Site Management Plan
Former Davis-Howland Oil Corporation Site
NYSDEC Site No. 8-28-088
City of Rochester, Monroe County

January 2020

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DEPARTMENT OF ENVIRONMENTAL REMEDIATION
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1	January 17, 2020	Revisions based on decommissioning of groundwater treatment and AS/SVE systems	

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List of Abbreviations and Acronyms

AOC	area of concern
AS	air sparge/air sparging
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CHI	Clean Harbors of Kingston, Inc.
CATOX	catalytic oxidation unit
CFR	Code of Federal Regulations
COC	chemical of concern
CPP	Community Protection Plan
DER	Department of Environmental Remediation
DHOC	Davis-Howland Oil Corporation
DGC	Dunn Geosciences Corporation
EC	engineering control
ECL	Environmental Conservation Law
EEEPC	Ecology and Environment Engineering, P.C.
ENSR	ENSR Engineering New York
EPA	U.S. Environmental Protection Agency
ft/ft	feet per foot
GHASP	Generic Health and Safety Plan
HASP	Health and Safety Plan
IC	institutional control
IDW	investigation-derived waste
IRM	Interim Remedial Measure
LMS/GLE	Lawler, Matusky Skelly Engineers LLP/Galson/Lozier Engineers
MSLF	Mill Seat Landfill
NYCRR	New York Codes, Rules, and Regulations
NYS	New York State

List of Abbreviations and Acronyms (cont.)

NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYS PE	New York State-licensed Professional Engineer
O&M	operations and maintenance
OM&M	operations, maintenance, and monitoring
OSHA	Occupational Safety and Health Administration
OU	operable unit
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PPE	personal protective equipment
ppm	parts per million
Popli	Popli Architecture + Engineers & L.S., PC
POTW	publicly owned treatment works
PRR	Periodic Review Report
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
RA	remedial action
RI	remedial investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
ROW	right of way
SCG	standards, criteria and guidance value
SHASP	Site-Specific Health and Safety Plan
SMP	Site Management Plan
SSD	sub-slab depressurization
SVE	soil vapor extraction
SVI	soil vapor intrusion
SVOC	semivolatile organic compound
Tyree	Tyree Corporation, Limited
UST	underground storage tank
VOC	volatile organic compound

1 Administrative Setting and Site Background

1.1 Purpose

This Site Management Plan (SMP) is a requirement of the remedial program at the (former) Davis-Howland Oil Corporation (DHOC) Site (the Site), under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The program number for the site is 8-28-088. This SMP describes the institutional controls (ICs) and engineering controls (ECs) in place at the Site as described in the Records of Decision (RODs) issued for the site. The RODs were signed by NYSDEC and accepted by the New York State Department of Health (NYSDOH) in March 1997 and March 1998 (see Appendices A and B, respectively).

1.2 Registry Site Information

The Site is located in the city of Rochester, Monroe County, New York. Documentation in NYSDEC's Environmental Site Remediation Database currently notes that the site encompasses the parcels located at 190 through 220 Anderson Avenue and the portion of 176 Anderson Avenue immediately north and west of 190 through 220 Anderson Avenue. Early documentation of a consent order is lacking. A soil investigation report conducted by Dunn Geosciences concluded that contamination extended beyond the Davis-Howland property line onto the 176 Anderson Avenue and CSX Railroad properties to the north, east, and west (Dunn Geosciences Corporation [DGC] 1991). Cooperation with DHOC evidently ended after this point because the Site was referred to NYSDEC's Division of Environmental Enforcement on April 30, 1993, for continuing environmental remediation as a state Superfund, site. The remedial actions performed and remedial systems installed at the site encompass the adjacent parcels described as 190 through 220 Anderson Avenue, the portion of 176 Anderson Avenue immediately north and west of 190 through 220 Anderson Avenue, and a portion of the CSX Railroad right of way (ROW) to the north of 176 Anderson Avenue.

Location: The site is located in the southeast quadrant of the city of Rochester, in the Atlantic-University neighborhood within sight and sound of CSX's Goodman Street Rail Yard.

Site Features: The site is defined as a single, 0.2-acre, industrial parcel of land located at 200 Anderson Avenue. This parcel and the adjacent, parcels on the east and west are occupied by the former DHOC buildings. Historic landfill disposal activities occurred on the 200 Anderson Avenue parcel and two additional parcels immediately to the north of the Site. These additional parcels, although managed in the remediation effort, are considered off site.

The neighborhood includes residential, commercial, and industrial facilities. The site itself is bounded on the south by Anderson Avenue, and on the north by property belonging to Mr. Stern. The rear yard of the site parcel is paved with blacktop, which extends to cover the entire Stern parcel and overlaps onto CSX railroad property. Remedial trenches, wells, and air sparge (AS) and vacuum lines are underneath the entire Stern parcel and extend onto railroad property.

Site Geology and Hydrogeology: The unconsolidated surface geology consists of fine to coarse sand with some gravel and silt. No significant surface water is located in the immediate area of the site. The bedrock is the mid-upper Silurian, late Niagaran stage, Lockport group dolostone.

Current Zoning/Use(s): Zoning is commercial/industrial.

Historical Use(s): The current buildings along Anderson Avenue are more than a century old. A hundred years ago the DHOC site bordered property owned by the Robeson Rochester Company and the Rochester Stamping Company. Robeson Rochester was a cutlery manufacturer that performed metal fabrication and acid treatments. The DHOC site remediation has removed contaminated soil from off-site locations, which probably originated from its former industrial neighbors.

Between 1942 and 1972 the site parcel was used for production of industrial chemicals, oils, greases, and other lubricants. DHOC operated the business from 1972 to sometime in 1994, when operations began to decrease significantly. DHOC ceased operations sometime in 1994. Several reports of spills and releases of materials, including waste oil, mineral oil, hydrochloric acid, and sulfuric acid, on the site were reported to NYSDEC during DHOC’s operational period.

Between 1974 and the early 1990s, there were many reports to NYSDEC of releases of materials at the Site, ranging from waste oil and mineral oil to hydrochloric and sulfuric acids. However, there was no single occurrence that can account for the majority of contamination that was found at the Site.

In June of 1991, NYSDEC staff inspected the site in response to an oil spill complaint and found several hundred drums of oils and solvents and several areas of stained soils. A NYSDEC contractor was subsequently hired to overpack leaking drums and obtain soil samples. The analytical results indicated that the surficial soils were contaminated with petroleum products and solvents. DHOC conducted an additional soil investigation and the results confirmed the NYSDEC analyses. As a result, DHOC removed all drums of liquid wastes and completed a surficial soil cleanup in July 1992. Following the soil removal, the excavated area was filled with clean soil. Approximately 341 tons of soil was disposed of off site as hazardous waste and approximately 120 cubic yards of soils were disposed of off site as non-hazardous petroleum contaminated soils.

The majority of the hazardous waste disposal, assessment, and cleanup occurred on the Stern parcel north of the DHOC buildings. Chemical spills from loading and unloading on the off-site parcels were linked to DHOC and these additional contaminated parcels are managed together with the single "Site" parcel.

In 1991, DHOC conducted a groundwater investigation on adjacent parcels. The sampling results indicated heavy groundwater contamination with chlorinated and non-chlorinated solvents with levels that exceeded groundwater standards by as much as five orders of magnitude.

In 1993, the Site was listed on the New York State Inactive Hazardous Waste Disposal Site Remedial Program Registry as a Class 2 site. At that time, the Site was defined as a single parcel (ID No. 106.84-1-6) located at 192 through 200 Anderson Avenue in the city of Rochester, Monroe County, New York (see Figure 1-1). A general site layout plan is presented in Figure 1-2. And a detailed plan of the constructed remedial systems prior to decommissioning is presented in Appendix C.

In September of 1994, this site was referred to the State Superfund program. A state Superfund Remedial Investigation (RI) was completed in early 1997. Two RODs were signed in 1997 and 1998, which called for AS, soil vapor extraction (SVE), and soil removal. Groundwater contamination at deep levels was encountered during pre-design sampling activities, consequently deep groundwater contamination is also addressed in the remedy. The Remedial Design was completed in September of 2000. Remedial construction began in 2001 and was completed in 2002.

The remedial components included dual, AS/SVE and groundwater pump-and-treat technology. An air stripper and (until 2009) a catalytic oxidation unit (CATOX) removed volatile contaminants from the water and air. Water was then discharged to the city sewer. In 2009 the CATOX was disconnected and removed from the site. Following NYSDEC's guidance on air emissions, to replace the CATOX, an engineered vertical stack was installed. Routine site management was performed and the treatment technology ran continuously.

From 2002 to 2018, NYSDEC had been responsible for operation, monitoring, and maintenance of the entire groundwater collection and treatment system, both on and off site. Treated water was sampled, monitored, and discharged through a dedicated discharge line to the sanitary sewer line along Anderson Avenue under permit with discharge limits established by Monroe County. Air with entrained contamination removed from the groundwater was sampled, monitored, and discharged in accordance with NYS guidelines.

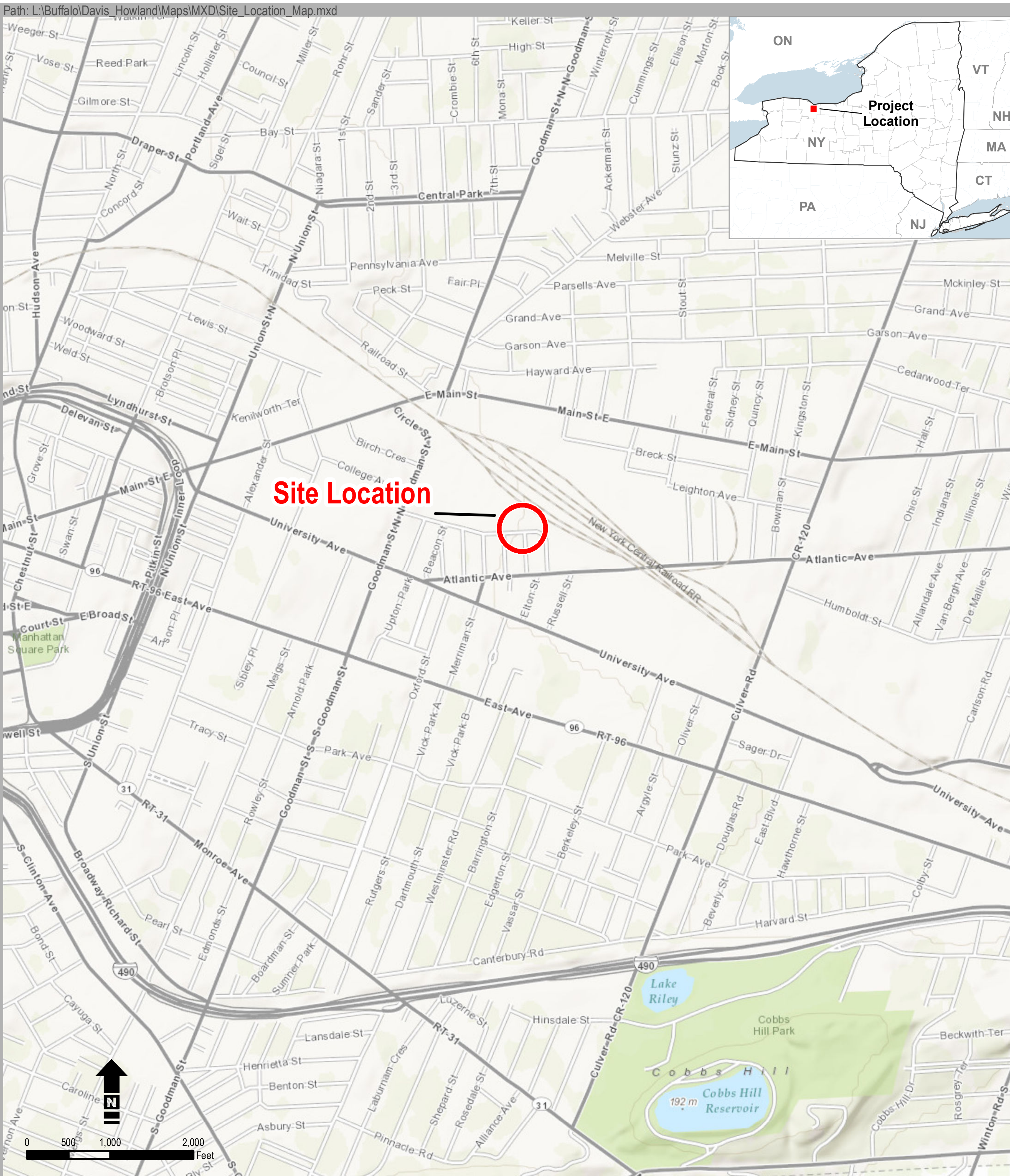
During the 2004 and 2005 heating seasons, NYSDEC and NYSDOH completed a soil vapor intrusion (SVI) study within the downgradient residential area. Follow-up indoor air sampling performed in the fall of 2010 in the Stern building on the western edge of the site, no chlorinated volatile organic compounds were found in indoor air that required mitigation. NYSDOH had determined that no further measures were necessary.

In 2018, the groundwater treatment and AS/SVE systems were decommissioned following an evaluation of the effectiveness of the systems and remaining contamination at the Site, and sub-slab depressurization (SSD) systems were installed at 190 Anderson Avenue, 192 through 200 Anderson Avenue, and 220 Anderson Avenue. These SSD systems were intended to mitigate potential sub-slab soil vapors that may enter each building via soil vapor intrusion, while also reducing operation costs by switching from AS/SVE systems to SSD systems. These SSD systems were installed between August 6 and August 13, 2018, in accordance with the *NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York* dated October 2006. Following installation, indoor and outdoor air sampling was performed on December 11, 2018. In all of these samples, the concentrations of detected volatile organic compound (VOCs) in indoor air did not exceed the NYSDOH Air Guidance Values nor the U.S. Environmental Protection Agency (EPA) Building Assessment and Survey Evaluation Database 90th percentile values.

1.3 Administrative Setting

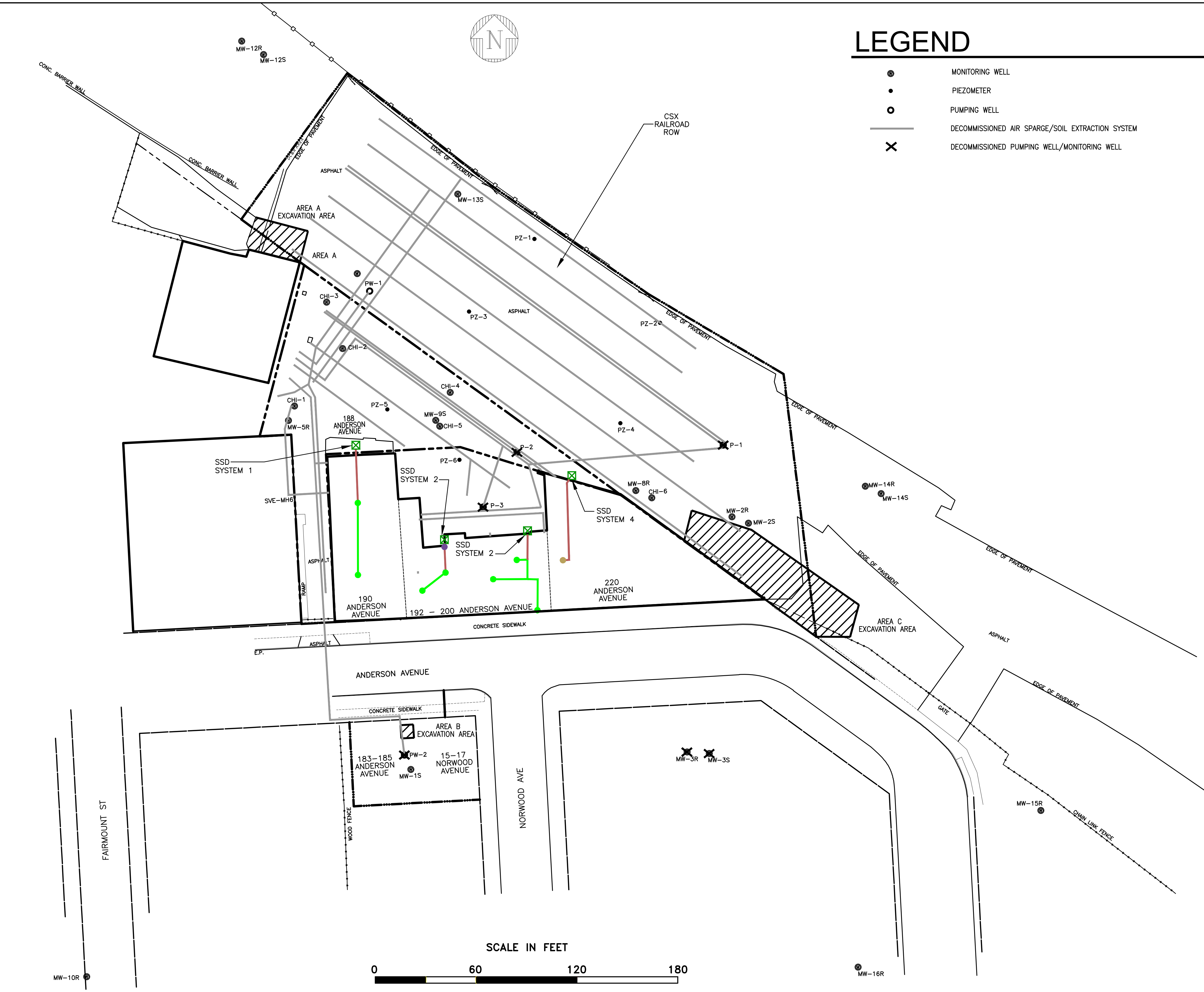
The site was divided into two operable units (OUs). An operable unit represents a portion of a remedial program for a site that, for technical or administrative reasons, can be addressed separately in order to investigate, eliminate, or mitigate a release, threat of release, or exposure pathway resulting from the site contamination.

Path: L:\Buffalo\Davis_Howland\Maps\MXD\Site_Location_Map.mxd



Source: ESRI 2012.

Figure 1-1
Site Location Map
Former Davis-Howland Oil Corporation
Rochester, NY



LEGEND

⊗	MONITORING WELL
•	PIEZOMETER
o	PUMPING WELL
—	DECOMMISSIONED AIR SPARGE/SOIL EXTRACTION SYSTEM
×	DECOMMISSIONED PUMPING WELL/MONITORING WELL
⊠	FAN LOCATIONS (EXTERIOR)
•	2 INCH SOLID SCHEDULE 40 PVC VERTICAL RISER
•	3 INCH SOLID SCHEDULE 40 PVC VERTICAL RISER
•	4 INCH SOLID SCHEDULE 40 PVC VERTICAL RISER
—	3 INCH SOLID PVC SCHEDULE 40 PVC OVERHEAD HEADER PIPING
—	4 INCH SOLID PVC SCHEDULE 40 PVC OVERHEAD HEADER PIPING

ABBREVIATIONS

CH	CLEAN HARBOR
MH	MANHOLE
MW	MONITORING WELL
PART	PARTIAL
P	SHALLOW OVERBURDEN GROUNDWATER PUMPING WELLS
PW	BEDROCK GROUNDWATER PUMPING WELLS
PZ	PIEZOMETER
SSD	SUB-SLAB DEPRESSURIZATION

NOTES

1. PIEZOMETERS, MONITORING WELLS, BUILDINGS AND PROPERTY LINES ARE BASED ON A SURVEY BY POPLI DESIGN GROUP, ARCHITECTURE AND ENGINEERING P.C. DATED DEC 7, 2012.
2. PUMPING WELL LINES, SOIL VAPOR EXTRACTION LINES AND AIR SPARGE LINES BASED ON AS-BUILT DRAWINGS BY ECOLOGY AND ENVIRONMENT P.C DATED NOVEMBER 2006.
3. STREET LOCATIONS ARE APPROXIMATE.

ecology and environment engineering and geology p.c.

FIGURE 1-2

SITE PLAN
FORMER DAVIS HOWLAND OIL CORPORATION SITE
MONROE COUNTY, ROCHESTER, NY

Operable Unit 1 (OU-1) focuses on the shallow groundwater, surface soil, and subsurface soil on the site. The ROD called for AS to treat overburden groundwater, vapor extraction to collect released volatile organic compounds (VOCs) and enhance soil cleanup, and site fencing to protect the treatment plant, and groundwater monitoring.

Operable Unit 2 (OU-2) focuses on bedrock groundwater. NYSDEC selected No Further Action as the site remedy for OU-2, but included a contingency: in the event that the OU-1 remedy did not effectively clean up the deeper groundwater, the remedy for OU-2 includes groundwater pumping wells and groundwater monitoring. As a result, early on, NYSDEC decided to install two pumping wells to cleanup contamination and a network of monitoring wells to monitor remediation in the bedrock aquifer. This contingency remedy operated continuously at DHOC through 2018 when the treatment systems were decommissioned.

After completion of the remedial construction work described in the Final Engineering Report, some contamination was left in the subsurface soils and groundwater on and off site, which is hereafter referred to as “remaining contamination” (EEEPC 2006a). This SMP outlines management strategies for the remaining contamination at the Site until the environmental notice is extinguished in accordance with Environmental Conservation Law (ECL) Article 71, Title 36.

1.4 Deed Restriction/Environmental Notice

Environmental easements and/or environmental notices have been filed and recorded with the Monroe County Clerk to ensure that future owners of the Site will be informed of development restrictions on the property due to environmental concerns. The deed restrictions and environmental notices for the properties that comprise the Site are provided in Appendix D.

In New York State, an environmental easement/environmental notice is required for remedial projects that rely upon one or more ICs and/or ECs after remediation has been completed and where residual contamination remains that must be monitored and controlled. The restrictions remain with the property’s deed, binding the owner and the owner’s successors and assigns to be subject to the provisions of ECL Article 71, Title 36.

An environmental easement/environmental notice contains the ICs for use restriction(s) and/or any prohibition(s) on the use of the land in a manner consistent with the factors that the ECs deemed necessary to control the residual contamination at the Site. The emplacement of a deed restriction/environmental notice provides an effective and enforceable means of encouraging the reuse and redevelopment of a controlled property in a manner that has been determined to be safe for a specific use. This will provide for the performance of the operations, maintenance, and monitoring (OM&M) requirements deemed necessary to control the residual contamination on the property.

1.5 Site Management Plan

This SMP specifies the methods and provides a detailed description of the obligations for the future remedial management and monitoring requirements at the Site. The execution of the requirements presented in this SMP or the latest revision are necessary to provide compliance with the RODs and property restrictions to address residual contamination at the Site. The ICs were established to place restrictions on the Site's use and mandate reporting measures for all ECs in the SMP. The ECs that have been incorporated into this SMP were established to control potential exposure of Site personnel and the environment to residual contamination during current and future use of the Site. This SMP may be revised or amended only with the approval of NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the Site after completion of the Remedial Action (RA), including:

(1) Implementation and management of all ECs and ICs;

(2) Media (soil, soil vapor, groundwater) environmental monitoring;

(3) Performance of periodic inspections, certification of results, and submittal of Periodic Review Reports (PRRs).

To address these needs, this SMP includes three plans:

(1) An Engineering and Institutional Control Plan for implementation and management of EC/ICs;

(2) A Monitoring Plan for implementation of Site Monitoring; and

(3) A Termination Plan.

This SMP also includes a description of PRRs for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

The following requirements apply to the Site:

- This SMP details the specific implementation procedures that are required by the state Superfund program and the deed restriction/environmental notice. Failure to properly implement the SMP is a violation of the deed restriction/environmental notice, and one is thereby subject to applicable penalties; and
- Failure to comply with this SMP is also a violation of ECL 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 and the RODs in effect for the Site and is subject to applicable penalties.

Revisions or amendments to this SMP shall be proposed in writing to NYSDEC's project manager for the Site. In accordance with the deed restriction/environmental notice for the Site, NYSDEC will provide a notice of any approved changes to the SMP and append those notices to the SMP that is retained in its files.

1.6 General Site Background and History

1.6.1 Background

Although the 0.2-acre parcel identified as 190-200 Anderson Avenue (Block 106 and Lot 84-1-6 on the Monroe County Tax Map) comprises the Site, remedial systems had been installed over an approximately 1.5-acre area bounded by the parcels located at 190 through 220 Anderson Avenue to the south, a CSX Transportation ROW with active tracks to the north and east, and light industrial/commercial/retail buildings to the west (see Appendix C). The existing Access Agreement with CSX is provided in Appendix E. The boundaries of the Site are more fully described in Appendix F, Metes and Bounds Survey.

The Site was used from 1942 to 1972 to produce industrial chemicals, oils, greases, and other lubricants, and from 1972 to 1994 the Site was used by DHOC. DHOC closed in 1994 and all manufacturing and product-processing operations ceased.

Between 1974 and the early 1990s, there were many reports to NYSDEC of releases of materials at the Site, ranging from waste oil and mineral oil to hydrochloric and sulfuric acids. However, there was no single occurrence that can account for the majority of contamination that is now found at the Site. NYSDEC inspected the Site in June 1991 and found several hundred drums of oils, solvents, and other materials. Some of the drums were leaking, and several areas with stained surficial soil also were found.

1.6.2 Geologic Conditions

Geology

The soils at the Site and in the vicinity are classified as urban land (areas altered or obscured by urban works and structures). The Site is situated on alluvial organic silt and sand overlaying glacial till deposits and lacustrine sand and silt of varying thickness.

Bedrock in Monroe County dips gently to the south-southwest at approximately 55 feet per mile (Kappel and Young 1989). Bedrock beneath the Site is Dolostone of the Middle Silurian Lockport Group and was encountered at 26.6 to 27 feet below ground surface (BGS) during the RI (Lawler, Matusky Skelly Engineers LLP/Galson/Lozier Engineers [LMS/GLE] 1998). The upper surface bedrock slopes to the south at gradients ranging between 0.008 feet per foot (ft/ft) to 0.02 ft/ft. Geologic cross-sections are presented in Appendix G.

Hydrogeology

There are two water-bearing zones beneath the Site: the shallow overburden zone and upper bedrock zone. The shallow overburden aquifer consists of 1 to 2 feet of topsoil (at one well location) underlain by average thicknesses of 3 feet of fill material (sand and gravel with some cobbles, brick, concrete, wood, and coal fragments); 10 feet of glacial outwash deposits; and 10 feet of glacial till. Bedrock, consisting of dolostone, occurs at depths of 15 to 27 feet below grade, with an average depth of 22.5 feet. A summary of each water-bearing zone is provided below.

1.6.3 Summary of Remedial Investigations (RIs)

A soil investigation was performed in 1991 by NYSDEC. This investigation included soil sampling, waste inventory and characterization, and overpacking and containerizing several hundred leaking drums. Analytical results showed that the surficial soils were contaminated with petroleum products and solvents.

In October 1991, Dunn Geosciences Corporation (DGC) of Amherst, New York, conducted a remedial soil investigation for the owners of the DHOC building (DGC 1991). The investigation included test pits and soil gas probing in order to evaluate the distribution of contaminated soils behind (north of) the DHOC building on Anderson Avenue.

From April to June 1992, Clean Harbors of Kingston Inc. (CHI), Kingston, New York, conducted an Interim Remedial Measure (IRM), which consisted of a drum removal and surface soil excavation and removal. The soil removal consisted of the removal of the top 1 foot of soil and subsequent off-Site disposal. NYSDEC's inspection during the CHI cleanup indicated that contaminated soils were observed after the surficial soils excavation activities, and further soil removal would have been impractical at that time. NYSDEC decided that additional soil contamination would be addressed in later investigations.

In conjunction with the drum and soil removal work (April to June 1992), CHI performed additional Site investigations by sampling soils and installing and sampling six shallow groundwater monitoring wells. In September 1992, DHOC submitted the CHI groundwater report to NYSDEC. The analytical results indicated that the groundwater was contaminated with chlorinated and non-chlorinated solvents and metals.

In December 1994, NYSDEC sampled the Site's groundwater monitoring wells to assist in the development of the Remedial Investigation/Feasibility Study (RI/FS) Work Plan. The results were consistent with the CHI Groundwater Report of September 1992.

In April 1995, NYSDEC made the following conclusions, based on report results:

- All monitoring well analytical results from the Site exceeded the NYSDEC Class GA groundwater standards for VOCs, semi-volatile organic compounds (SVOCs), and metals;
- Additional deep bedrock and shallow monitoring wells were needed to characterize the Site; and
- The designated groundwater chemicals of concern (COCs) included VOCs, SVOCs, pesticides, polychlorinated biphenyls (PCBs), and metals.

In April 1995, based on the review of previous technical studies, the Site was listed on the New York State Registry of Inactive Hazardous Waste Sites (Site No. 8-28-088), indicating that it posed a significant threat to human health and the environment.

The first of a two-phase RI/FS work assignment was completed in October 1996 by LMS/GLE. The remedial investigation (LMS/GLE 1996) and focused feasibility study (LMS/GLE 1997a) focused on the shallow groundwater, surficial soil, and subsurface soil on the Site. Eight shallow and 15 bedrock monitoring wells were installed for the Phase I investigation.

Generally, the RI determined that the primary contaminated media at the Site consist of soil and groundwater. These were further divided into surface soil, subsurface soil, shallow groundwater (found in the fill and soil overlying bedrock), and deep or bedrock groundwater (located in the uppermost bedrock unit encountered at the Site). The shallow groundwater is separated from the bedrock groundwater by a layer of material classified as glacial till. Each of the four subdivisions of the media described above were determined to be contaminated. The highest level of soil contamination was found in the area behind (north of) the DHOC building. Shallow soils were contaminated with SVOCs and metals, and subsurface soils with VOCs and, to a lesser extent, SVOCs and metals. Groundwater contamination was greatest in shallow groundwater with the area behind the building showing the highest levels. The bedrock groundwater was contaminated at levels generally an order of magnitude less than that observed in shallow groundwater.

Based on this report and the prior investigations, NYSDEC prepared a ROD for OU-1, which encompasses the shallow groundwater, surficial soil, and subsurface soil on the Site (NYSDEC 1997a).

A second phase RI/FS was completed in October 1997 (LMS/GLE 1997b). The investigation and study focused on further defining the nature and extent of soil and deep groundwater impacts on the Site. Additional soil samples were collected at the surface and near-surface to confirm the results from Phase I of the first RI. In addition, bedrock monitoring wells were installed and sampled. Finally, AS and SVE pilot tests were performed to evaluate the remedial technologies for use at the Site.

Based on this report and the prior investigations, NYSDEC prepared a ROD for OU-2, which encompasses the deep groundwater on the Site (NYSDEC 1998).

Using the results of the Phase I and Phase II RI/FS prepared for the Site's inactive hazardous waste site OU-1 (upper aquifer and soils) and OU-2 (bedrock aquifer) and the criteria identified for the evaluation of alternatives in that document, NYSDEC made an alternatives selection. AS, SVE, and soil excavation and removal was selected as the Site remedy for OU-1. No further Action with monitoring was selected for OU-2 in the RODs.

The ROD remedy selected for OU-1 was AS and SVE. Details of this remedy include:

- AS points in the shallow overburden groundwater in the areas of highest VOC contamination to transfer VOCs from the groundwater to a vapor phase;
- Vapor extraction points located beneath and to the north of the Site buildings;
- Vapor-phase treatment system for the extracted VOCs; and
- Security fencing to protect on-site, aboveground equipment.

The original remedy for OU-2, the bedrock aquifer, was "no further action with groundwater monitoring." There was a requirement for additional testing and a "contingency plan" in case contamination in the bedrock did not decrease after the remedy for OU-1 was implemented. A limited pump test was performed to determine connections and interconnections between the soil and bedrock layers. The remedy for OU-1 was deemed inadequate and a groundwater pump and treat system was installed as the OU-2 "contingency." The limited pump and treat remedy focuses on source areas, includes pre-treatment and discharge of extracted groundwater to the publicly owned treatment works (POTW) and includes appropriate supplemental monitoring.

Upon selection of the remedial technology to be used at the Site under the RODs, an additional Pre-Remedial Design Investigation was performed in September and October 1998 (LMS/GLE 1998). The pre-remedial design was the initial basis for the designing the remedial process, equipment selection, and sizing the capacities of remedial operations to reach the goals outlined by the RODs.

1.6.4 Summary of Remedial Action Objectives and Soil Cleanup Objectives

The standards, criteria and guidance values (SCGs) that will be used by NYSDEC at this Site are NYSDEC soil cleanup guidance Final Commissioner Policy CP-51 (October 21, 2010)[1] and 6 NYCRR Part 375 soil cleanup objectives.

[1] Although NYSDEC Technical and Administrative Guidance Memorandum No. 4046 was initially used as the basis for remediation at this site, that Memorandum was rescinded in 2010 and replaced by CP-51.

The remediation goals outlined in the RODs included the following for OU-1:

- Eliminate the potential for direct human contact with the contaminated soils on Site;
- Mitigate the impacts of contaminated groundwater to the environment, to the extent practicable;
- Prevent, to the extent practicable, migration of soil contaminants to groundwater; and
- Provide for attainment of SCGs for groundwater quality at the limits of the area of concern (AOC) to the extent practicable.

The remediation goals for OU-2 include the following:

- Be protective of human health and the environment and meet all SCGs; and
- Eliminate or mitigate the impacts of contaminated groundwater to the environment, to the extent practicable;

1.6.5 Summary of Remedial Actions

In 1999, ENSR Engineering New York (ENSR), Rochester, New York, began preparation of contract documents for remedial construction at the Site. The documents were issued at 65% completion to NYSDEC in September 2000 (ENSR 2000). Because ENSR's NYSDEC standby contract was not renewed, Ecology and Environment Engineering, P.C. (EEEPC) was assigned the project under its standby contract in October 2000. The contract drawings were reviewed by EEEPC in November 2000 and NYSDEC requested changes to bring the documents to 100% completion. NYSDEC advertised the notice for bidders for remedial construction at the Site in December 2000. Public bidding was opened in January 2001, and bids were received in February 2001. Upon acceptance of the lowest qualified bid in March 2001, the Intent to Award the project was issued to The Tyree Corporation, Limited (Tyree), Latham, New York. Project shop drawings were submitted by Tyree and reviewed for conformance with the Contract Documents by EEEPC. Notice to Proceed was issued by NYSDEC on June 7, 2001.

Construction of the remedial treatment system began on June 7, 2001. A Site Plan including the locations of the remedial system and removal activities is presented in Appendix C. The following major construction actions were performed as part of the remediation:

- Installation of 47 positive-pressure AS points and discharge lines and valve control manholes;
- Installation of eight interior SVE points and 1,300 feet of horizontal SVE collection lines;

- Installation of three groundwater extraction wells with discharge lines and six observation piezometers;
- Decommission of eight monitoring wells;
- Installation of two blasted-bedrock trench recovery wells;
- Excavation and off-site disposal of an underground storage tank (UST);
- Excavation and off-site disposal of contaminated soils in Areas A, B, and C (see Site Plan in Appendix C);
- Installation of asphalt pavement for load-bearing protection over the north and west end of the Site;
- Fabrication and installation of a trailer-mounted remediation system consisting of a low-profile air stripper for groundwater and an AS/SVE system with a CATOX for soil vapors;
- Connection of a new treated-discharge line to the existing Monroe County combined storm and sanitary sewer system; and
- Development and implementation of an OM&M Plan for long-term management of remaining contamination as required by the deed restriction/environmental notice, which includes plans for: (1) ICs and ECs, (2) monitoring, (3) operations and maintenance (O&M), and (4) reporting.

Remedial activities were completed at the Site in August 2003 and documented in the *Final Construction Closure and Certification Report, Davis Howland Oil Company* (EEEPC 2006b).

Based on air quality modeling performed for the Site, the CATOX system was decommissioned and removed from the treatment system in July 2003 (EEEPC 2006b).

1.6.6 Removal of Contaminated Materials from the Site

From April to June 1992, Clean Harbors of Kingston Inc. (CHI), Kingston, New York, removed the inventory of drummed waste and removed visibly affected surficial soils. CHI submitted a draft report summarizing the three-month soil and drummed waste remediation (CHI 1992).

Based on prior remedial investigations, three specific shallow (6 inches to 2 feet in depth) areas of contaminated soils were designated for excavation and disposal under the scope of work of the contract. The RI analytical results indicated that the soils contained VOCs and benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds that exceeded the NYSDEC cleanup criteria but were below the criteria limit for hazardous waste disposal. The excavation limits of the contaminated soils (designated as Area A, Area B, and Area C; see Appendix C) were surveyed and demarcated by Popli Architecture + Engineers & L.S., P.C. (Popli) of Rochester, New York, a licensed New York State land surveyor. The soils were then excavated by Tyree as part of the Remedial Construction Contract D003493. Prior to removal from the Site, the excavated soils were staged on a high-density polyethylene liner in the soils staging area located to the east of the work limits on the CSX railroad property. As with the decontamination pad and soil stockpile areas, Tyree obtained confirmation samples of soil at the bottom of the excavations to confirm that the remedial cleanup objectives had been met.

The work performed in Area A included the excavation and removal of soils in an area measuring 30 feet by 40 feet by approximately 2 feet deep. The primary contaminants of concern in Area A were priority pollutant metals and SVOCs.

In Area B, located on the south side of Anderson Avenue on the west corner of Norwood Street, excavation was performed within an area measuring 10 feet by 10 feet by 6 inches deep. The primary contaminants of concern in Area B were priority pollutant metals and SVOCs.

Area C, located on the east side the remedial area behind the east side of the 200 Anderson Avenue facility, included a raised area of soils measuring approximately 65 feet by 15 feet by approximately 2 feet deep and defined by railroad ties. The primary contaminants of concern in Area C were priority pollutant metals, SVOCs, and VOCs.

Upon excavation of Areas A, B, and C to the required limits and depths, each excavation was visually examined to determine whether additional soils needed to be removed prior to taking confirmation samples. For Area A, nine confirmatory soil samples were taken of the floor and walls of the excavation. For Area B, five confirmatory soil samples were taken of the finished floor and walls of the excavation. For Area C, 12 confirmatory soil samples were taken of the finished floor and walls of the excavation. The analytical results from all areas indicated that contaminant concentrations in the remaining soils were below the remedial action objectives. Area B was then backfilled with approved topsoil and restored with grass, while Areas A and C were backfilled with Site soils.

Corbett Management, a waste broker, was subcontracted by Tyree to broker and process waste profiles for non-hazardous material disposals, including excavation spoils and drill cuttings for disposal to the Mill Seat Landfill (MSLF) located in the town of Riga, Monroe County, New York. Corbett Management arranged subcontracted waste transportation for Tyree, including Rochester Waste, Inc., and Silvarole Trucking, for the project. MSLF also accepted asphalt spoils, crushed drums, boulders, concrete, railroad ties, decontamination pad materials, and other non-hazardous materials. MSLF accepted a total of 152 loads, or approximately 3,140 tons, of non-hazardous material from the Site. Project transportation and disposal tracking logs are presented in Appendix O of the *Final Construction Closure and Certification Report* (EEEPC 2006a). Much of the excavated materials from the remedial area of the Site were screened on-site using a portable screen to separate large, bulky items, such as railroad ties, railroad rails, oversized boulders, and miscellaneous concrete debris. In order to reduce the volume of materials disposed of off-site, some of the screened spoils were used on-site as backfill, provided the materials met prequalification requirements for backfill and compaction requirements were achieved. Additional screened spoils were used as daily cover at the MSLF due to its low levels of contamination and acceptable engineering properties.

Railroad ties, concrete and debris from the subgrade chamber in Area C, and miscellaneous pieces of concrete were transported by Rochester Waste Inc., to Alpco Recycling Inc., in Macedon, New York, to be recycled. Alpco accepted 18 loads, or approximately 250 tons, of material.

Sixteen 55-gallon drums of non-hazardous wastes from the original on-site drum inventory in the Contract Documents were transported by St. Joseph Motor Lines to General Environmental Management's recycling and pretreatment facility in Cleveland, Ohio. Chemtron accepted three 55-gallon drums of "stone and tar," which were found on the Site at the time of mobilization. One 55-gallon drum of soiled/used personal protective equipment (PPE), mainly consisting of disposable Tyvek suits and disposable rubber gloves from previous remedial investigations, was transported by Precision Industrial Maintenance to Adirondack Resource Recovery's incineration facility in Hudson Falls, New York.

Approximately two tons of solid and liquid hazardous waste were disposed of in 2001 as a result of the remedial activities at the Site. A hazardous waste disposal report is presented in Appendix U of the *Final Construction Closure and Certification Report* (EEEPC 2006a).

1.6.7 Remaining Contamination

This section contains historical information from documents in the Administrative Record, as of 1997.

The remedial investigation determined that the primary contaminated media at the Site consists of soil and groundwater. These are further divided into surface soil, subsurface soil, shallow groundwater (which is found in the fill and soil overlying bedrock), and deep or bedrock groundwater (which is located in the upper-most bedrock unit encountered at the Site). The shallow groundwater is separated from the bedrock groundwater by a layer of material classified as a glacial till. This material consists of clay-rich silt with small amounts of sand and gravel encountered.

The highest level of soil contamination in 1992 was found in the area on and off-site behind the former DHOC building. Shallow soils were contaminated with SVOCs and metals, and subsurface soils with VOCs and, to a lesser extent, SVOCs and metals.

Some of the soil analyses detected the presence of several SVOCs at levels above recommended levels. While these SVOCs were found in surface soil above standards, the distribution of the SVOCs and past operations in the Site vicinity seem to indicate that they are not from DHOC operations. Some of this contamination was removed with the soil that was identified to pose a health risk.

Surface Soil

After completion of the surface soil removal IRM in 1992, only trace levels of VOC contamination were found in this media. Total SVOC contamination in this media ranged from non-detect to 448 parts per million (ppm). In general, the highest levels of contamination were found in the area behind the Site building and along the railroad tracks. Specifically, the highest levels of SVOCs consist of a class of compounds known as polynuclear aromatic hydrocarbon (PAH). These are compounds that include creosote and related chemicals. Individual SVOCs with the greatest exceedances of their soil cleanup goals were benzo(a)anthracene (37 ppm) and chrysene (33 ppm). Also found at elevated concentrations in this media were metals. Elevated levels of cadmium, chromium, mercury, lead, and zinc were detected in soil samples. The metals with the highest concentrations were lead (2,020 ppm) and zinc (43,800 ppm). According to historical Sanborn maps, galvanizing and "re-tinning" were performed in this off-site location when the property was part of the Robeson Rochester plant.

Two areas of surface soil contamination were identified as requiring remediation due to elevated metals contamination. These two areas comprise an estimated 33 cubic yards of soil. Although disposal activities were not attributed to the PAHs described above, the PAH contaminated soils were removed with the metals contaminated soils.

Subsurface Soil

The subsurface soil samples were higher in concentrations of VOCs and lower in SVOCs and metals. Highest VOCs were trichloroethene (6.4 ppm), xylene (5.1 ppm), and toluene (4.6 ppm). SVOCs were not encountered at levels of concern in subsurface soils. Of the metals, significant levels of mercury (0.37 ppm) were detected.

The highest levels of VOCs were generally encountered at or near the water table. They are likely to be associated with the groundwater contamination.

Shallow Groundwater

Data from the initial investigations indicate that groundwater contamination was highest in shallow groundwater with the area behind the former DHOC building showing the highest levels. Contamination levels reached non-detect levels just south of Anderson Avenue in front of the former DHOC building. Shallow (overburden) groundwater contamination consists primarily of the same VOCs found in subsurface soils. In 1994, the highest contaminant levels were 1,2-dichlroethene and trichloroethene (both 98 ppm) and 1,1,1-trichloroethane (34 ppm). The only SVOC detected at significant concentrations was naphthalene (0.29 ppm). The only significant metal detected was lead (0.819 ppm) (NYSDEC 1997a, 1997b).

In 2012, 15 VOCs were detected at least once in the shallow groundwater samples collected. The highest contaminant levels were cis-1,2-dichloroethylene (5.6 ppm), tetrachloroethylene (2.1 ppm), and vinyl chloride (0.99 ppm). No SVOCs were detected in shallow groundwater samples. Metals were not analyzed. Overall, total BTEX concentrations in the shallow groundwater have decreased significantly since 1998, with no BTEX contamination detected in the seven overburden wells since 2009. In 1997 and 1998, significant concentrations of BTEX were detected in overburden wells MW-9S (1.42 ppm and 4.69 ppm) and MW-13S (10.56 ppm and 9.44 ppm).

In general, VOC concentrations in the overburden wells have decreased significantly since 1997 where significant concentrations were detected in overburden wells MW-9S (6.28 ppm) and MW-13S (36 ppm). The highest levels VOCs were detected in 1998 (14.8 ppm in MW-9S and 40.1 ppm in MW-13S), with VOC concentrations significantly decreasing between 1998 and 2004. However, while VOC detection in a number of wells has varied between three to six wells since 2007, the overall VOC concentrations at the Site have generally remained consistent between 0 and 1.5 ppm.

Shallow groundwater flow direction has been variable, but is generally to the south and west of the Site, with a limited component of flow in a more easterly direction from under the former DHOC building.

Bedrock Groundwater

The bedrock groundwater was contaminated at levels generally an order of magnitude less than that observed in shallow groundwater.

Bedrock groundwater is contaminated with most of the same components found in shallow groundwater. Bedrock contamination is greatest on the south side of Anderson Avenue and northwest of the DHOC building. Contamination levels decrease to the east of the Site. Levels of contamination are, for the most part, lower. Highest levels are for 1,2-dichlroethene (8.6 ppm), vinyl chloride (0.84 ppm), and trichloroethene (0.74 ppm).

BTEX concentrations in the bedrock groundwater have also generally decreased since 1997. Total BTEX has been detected in five of the nine bedrock wells at the Site, with the highest concentrations in 1997 found at MW-5R (0.2 ppm) and MW-8R (1.26 ppm). Since 1997, BTEX concentrations have decreased to the point only one bedrock well (MW-5R) identified BTEX contamination in 2012 (0.32 ppm).

Overall, VOC concentrations in the bedrock wells have decreased about 40% since 1997 where significant concentrations (>1 ppm) were detected in six of the nine of the wells (MW-2R, MW-3R, MW-5R, MW-8R, MW-10R, and MW-16R). Except for the low levels detected in 2010, the total VOC concentration of the nine monitoring wells combined since 2004 has generally been about 9 to 10 ppm.

MW-8R continues to exhibit the highest VOC concentration (5.6 ppm), which consists primarily of cis-1,2-DCE.

Bedrock groundwater flow has historically been more consistent than that in the overburden, and appears to flow predominantly to the east in the area of the Site. A groundwater sink was noticeable surrounding the two pumping wells when evaluating the 2012 groundwater elevation data.

1.6.8 Site-related Treatment Systems

Groundwater and air at the Site had been treated via multiple systems. A detailed description of each process and treatment system is provided below. A schematic diagram illustrating the remedial treatment process is presented as Figure 1-3.

Groundwater Treatment System

The groundwater treatment system was composed of five pumping wells capable of processing up to a combined flow rate of 30 gallons of water per minute on a continuous basis. Groundwater wells PW-1 and PW-2 were installed as deep bedrock groundwater pumping wells to extract contaminated groundwater. Overburden pumping wells P-1, P-2, and P-3 were installed to keep the shallow aquifer groundwater levels below the elevation of the SVE lines. These pumping wells pumped contaminated groundwater from the treatment area to the treatment trailer for processing. All groundwater pumping wells cycled on and off at preset water levels within each well.

The groundwater VOC treatment system in the treatment trailer consisted of influent meters, a 500-gallon holding tank, sequestering agent feed, feed pump, a five-tray low-profile air stripper with air blower, effluent pump, effluent meter, and an effluent discharge line to the main trunk sewer under Anderson Avenue.

Groundwater was pumped from the shallow and bedrock-level extraction wells to the equalization tank, where it was then pumped to the air stripper on a batch basis. Contaminated water from the top of the air stripper tower drained down over a series of five stacked orifice trays in the column. A fan forced air countercurrent to the water flow and volatized the VOCs in the groundwater. The air discharge from the air stripper was discharged to the atmosphere without treatment. A sump at the bottom of the tower collected the decontaminated water, which was discharged in batches to the Monroe County combined storm and sanitary sewer system.

Six piezometers (PZ-1 through PZ-6) associated with the groundwater pumping wells (P-1 through P-3) were used to monitor the depth of groundwater under the paved AS/SVE area on a weekly basis.

Air Sparge/Soil Vapor Extraction Systems

The vapor-phase treatment system included both an air injection system (air sparge, or AS) and air removal system (soil vapor extraction, or SVE) to remove VOCs from shallow soils and from beneath building slabs at the Site. The AS components of the system utilized a low-pressure compressor designed to operate on a continuous basis to inject air into the soil via sparge points located around the Site. Forty-seven AS points were installed at approximately 12 feet BGS outside the facility and inside the buildings located at 200 Anderson Avenue.

The SVE system extracted soil vapor under negative pressure from the AS treatment zone via a network of outdoor and indoor underground collection piping. Depending on the location, the collection piping was either lateral collection slot-drain (indoor and outdoor) or collection points (indoor). The soil vapors were collected at a central location (treatment trailer) and discharged to the atmosphere without treatment.

From 2002 to 2008, the soil vapors were treated by an on-site CATOX unit prior to discharge to the atmosphere. In 2002, an application was submitted to NYSDEC for a permit to discharge the soil vapors following treatment by the CATOX unit. In 2006, an air quality analysis was performed (EEEPC 2006b). Based on this analysis and subsequent recommendations, the CATOX unit was removed from service in 2008. The existing air discharge system was regulated by NYSDEC's DAR-1, *Guidelines for the Control of Toxic Ambient Air Contaminants* (NYSDEC 1997b).

Treatment System Decommissioning

In 2018, the groundwater treatment system and the air sparge/soil vapor extraction systems had reached their performance limits whereby they were no longer making gains in cleaning up the groundwater. Both the AS/SVE and pumping well/air stripper treatment systems had reached asymptotic states and were no longer efficiently removing contamination from the site. It was concluded that continued operation of these systems would not meet remedial cleanup goals for groundwater in a timely manner. The restricted-residential soil cleanup goals have already been met at the site based on sampling performed in 2015. While groundwater has not reached the remedial goals as specified in the RODs, groundwater is not used as a potable water source in the area.

The treatment systems were shutdown and decommissioned in 2018 at the request of NYSDEC, with concurrence from NYSDOH (NYSDEC 2016; EEEPC 2018a, 2018b).

02:EN003231-0001-03TTO\Figure1-3 Treatment System.CDR-2/5/13-GRA

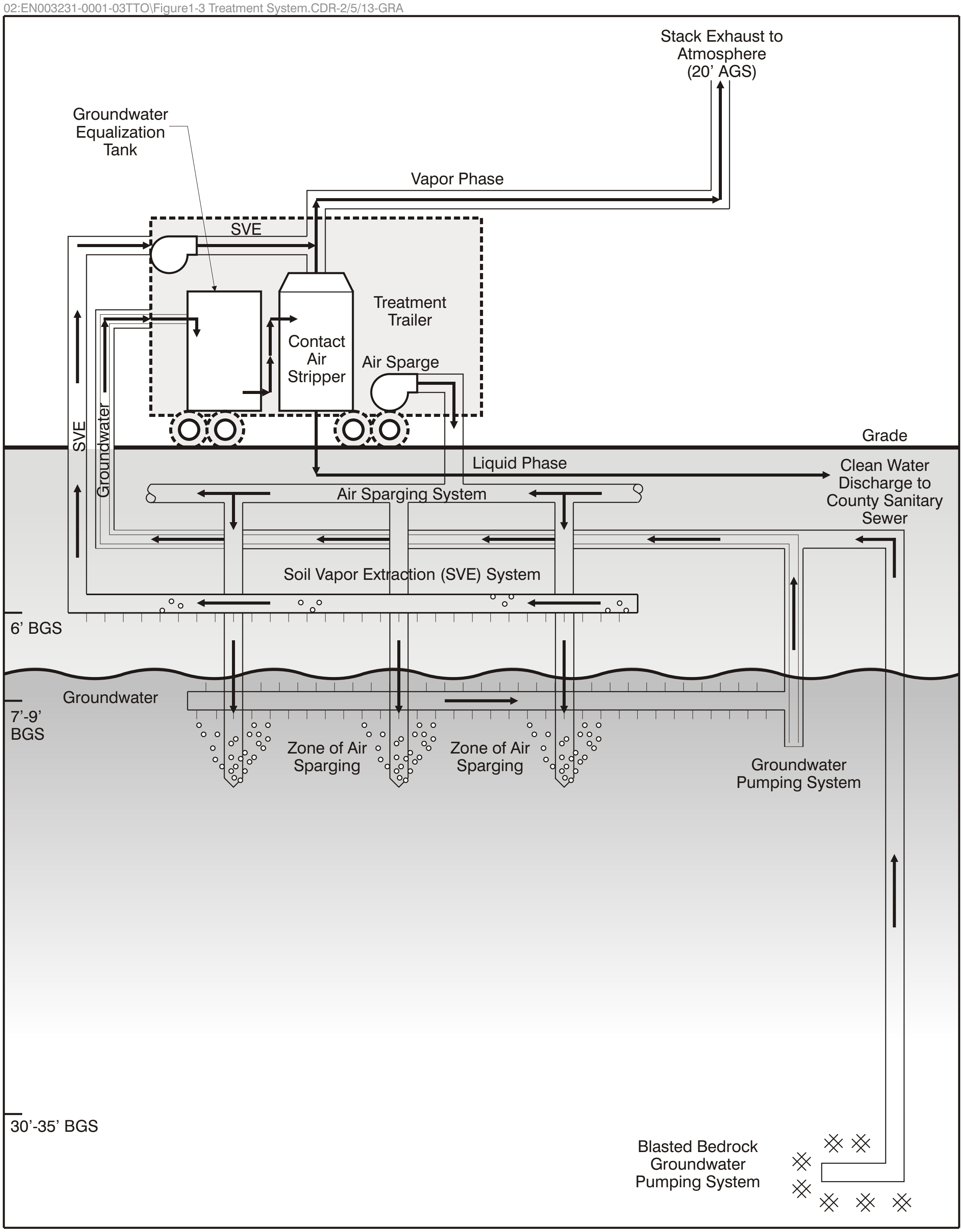


Figure 1-3 Treatment System Schematic

2 Institutional and Engineering Controls

2.1 Introduction

ICs and ECs are needed to protect human health and the environment from the residual contamination present in soil and groundwater beneath the Site. This section describes the procedures for managing all ICs and ECs at the Site. The ICs and ECs are components of the SMP, and revisions to the SMP are subject to approval by NYSDEC.

NYSDEC's Department of Environmental Remediation (DER)-10: *Technical Guidance for Site Investigation and Remediation* outlines the requirements for all phases of the remediation process (NYSDEC 2010). Among these requirements is the implementation of a plan for maintaining the ICs and ECs for this phase of the remediation process. The Site Plan presented in Appendix C identifies the locations of the major ECs for the Site. The ICs are included as listed below.

2.2 Institutional Controls

No ICs were required by the two RODs issued for the Site. Programmatically the ICs that are necessary to provide for the effectiveness of this phase of the remedial action include this SMP and an environmental notice. The following ICs are currently listed as part of the NYSDEC environmental database for the Site:

- SMP (this document);
- Soils Management Plan (see Appendix H); and
- Environmental Easement/Environmental Notices (see Appendix D).

An environmental notice was filed and recorded with the Monroe County Clerk on August 15, 2013, in Book 11290, pages 171-176, as miscellaneous record to provide that future owners of the Site will be informed of development restrictions on the property due to environmental concerns. The ICs require that there be no disturbance that threatens the integrity of the EC, no disturbance of the ECs, adherence to the SMP, allowance of access by NYSDEC, that land be used for industrial use only, and that no groundwater water is to be used for drinking water unless properly treated.

The environmental notice that was filed and recorded with the Monroe County Clerk on August 15, 2013, in Book 11290, pages 171-176, has been supplanted by two environmental easements. Copies of the environmental easements for the Site are provided in Appendix D.

The ICs at the Site are necessary to verify that residual contaminated material remains undisturbed. Current and future Site owners are required to perform soil characterization and disposal/reuse in accordance with NYSDEC regulations if residual contaminated soil is disturbed and/or excavated.

All requirements of the latest revision of the SMP and all referenced plans on file must be adhered to. This applies to all existing and future property owners for each affected property.

2.3 Engineering Controls

2.3.1 Engineering Control Systems

The following ECs are present at the Site:

- Monitoring wells;
- Piezometers; and
- Vapor mitigation.

The ECs shall continue to be maintained and monitored until permission to discontinue is granted in writing by NYSDEC.

The ECs include a system of groundwater monitoring wells and piezometers. The analytical results of samples collected from these locations will be used to evaluate the long-term levels of contaminants in groundwater from the Site. The ECs also include SSD systems that were installed at 190 Anderson Avenue, 192 through 200 Anderson Avenue, and 220 Anderson Avenue in 2018. The SSD systems are monitored and maintained by the owner of 220 Anderson Avenue.

These ECs are shown on Figure 1-2 and shall continue to be maintained and monitored until permission to discontinue is granted in writing by NYSDEC.

2.3.2 Soils Management Plan

The restricted-residential soil cleanup goals have been met at the site based on sampling performed in 2015. . Any future intrusive work that will encounter or disturb the remaining soil contamination will be performed in compliance with the Soils Management Plan (see Appendix H). Any excavation work conducted pursuant to the plan must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Protection Plan (CPP) prepared for the Site. A generic HASP (GHASP) is attached as Appendix I to this SMP that is in current compliance with DER-10, and 29 Code of Federal Regulations (CFR) 1910, 29 CFR 1926, and all other applicable federal, state and local regulations. The CPP is attached as Appendix J. Based on future changes to state and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CPP will be required to be updated and re-submitted prior to any activities at the Site. Any intrusive construction work will be performed in compliance with the Soils Management Plan, HASP, and CPP, 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-watering fluids, 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 ECs described in this SMP.

2.3.3 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination and the potential for SVI has been identified (see Appendix D), an SVI evaluation shall 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 would 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 shall be developed and submitted to 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 shall be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data shall be forwarded to NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data shall be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. Validated SVI data shall be transmitted to the property owner within 30 days of validation. If any indoor air test results exceed NYSDOH guidelines, relevant NYSDOH fact sheets shall be provided to all tenants and occupants of the property within 15 days of receipt of validated data. SVI sampling results, evaluations, and follow-up actions will also be summarized in the next PRR.

2.3.4 Groundwater Monitoring

Groundwater monitoring activities to assess contamination levels shall continue until the state has determined that residual levels of contaminants in groundwater are consistently below SCGs or have become asymptotic at an acceptable level over an extended period. Monitoring shall continue until permission to discontinue is granted in writing by NYSDEC. If groundwater contaminant levels become asymptotic at levels that are not acceptable to NYSDEC, additional source removal, treatment, and/or control measures shall be evaluated. The groundwater sampling locations will be inspected as follows:

- The on- and off-site groundwater monitoring wells shall be inspected annually to verify their integrity. See Figure 1-2 for the locations of existing monitoring wells, and Appendix K for a groundwater monitoring well inspection form. If (1) the wells are damaged or determined to be otherwise unusable for obtaining samples, (2) the wells need to be abandoned and replaced, or (3) an additional monitoring well is required, then:
  - The well(s) shall be decommissioned as described in NYSDEC's Commissioner Policy 43: Groundwater Monitoring Well Decommissioning Policy dated November 3, 2009; or
  - If it is determined that a monitoring well needs to be decommissioned and replaced or an additional monitoring well is required, the work shall be performed in accordance with Sections 4.4.3 and 4.4.4 of this SMP.

2.3.5 Criteria for Completion of Remediation

Generally, remedial processes are considered completed when the effectiveness of the monitoring program indicates that the remedy has achieved the remedial action objectives identified by the ROD or other post-remedial decision documents. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC's DER-10: *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010).

2.4 Inspections and Notifications

2.4.1 Inspections

Inspections of remedial components installed at the Site shall be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive sitewide inspection shall be conducted annually, regardless of the frequency of the PRR. The inspections will determine and document the following:

- EC performance;
- Whether ECs continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the environmental notice;
- Achievement of remedial performance criteria;
- Completion of the sampling and analysis of appropriate media during monitoring events;

- If Site records are complete and up to date; and
- If there are changes, or if changes are needed, to the remedial or monitoring system;

Inspections shall be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the PRR section of this plan (Section 5.2).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the Site shall be conducted within five 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.

2.4.2 Notifications

Notifications shall be submitted by the property owner to NYSDEC as needed for the following reasons:

- Sixty-day advance notice of any proposed changes on Site use that are required under the terms of the Environmental Notice, 6 NYCRR Part 375, and/or ECL.
- Seven-day advance notice of any proposed ground-intrusive activities pursuant to the Soils Management Plan (see Appendix H).
- Notice within 48 hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other ECs and likewise any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake, that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within seven days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

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

- At least 60 days prior to the change, NYSDEC shall be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the deed restriction/environmental notice, and all approved work plans and reports, including this SMP; and

- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information shall be confirmed in writing.

2.5 Certification of Institutional and Engineering Controls

To verify that the ICs and ECs are being monitored and enforced, this SMP must be instituted at the Site. The major tasks will include the following:

- Maintaining and enforcing ICs;
- Completing all work required in the ECs, such as repair, maintenance, and replacement of groundwater monitoring wells;
- Preparing reports regarding the required analyses based on NYSDEC-provided parameters and format;
- Obtaining access permits from private land owners, and others as necessary, to allow for reasonable access to all remedial components including, but not limited to, the groundwater monitoring wells for the purposes of repairing, maintaining, and/or replacing the wells and to obtain required samples; and
- Certifying ICs and ECs as required per the RODs through the preparation of a PRR. Specific requirements of IC and EC certifications are listed in Section 5.2 of this SMP.

2.5.1 Certification of Institutional Controls

An affidavit shall be submitted by the owner (or their representative) at NYSDEC's request and submitted with the next PRR to NYSDEC indicating that there have been no changes to the executed deed restrictions/environmental notices or any other ICs that have been put in place as a result of this SMP.

2.5.2 Certification of Engineering Controls

The ECs described herein have been implemented under the direct supervision of a New York State-licensed Professional Engineer (NYS PE), and the ECs must be reviewed and certified by a Qualified Environmental Professional as defined in 6 NYCRR Part 375 on an annual basis as described in Section 5.2. A separate inspection and repair summary for each inspection and any necessary repair shall be prepared under the direction of the supervising Qualified Environmental Professional, who shall sign and certify the summary as part of the PRR. An affidavit shall be submitted in the PRR to NYSDEC that there have been no changes to the ECs that have been put in place as a result of this SMP. Section 5.2 provides additional detail pertaining to the PRR.

3 Monitoring Plan

3.1 Introduction

The overall goals of this remediation effort are described in Section 1 of this SMP. As part of the remediation effort, the monitoring of groundwater, including sampling and analysis, shall be performed in a manner acceptable to NYSDEC. This section provides a summary and a description of the Site operation, maintenance, monitoring and sampling plans for groundwater. These monitoring activities must continue until NYSDEC determines that continued operation is technically impracticable or not feasible.

3.1.1 General

This SMP describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site and all affected Site environmental media. Monitoring procedures are described in the groundwater monitoring well procedures (see Appendix L).

The SMP may be revised only with the approval of NYSDEC. The SMP and the latest revisions to the SMP shall be filed with NYSDEC.

3.1.2 Purpose and Frequency

The services of a qualified professional firm must be retained to inspect and maintain the monitoring wells, replace wells as required, and obtain and analyze groundwater samples. The following methods will be used for sampling and analysis of all appropriate environmental media (i.e., groundwater):

- Assessing compliance with applicable NYSDEC SCGs, particularly ambient groundwater standards;
- Periodically evaluating Site information 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 SMP provides information on:

- Sampling locations, protocols, and frequencies;
- Information on all designed monitoring systems (e.g., well logs);

- Analytical sampling program requirements, including independent validation of analytical data;
- 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 review certification.

All groundwater sampling shall be completed as described in the sampling procedures (see Appendix L). Table 3-1 presents the analytical sampling program for the Site.

3.2 Media Sampling Program

All sampling activities shall be recorded in a dedicated Site field log book and a groundwater sampling log. The groundwater monitoring well sampling procedures are provided in Appendix L.

3.2.1 Groundwater Monitoring Wells

Groundwater sampling shall be performed on a periodic basis to assess the performance of the remedy. Fourteen active groundwater monitoring well locations are located either on the Site property or off site. These shallow and deep wells allow for the monitoring of contaminant trends in the local groundwater. As a convention, "off-site" wells are those located south of Anderson Avenue.

Table 3-1 Former Davis-Howland Oil Corporation Site Sampling Schedule and Analytical Methodologies

Monitoring Program	Reporting Frequency[1]	Matrix	Analysis[2]
Groundwater Monitoring Wells	Annual	Water	VOCs (EPA Method 601/602) pH (EPA Method 150.1)

Notes:
[1] The sampling frequency will be as indicated unless otherwise specified by NYSDEC.
[2] Additional analytical parameters may be required under DER-10 to ensure compliance with the Site cleanup objectives.

Key:
EPA = (United States) Environmental Protection Agency
NYSDOH = New York State Department of Health
VOC = volatile organic compound

The network of monitoring wells has been installed to monitor both upgradient and downgradient groundwater conditions at the Site. Available well logs of the groundwater monitoring wells are provided in Appendix M. Table 3-2 lists the on-site and off-site monitoring wells.

Table 3-2 Site Monitoring Wells

Shallow (Overburden) Wells	Deep (Bedrock) Wells
On-Site Monitoring Wells	
MW-2S	MW-2R
MW-9S	MW-5R
MW-12S	MW-8R
MW-13S	MW-12R
MW-14S	MW-14R
Off-Site Monitoring Wells	
MW-1S	MW-15R
MW-10R	MW-16R

The groundwater monitoring wells shall be sampled annually or at a frequency decided by NYSDEC. Ten of these wells are located on the Site property, and four are located off site. The locations of the groundwater monitoring wells are shown on Figure 1-2. Groundwater levels in the wells shall be recorded when the sampling is performed. The samples shall be analyzed for VOCs and pH by an Environmental Laboratory Accreditation Program-certified laboratory in accordance with the analytical procedures listed in Table 3-1. Standard groundwater well sampling procedures for the Site are provided in Appendix L.

3.2.2 Sampling Equipment Decontamination Procedures

All sampling equipment decontamination will be performed in accordance with NYSDEC-approved procedures. Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. Standard equipment decontamination procedures for each of the sampling elements are presented in each sampling work plan (see Appendix L).

3.2.3 Sample Packaging and Shipping Procedures

Sample shipment shall be performed in strict accordance with all applicable U.S. Department of Transportation regulations. Sample packaging and shipping procedures are presented in each sampling plan (see Appendix L).

3.3 Sitewide Inspection

Sitewide inspections shall be performed on a regular schedule at a minimum of once a year. Sitewide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed (see Appendix K). The form will compile 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 conducted at the Site including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that Site records are up-to-date.

3.4 Storage and Disposal of Investigation-Derived Wastes

3.4.1 Typical Wastes

Typical Site-related wastes that must be disposed of include the following:

- Liquid investigation-derived waste (IDW) from sampling activities, including water, sediments, and PPE; and
- Passive diffusion bag (PDB) samplers can be used for the volatile organic analysis at the site. This method minimizes waste generated from sampling.

Sampling procedures (see Appendix L) describe disposal methods for IDW.

Purge water from groundwater sampling activities shall be disposed of at the discharge point approved by the Monroe County Department of Environmental Services on September 28, 2018. The discharge point is located inside the building at 220 Anderson Avenue. The current discharge permit issued by Monroe County is provided in Appendix N.

3.5 Analytical Program Monitoring

An Analytical Program Work Plan has been prepared that addresses all requirements and considers all information presented in the analytical program. The two main components of the Analytical Program Work Plan are the Quality Assurance Project Plan (QAPP) (see Appendix O) and monitoring reporting requirements (see Table 3-1).

The Sampling Procedures provided in Appendix L present the policies, organization, objectives, functional activities, and specific QA/QC measures that must be implemented by the laboratory selected for this project. The program is designed to provide that all technical data generated by the laboratory are accurate and representative and will (if needed) withstand judicial scrutiny.

3.5.1 Quality Assurance/Quality Control

All sampling and analyses shall be performed in accordance with the requirements of the generic QAPP prepared for the Site (see Appendix O). The main components of the QAPP include the following:

- QA/QC Objectives for Data Measurement;
- Sampling Program;
  - Sample containers will be new, 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 NYSDEC Analytical Service Protocol 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 EPA SW-846 (EPA 2007) and subsequent updates that apply to the instruments used for the analytical methods;

■ Analytical Procedures;

■ Preparation of a Data Usability Summary Report, as necessary;

■ Internal QC and Checks;

■ QA Performance and System Audits;

■ Preventative Maintenance Procedures and Schedules; and

■ Corrective Action Measures.

3.5.2 Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections shall be kept on file. All forms and other relevant reporting formats used during the monitoring/inspection events shall be subject to approval by NYSDEC and submitted at the time of the PRR. All monitoring results from the period shall be reported to NYSDEC in the PRR.

4 Operation and Maintenance Plan

4.1 Introduction

This O&M Plan describes the ECs in place at the Site and the provisions for their continued proper O&M. ECs include monitoring wells and SSD systems.

4.2 Groundwater Monitoring Well System

Fourteen monitoring wells are currently installed as part of the monitoring well network at the Site. The purpose of the inspections will be to determine and document the physical condition of long-term monitoring wells and to identify any necessary maintenance required. If a monitoring well no longer provides viable Site information (based on inspections and sampling), the well will be recommended for either decommissioning and/or replacement.

Appendix L presents the procedures for inspecting and maintaining the monitoring network at the Site.

4.3 SSD Systems

Three SSD systems are located at 190 Anderson Avenue, 192 through 200 Anderson Avenue, and 220 Anderson Avenue. The SSD systems were installed as mitigation systems and are monitored and maintained by the owner of 220 Anderson Avenue.

5 Inspections, Reporting, and Certifications

5.1 Site Inspections

5.1.1 Sitewide Inspection

Sitewide inspections shall be performed at least once a year and after all severe weather conditions that may affect ECs. Based on the results of the inspections, a report shall be compiled that provides sufficient information to assess the following:

- Compliance with all ICs, including changes in Site use;
- The condition and effectiveness of all ECs;
- General Site conditions at the time of the inspection;
- The Site management activities including, where appropriate, confirmation sampling and health and safety inspections performed as part of the Sitewide inspection;
- Changes in building use or functional space use changes;
- Compliance with the permits and schedules included in this SMP; and
- Whether Site records are up-to-date.

Routine Sitewide inspections will be performed as scheduled and interim inspections will be performed as needed. Inspection reports (scheduled and interim) will be submitted to NYSDEC in a timely manner. All inspection reports will be included as part of the annual PRR.

5.1.2 Inspection Frequency

All inspections shall be conducted at the frequency specified in the schedules included in Section 3 (Site Sampling Plan) and Section 4 (O&M Plan), of this SMP. At a minimum, a Sitewide inspection will be conducted annually (see Section 5.1.1).

All inspection and monitoring reports will be sent to:

Ms. Jenelle Gaylord
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7016

5.1.3 Inspection Forms, Sampling Data, and Maintenance Reports

Information obtained during all inspections and monitoring events will be recorded on the appropriate forms for each respective sampling work plan. A well inspection form is provided in Appendix K.

5.1.4 Evaluation of Records and Reporting

The inspection and Site monitoring data shall be evaluated to determine whether:

- The ICs and ECs are in place, function properly, and are effective in attaining the remediation goals specified in the ROD;
- 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.

5.2 Periodic Review Report

A PRR shall be submitted annually to NYSDEC. This time period may be changed subject to approval by NYSDEC. Although the Site is subdivided into separate parcels with multiple ownership, a single PRR shall be prepared in accordance with NYSDEC's *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010) and submitted within 30 days after the end of each certification period. The PRR shall include the following:

- Identification, assessment, and certification of all ICs and ECs 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, including comments and conclusions;
- Data summary tables that include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a graphical presentation of past data as part of an evaluation of contaminant concentration trends;

- Graphical representations of the distributions of contaminants of concern, by media;
- The 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 (EQuIS); and
- A Site evaluation that includes the following:
  - The compliance of the remedy with the requirements of the Site-specific Remedial Action Work Plan and RODs. (The remedy now consists of no-further action with groundwater monitoring.),
  - Any new conclusions or observations regarding Site contamination based on inspections or data generated by the SMP for each media being monitored (groundwater only),
  - Recommendations regarding any necessary changes to the remedy and/or SMP, and
  - The overall performance and effectiveness of the remedy.

The PRR shall be submitted in electronic format to the NYSDEC project manager as listed in Section 5.1.2.

5.2.1 Certification of Institutional and Engineering Controls

After the last inspection of the reporting period, the owner (or their representative) and a qualified environmental professional or NYS PE will certify to the following statements and include the certification page(s) in the PRR. The certifying parties shall continue to provide the periodic certifications until NYSDEC notifies the certifying parties in writing that this certification is no longer needed.

For ICs, the certification shall include the following:

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

- The institutional controls employed at this Site are unchanged from the date the control was put in place, or are compliant with NYSDEC-approved modifications;
- Nothing has occurred that would impair the ability of the Institutional Controls to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any Site-specific requirements of the SMP;
- Access to the Site will continue to be provided to NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of the Institutional Controls;

- 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 in compliance with the environmental notice;
- The information presented in this report is accurate and complete; and
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] (and if the Site consists of multiple properties): [and I have been authorized and designated by all Site owners to sign this certification] for the Site."

For ECs, the certification shall include the following:

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

- Inspection of the Site to confirm the effectiveness of each engineering control required by the remedial program was performed under my direction;
- Each engineering control employed at this Site is unchanged from the date the control was put in place, or are compliant with NYSDEC-approved modifications;
- Nothing has occurred that would impair the ability of the Engineering Controls to protect public health and the environment;
- Nothing has occurred that would constitute a violation or failure to comply with any Site-specific requirements of the SMP;
- Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of the engineering controls;
- 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 in compliance with the deed restriction or environmental notice, as applicable;
- Each engineering control is performing as designed and is 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 generally accepted engineering practices;
- The information presented in this report is accurate and complete; and

- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner’s Designated Site Representative] (and if the Site consists of multiple properties): [I have been authorized and designated by all Site owners to sign this certification] for the Site.”

The signed certifications will be included in the PRR.

If for any reason one or more of the above statements cannot be certified, the certification cannot be completed and a corrective measures plan must be submitted to NYSDEC (see Section 5.4).

5.3 Reporting Exceedances of Standards, Criteria, and Guidance Values

If VOCs or other contaminants are detected at concentrations exceeding the SCGs defined by NYSDEC for groundwater, mention shall be made in the PRR and highlighted in an analytical results table within the PRR. The interim analytical results will then be evaluated by NYSDEC to determine whether further analytical testing or interim remedial actions are needed. Table 5-1 lists some relevant SCG values defined by NYSDEC for groundwater. New York State currently does not have any SCG values for concentrations of chemicals in soil vapor.

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 IC or EC, a corrective measures plan shall be submitted to 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 has been approved by NYSDEC.

Table 5-1 Recommended SCG Values for Groundwater at the DHOC Site

Contaminant	Groundwater SCG (µg/L)
Chlorinated Volatile Organic Compounds	
1,1,1-Trichloroethane (TCA)	5.0
Tetrachloroethene (PCE)	5.0
Trichloroethene (TCE)	5.0

Source: NYSDEC Regulations Part 703 Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations (Class GW Waters)

Key:

µg/L = micrograms per liter
SCG = Standards, Criteria, and Guidance

All records and information regarding maintenance shall be included as a part of the Site inspection report. If maintenance is projected for the future or cannot be completed as a result of winter weather or other difficulties, it shall be noted in the Site inspection report. Records of all completed maintenance efforts, including any transportation and disposal of waste, shall also be included in the Site inspection report.

In order to comply with the above submittal times, it may be necessary to prepare and submit interim reports to NYSDEC to supplement the annual reports.

6 Termination Plan

6.1 Remedial Process Closure Requirements

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the ROD or other post-remedial decision documents. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC's DER-10: *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010).

7 Health and Safety Plan

A Site-specific Health and Safety Plan (SHASP) must be developed for the work assignments to be conducted. As required by NYSDEC's *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010), the GHASP included in this SMP can be used as a guide when producing an SHASP for the activities, or separately for each activity, as required. A copy of the GHASP is provided in Appendix I.

All staff should be aware of Occupational Safety and Health Administration (OSHA) hazardous communication requirements. Personnel should review all required Material Safety Data Sheets (MSDSs) and instructions pertaining to all anticipated chemicals prior to the initiation of any work.

7.1 Preparation of a Site-Specific Health and Safety Plan

In accordance with the requirements of 29 CFR 1910.120, an SHASP must be prepared prior to initiating field activities at the Site. The SHASP should include the following:

- The names of key personnel responsible for Site health and safety, including an appointed Site Health and Safety Officer;
- A safety and health-risk analysis for each Site task and operation;
- Employee training requirements;
- Specification of PPE to be used by employees for each of the Site tasks and operations being conducted;
- Medical surveillance requirements;
- Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used;
- Site control measures;
- Decontamination procedures;
- Site standard operating procedures; and
- A contingency plan for responses to emergencies.

7.2 Training

All personnel performing monitoring, inspection, or remediation activities at the former DHOC Site must complete OSHA's 40-hour health and safety training course for work at hazardous waste sites. This includes 8-hour refresher training, first aid/cardiopulmonary resuscitation training, and annual physical examinations.

7.3 Emergency Telephone Numbers

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency (see Table 7-1). Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

Table 7-1 Emergency Contact Numbers

Medical, Fire, and Police	9-1-1
One Call Center	(800) 272-4480 (three-day notice required for utility mark-out)
Poison Control Center	(800) 222-1222
Pollution Toxic Chemical Oil Spills	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

In the event of any environmentally related situation or unplanned occurrence requiring assistance, the Owner or Owner's representative(s) shall contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Also contact Ms. Jenelle Gaylord, NYSDEC Division of Environmental Remediation.

NYSDEC – Albany O&M Section (518) 457-0927

NYSDEC – Project Manager, Jenelle Gaylord (518) 402-9791

These emergency contact numbers must be maintained in an easily accessible location, posted prominently, and readily available to all personnel at the Site at all times.

8 References

Clean Harbors of Kingston, Inc. (CHI). 1992. *Draft Preliminary Site Investigation, Davis-Howland Oil Corporation Site*. June 1992.

Dunn GeoScience Corporation (DGC). 1991. *Soil Investigation Report for Remedial Investigation: Davis-Howland Corporation*. November 1991.

Ecology and Environment Engineering, P.C. (EEEPC). 2006a. *Final Construction Closure and Certification Report, Davis-Howland Oil Corporation Site*. November 2006.

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Kappel, W. M. and R. A. Young. 1989. *Glacial History and Geohydrology of the Irondequoit Creek Valley, Monroe County, New York*. USGS Water Resources Investigations Report: 88:-4145.

Lawler, Matusky Skelly Engineers, LLP and Galson/Lozier Engineers (LMS/GLE). 1996. *New York State Superfund Contract, Remedial Investigation Report, Davis-Howland Oil Corporation Remedial Investigation/Feasibility Study*. Vol. I. October 1996.

__________. 1997a. *New York State Superfund Contract, Focused Feasibility Study Report: Operable Unit 1 – Shallow Groundwater and Soils, Davis-*

Howland Oil Corporation Remedial Investigation/Feasibility Study. March 1997.

__________. 1997b. *New York State Superfund Contract, Remedial Phase II Investigation Report, Davis-Howland Oil Corporation Remedial Investigation/Feasibility Study*. October 1997.

__________. 1998. *Pre-Remedial Design Investigation, Davis-Howland Oil Corporation Site*. October 1998.

New York State Department of Environmental Conservation (NYSDEC). 1997a. *Davis-Howland Oil Company Record of Decision—Operable Unit 1, Site No. 8-28-088*. March 1997.

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__________. 2016. Letter from William Welling, Engineering Geologist 2, NYSDEC, regarding Davis Howland Site, ID No. 828088 (acceptance of the final RSO dated June 10, 2016) to Ms. Ashlee Patnode, Project Manager, Ecology and Environment Engineering, P.C., of Lancaster New York. Letter dated July 13, 2016.

U.S. Environmental Protection Agency (EPA). 2007. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)*. February 2007.

A

Record of Decision – Operable Unit 1

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Davis-Howland Oil Company
Operable Unit 1
City of Rochester, Monroe County
Site Number 828088

March 1997

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Acting Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Davis-Howland Oil Company Inactive Hazardous Waste Site
Operable Unit 1
Rochester, Monroe County, New York
Site No. 8-28-088

Statement of Purpose and Basis

This Record of Decision (ROD) presents the selected remedial action for the Davis-Howland Oil Company Inactive Hazardous Waste Disposal Site, Operable Unit 1 (OU-1), which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40 CFR 300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Davis-Howland Oil Company Inactive Hazardous Waste Site (OU-1) and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Davis-Howland Oil Company Inactive Hazardous Waste Site (OU-1) and the criteria identified for the evaluation of alternatives, the NYSDEC has selected air sparging, vapor extraction, and soil excavation and removal as the site remedy. The components of the remedy are as follows:

- A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

- Several air sparging points located in the areas of highest shallow groundwater contamination to reduce contamination in shallow groundwater.

- Vapor extraction points beneath the site buildings and as needed to collect VOCs released by sparging and enhance removal of VOCs from soils.

- Vapor phase treatment system for extracted VOCs.

- Installation of a fence to protect onsite, above ground equipment.

- Since the remedy results in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. This program will allow the effectiveness of the selected remedy to be monitored and will be a component of the operation and maintenance plan for the site.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

3/26/97
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

TABLE OF CONTENTS

RECORD OF DECISION
Operable Unit 1 - Shallow Groundwater and Soils

DAVIS-HOWLAND OIL COMPANY
Rochester, Monroe County, New York
Site No. 8-28-088
March 1997

SECTION 1: SITE LOCATION AND DESCRIPTION

The Davis-Howland Oil Company site is defined as adjacent parcels of land located on Anderson Avenue in the City of Rochester, Monroe County. Those adjacent parcels are described as 190-220 Anderson Avenue and the portion of 176 Anderson Avenue immediately north and west of 190-220 Anderson. See Figure 1 for the location map and Figure 2 for the detailed site map. The site is approximately 1 acre in size. The site is situated in an area which combines residential, commercial, and industrial facilities. No significant surface water is located in the immediate area of the site. The site is bounded on the south by Anderson Avenue, on the west by light industrial and commercial/retail buildings, and on the north and east by Conrail tracks and right-of-way.

The site is underlain by a thin fill layer (2-5 feet thick), outwash sand and gravel (5-20 feet), glacial till (5-15 feet), and bedrock consisting of the Penfield Dolostone. Shallow groundwater is encountered in the outwash and deep groundwater is encountered in the bedrock unit.

The area is served by a public water supply system and we are aware of no local groundwater usage.

Operable Unit No. 1, which is the subject of this PRAP, consists of shallow groundwater, surface soil, and subsurface soil.

An Operable Unit represents a portion of the site remedy which for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The remaining operable unit for this site is described in Section 3.2 below.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

During the course of operations at the Davis-Howland site, there were evidently numerous incidences when material leaked or were spilled onto the ground. There is no single occurrence which can account for the majority of the contamination now found at the site.

Between 1974 and the early 1990s, there were many reports to the NYSDEC of releases of materials ranging from waste oil and mineral oil to hydrochloric and sulfuric acids at the Davis-Howland site.

In June 1991, NYSDEC staff inspected the site in response to a report of an oil spill. They found several hundred drums of oils and solvents and several areas of stained soils.

2.2: Remedial History

In June 1991, NYSDEC staff inspected the site and identified numerous drums, some of which were leaking. A follow-up inspection was conducted which included soil sampling and the containerizing of leaking drums. Soil sampling indicated that soil was contaminated with petroleum and solvents.

In October 1991, Dunn Geosciences performed a soil investigation for Davis-Howland. They confirmed the results of the initial DEC inspection.

From April through June 1992, Clean Harbors, Inc. conducted a soil and groundwater sampling effort. Results of this investigation indicated soil contamination and significant contamination of groundwater with chlorinated and non-chlorinated solvents. During the same period, Clean Harbors also conducted a drum removal and surface soil excavation and removal. The soil removal consisted of the removal of the top one foot of soil and subsequent offsite disposal.

In December 1994, the NYSDEC resampled the Clean Harbors wells and found similar types of contamination.

Operable Unit 2 (OU2), consists of the bedrock aquifer in the vicinity of the Davis-Howland site. The bedrock groundwater is contaminated by compounds similar to those described in this PRAP as being present in the shallow groundwater and soils. This deeper groundwater will be addressed in a future Record of Decision after further assessment and clarification of the nature and extent of bedrock groundwater contamination has been completed. The nature and extent of this contamination, as we now understand it, are described in the rest of this document. Areas of current uncertainty include the total areal extent of the contamination and details of flow rates and exact flow direction.

SECTION 3: CURRENT STATUS

In response to a determination that the presence of hazardous waste at the Site presents a significant threat to human health and the environment, the NYSDEC has recently completed a Remedial Investigation/Feasibility Study (RI/FS).

3.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

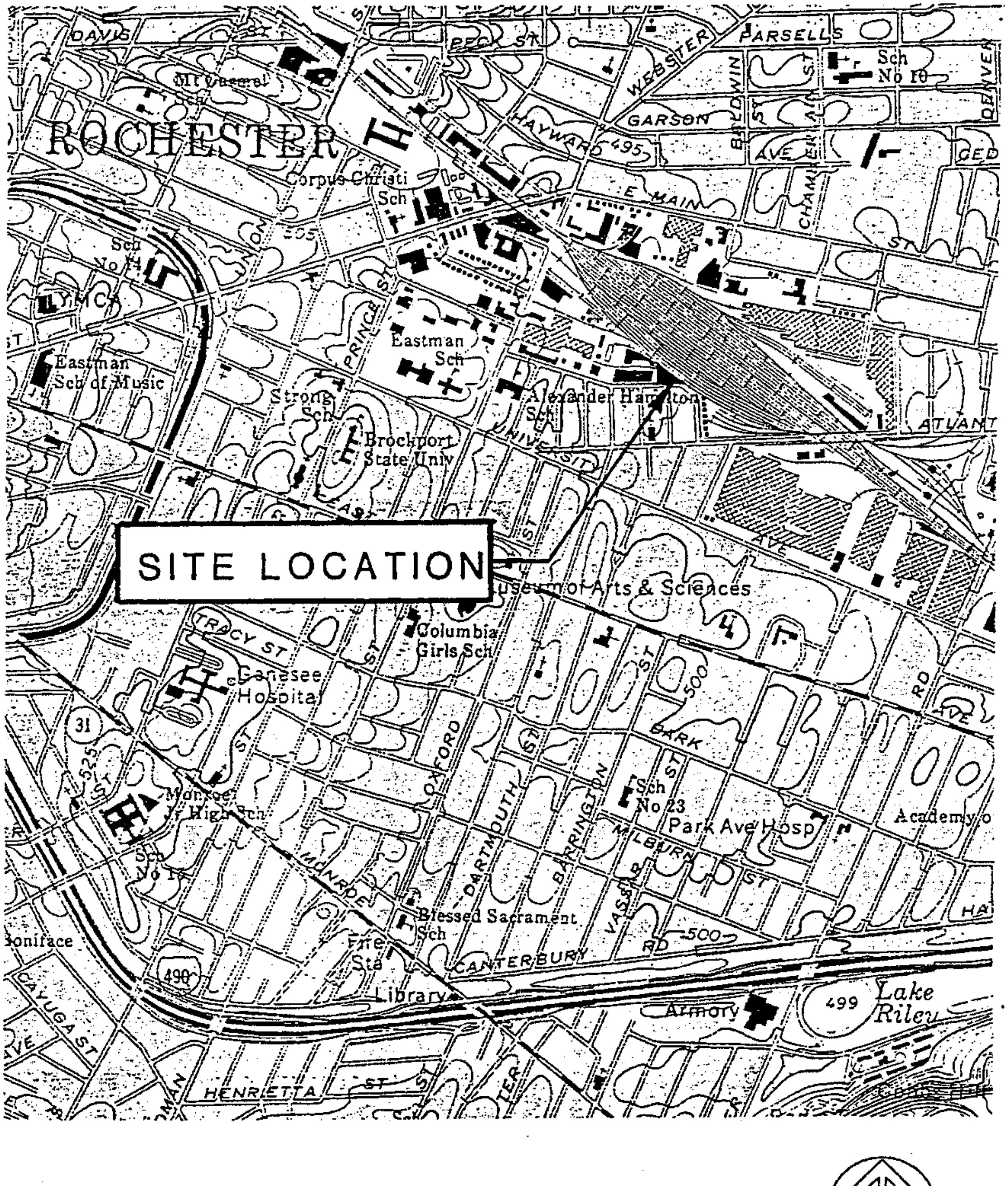
The RI was conducted in two phases. The first phase was conducted between July 1995 and October 1996, the second phase between November 1996 and January 1997. A report entitled "Davis-Howland Oil Corporation Remedial Investigation," dated October 1996, has been prepared describing the field activities and findings of the Phase I RI in detail.

The RI included the following activities:

- Area well inventory and literature search.

LOCATION PLAN

DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)



LOCATION PLAN

NOT TO SCALE

FIGURE 1

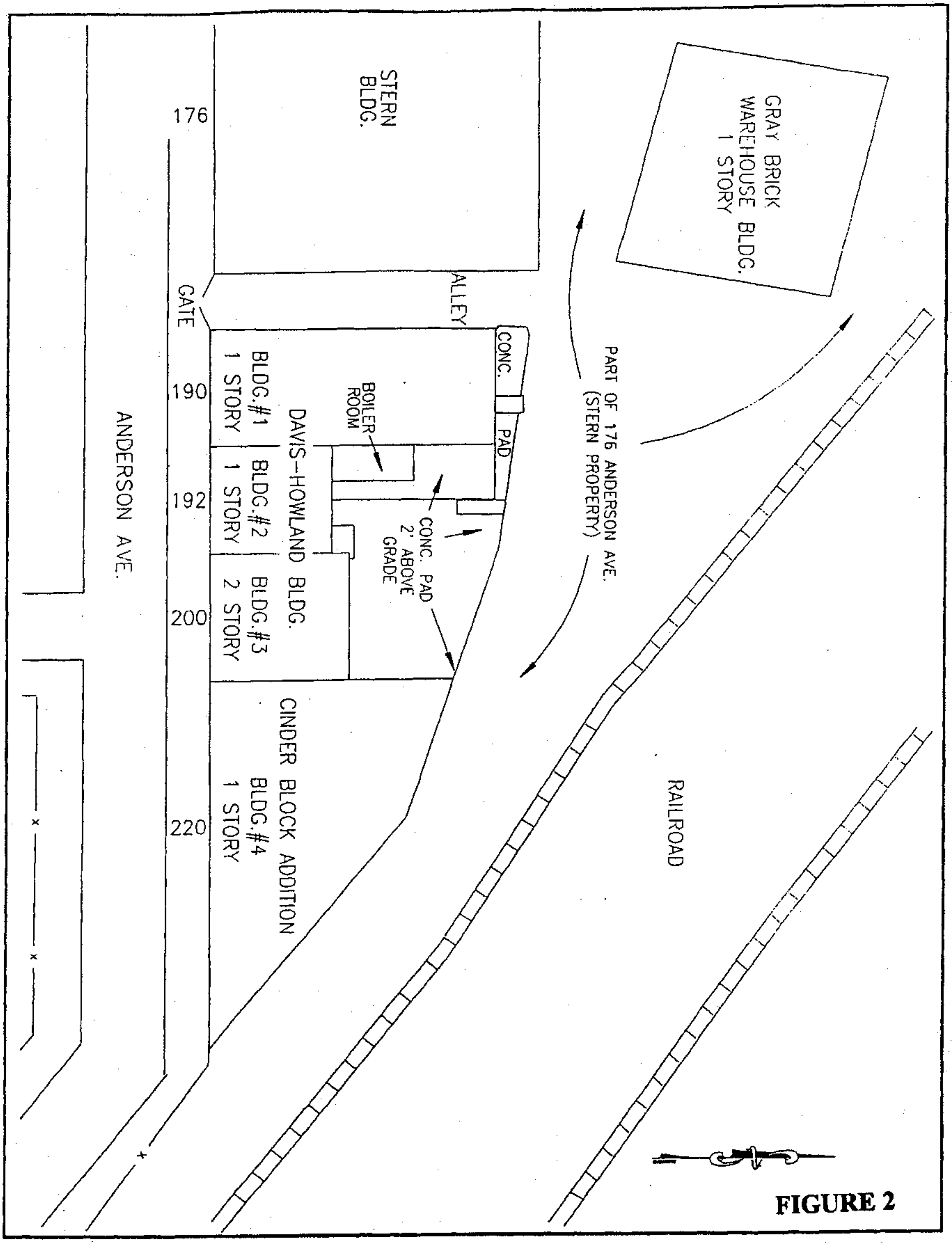


FIGURE 2

GENERAL SITE PLAN
DAVIS-HOWLAND OIL CORPORATION,
ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)

5/96 NTS 2240-003
2240FIG1.DWG

GALSON / LOZIER ENGINEERS

- Soil gas survey to help define the limits of contamination.
- Piezometer and monitoring well installation to collect groundwater samples and determine the direction of groundwater flow.
- Surface and subsurface soil sampling and analysis.
- The installation of exploratory soil borings.
- The sewer line near the site was inspected using a remote camera system.
- An exposure pathway analysis and habitat based assessment were conducted to determine potential impacts to humans and the environment.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the Davis-Howland Oil Company site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of the NYS Sanitary Code. NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used as SCGs for soil.

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media of the site require remediation. These are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) and parts per million (ppm). For comparison purposes, SCGs are given for each medium.

3.1.1 Nature of Contamination:

As described in the RI Report, many surface soil, subsurface soil and groundwater were collected at the Site to characterize the nature and extent of contamination.

During the RI soil and groundwater samples were analyzed for volatile organics (VOCs), semivolatile organics (SVOCs), pesticides, PCBs, and metals. Surface soils were found to contain SVOCs including benzo(a)anthracene, benzo(a)pyrene, and chrysene, and metals including lead, chromium, cadmium, and zinc. Subsurface soils were found to contain VOCs including 1,2-dichloroethene and trichloroethene, and metals including mercury and zinc. Low levels of SVOCs were also detected in subsurface soils. Groundwater was found to contain VOCs including those found in soil, vinyl chloride, 1,1,1-trichloroethane, and xylene. The only SVOC detected at significant levels was naphthalene. Metals detected include lead and manganese. PCBs and pesticides were not detected at concentrations of concern in these media.

Some of the SVOCs detected are known to be carcinogens in animals. The metals, particularly lead, is known to have adverse health effects in humans when there is long-term exposure at high levels. The VOCs detected can have both short and long-term health effects. The short-term impacts include headaches and dizziness, the long-term effects may include damage to the central nervous system and the liver as well as other internal organs. These effects are known to occur in cases of high level and long-term exposure.

3.1.2 Extent of Contamination

The remedial investigation determined that the primary contaminated media at the site consist of soil and groundwater. These are further divided into surface soil, subsurface soil, shallow groundwater, which is found in the fill and soil overlying bedrock, and deep or bedrock groundwater which is located in the upper-most bedrock unit encountered at the site. The shallow groundwater is separated from the bedrock groundwater by a layer of material classified as a glacial till. This material consists of clay rich silt with small amounts of sand and gravel encountered.

Each of the two subdivisions of the media described above are contaminated to a greater or lesser degree. The highest level of soil contamination is found in the area behind the Davis-Howland building. Shallow soils are contaminated with SVOCs and metals, and subsurface soils with VOCs and, to a lesser extent, SVOCs and metals. Groundwater contamination is highest in shallow groundwater with the area behind the building showing the highest levels. The bedrock groundwater is contaminated at levels generally an order of magnitude less than that observed in shallow groundwater.

Table 1 summarizes the nature and extent of contamination for the contaminants of concern in soils and groundwater and compares the data with the remedial action levels (SCGs) for the Site. For most of the listed compounds in Table 1, a single sample point was much higher than the rest. This resulted in a substantial upward skewing of the average values for each contaminant shown. For surface soils, sample DHSS-7 generally showed the highest contaminant levels. The selected remedy includes the removal and off-site disposal of this soil from the area of DHSS-7. The following are the media which were investigated and a summary of the findings of the investigation.

One of the SCGs relevant to this site is NYSDEC soil cleanup guidance (Technical and Administrative Guidance Memorandum No. 4046) which presents soil clean-up objectives. Some of the soil analyses detected the presence of several SVOCs at levels above recommended levels. While these SVOCs are found in surface soil above standards, the distribution of the SVOCs and past operations at the site seem to indicate that they are not site related. Some of the worst of this contamination will be removed with the soil which was identified as a health risk. The removal of SVOCs will not be comprehensive.

Soil

Surface Soil: After completion of the surface soil removal IRM, only trace levels of VOC contamination were found in this media. Total SVOC contamination in this media ranged from non-detect to 448 ppm. All samples except DHSS-5 had at least one exceedence of soil standards for SVOCs. In general, the highest levels of contamination were found in the area behind the site building and along the railroad tracks. Specifically, the highest levels of SVOCs consist of a class of compounds known as PAHs. These are compounds such as creosote and related chemicals. Individual SVOCs with the greatest exceedences of their soil cleanup goals were benzo(a)anthracene (37 ppm) and chrysene (33 ppm). Also found at elevated concentrations in this media were metals. Elevated levels of cadmium, chromium, mercury, lead, and zinc were detected in soil samples. The highest levels of these were detected at DHSS-7, located between the gray brick warehouse and the railroad tracks. Highest of these metals were lead (2020 ppm) and zinc (43800 ppm) (See Figure 3 for surface soil sample locations).

Two areas of surface soil contamination were identified as requiring remediation due to elevated metals contamination (see Figure 4 for locations). These two areas comprise an estimated 33 cubic yards of soil. Despite the fact that the PAHs described above are not thought to be attributable to disposal activities at the

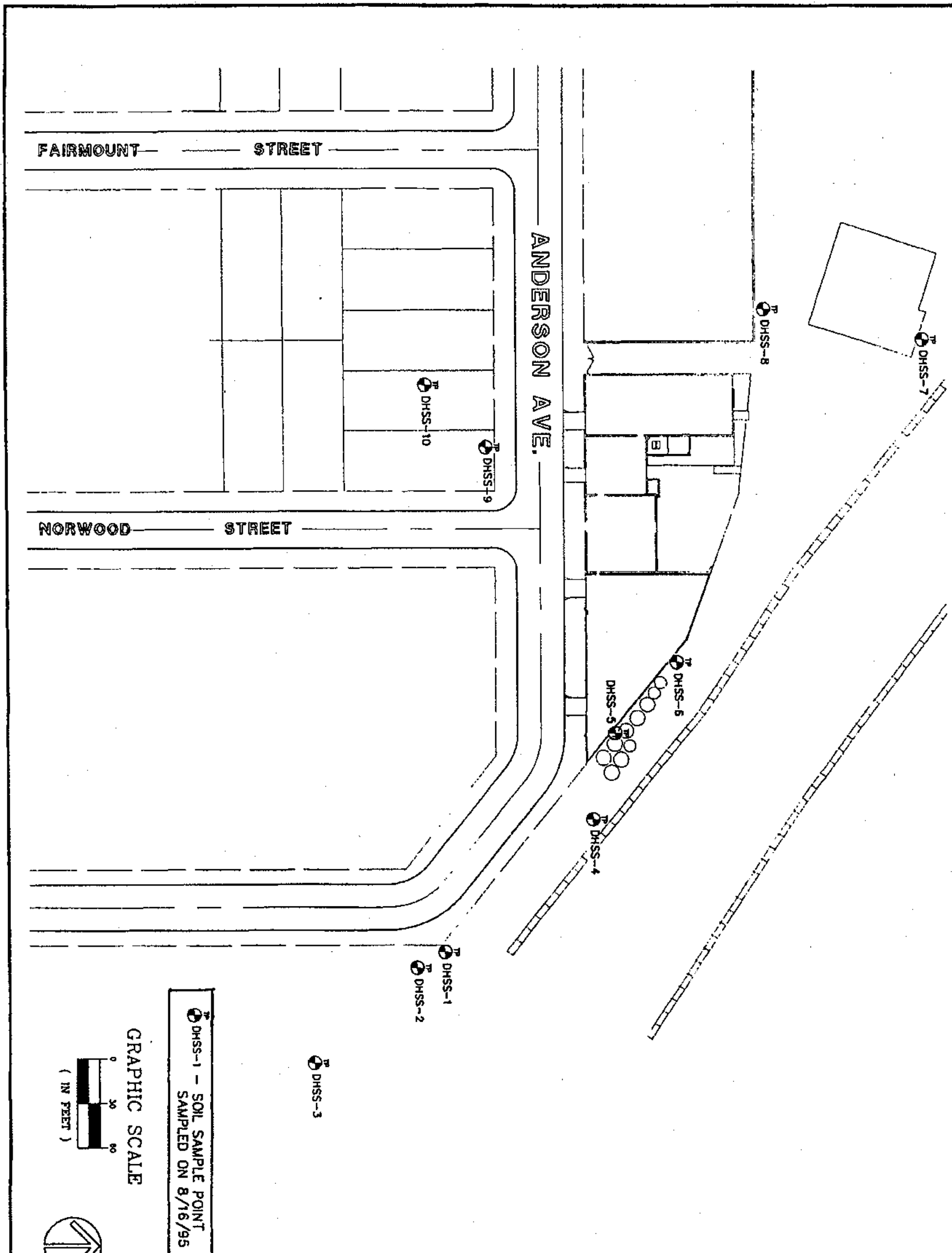


FIGURE 3

SURFACE SOIL SAMPLE PLAN
DAVIS–HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE NO. 8–28–088)

GALSON / LOZIER

Table 1: Representative Contaminants
Davis-Howland Oil Corporation Site (No. 8-28-088)

Overburden Groundwater

Contaminant	Concentration Range, ppb			SCG (ppb)	No. that Exceed	No. of Samples
	Minimum	Maximum	Average			
1,1-Dichloroethane	2.2	2800	875	5	8	11
1,2-Dichloroethene (total)	5	98000	20935	5	8	11
1,1-Dichloroethene	5	3900	977	5	8	11
Ethylbenzene	5	2500	629	5	8	11
Toluene	5	3400	690	5	8	11
1,1,1-Trichloroethane	1.1	34000	5149	5	8	11
Trichloroethene	5	98000	16595	5	9	11
Vinyl Chloride	5	5800	1723	2	11	11
Xylene	5	9600	1620	5	8	11
1,2-Dichlorobenzene	5	580	57	4.7	11	11
Naphthalene	1.3	290	33	10	3	11
Lead	0.5	819	79	15	1	11
Manganese	114	2590	814	300	8	11

Bedrock Groundwater

Contaminant	Concentration Range, ppb			SCG (ppb)	No. that Exceed	No. of Samples
	Minimum	Maximum	Average			
1,2-Dichloroethene (total)	300	8600	2866	5	8	8
Vinyl Chloride	56	840	402	2	8	8
Trichloroethene	27	740	319	5	8	8
1,1-Dichloroethene	8	88	33	5	8	8
1,1,1-Trichloroethane	10	190	67	5	8	8
1,1-Dichloroethane	28	390	101	5	8	8
4-Methyl-2-Pentanone	5	640	164	50	3	8

Surface Soil

Contaminant	Concentration Range, ppm			SCG (ppm)	No. that Exceed	No. of Samples
	Minimum	Maximum	Average			
Benzo(a)anthracene	0.19	37	4.5	0.33	8	10
Benzo(a)pyrene	0.11	26	3.4	0.33	7	10
Chrysene	0.26	33	4.3	0.4	8	10
Dibenz(a,h)anthracene	0.035	11	1.6	0.33	4	10
Cadmium	0.21	39.6	4.7	10	1	10
Chromium	6.1	80.1	22.5	50	2	10
Lead	8.8	2020	482.3	500	3	10
Zinc	52.4	43800	4573.5	160	6	10

Non-detects entered at approx. one-half of detection limit.

Table 1: Representative Contaminants
Davis-Howland Oil Corporation Site (No. 8-28-088)

Subsurface Soil

Contaminant	Concentration Range, ppm			SCG (ppm)	No. that Exceed	No. of Samples
	Minimum	Maximum	Average			
1,2-Dichloroethene (total)	0.003	2.9	0.40	0.3	3	18
Toluene	0.0035	4.6	0.26	1.5	1	18
Trichloroethene	0.004	6.4	0.44	0.7	2	18
Xylene	0.003	5.1	0.30	1.2	1	18
Benzo(a)anthracene	0.032	0.3	0.17	3	0	18
Fluoranthene	0.047	1.0	0.25	50	0	18
Phenol	0.038	1.0	0.19	0.33	1	18
Zinc	12.8	139.0	38.27	160	0	18

Non-detects entered at approx. one-half of detection limit.

site, they are most concentrated in the vicinity of DHSS-7 and will be removed with the metals contaminated soils.

Subsurface Soil: The subsurface soil samples were higher in concentrations of VOCs and lower in SVOCs and metals. Highest VOCs were trichloroethene (6.4 ppm), xylene (5.1 ppm), and toluene (4.6 ppm). SVOCs were not encountered at levels of concern in subsurface soils. Of the metals, significant levels of mercury (0.37 ppm) were detected.

The highest levels of VOCs were generally encountered at or near the water table. They are likely to be associated with the groundwater contamination. It is likely that the metals and SVOCs are a surface artifact and are not necessarily associated with the spillage of oils or solvents at the site.

Groundwater

Shallow groundwater flows to the south with a limited component of flow in a more easterly direction under the site. Data from the investigations indicate that the contamination levels reach non-detect just south of Anderson Avenue in front of the Davis-Howland building (see Figure 5). Highest contamination is found in the area immediately behind the Davis-Howland building.

Bedrock groundwater appears to flow predominantly to the east in the area of the site. Bedrock contamination is greatest in the areas of monitoring wells MW-1R and MW-5R (see Figure 4) which are located on the south side of Anderson Avenue and northwest of the Davis-Howland building, respectively. Contamination levels decrease to the east of the site (see Figure 6).

It may be postulated that the difference in levels of contamination between the shallow and bedrock groundwater units are due to the glacial till between the two units. This layer inhibits the rate of migration of contamination from the near surface to the bedrock located, on average, at a depth of 20 to 25 feet.

Please note that in Table 1, groundwater contamination values are given in parts per billion (ppb). One ppm is equal to one thousand ppb.

Shallow Groundwater: Shallow (overburden) groundwater contamination consists primarily of the same VOCs found in subsurface soils. Highest contaminant levels were 1,2-dichloroethene and trichloroethene (both 98 ppm) and 1,1,1-trichloroethane (34 ppm). The only SVOC detected at significant concentrations was naphthalene (0.29 ppm). The only significant metal detected was lead (0.819 ppm).

Bedrock Groundwater: Bedrock groundwater is contaminated with most of the same components found in shallow groundwater. Levels of contamination are, for the most part, lower. Highest levels are for 1,2-dichloroethene (8.6 ppm), vinyl chloride (0.84 ppm), and trichloroethene (0.74 ppm).

3.2 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 4.7 of the RI Report.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Pathways which are known to or may exist at the site include:

- Ingestion of contaminated surface soils or groundwater. The possibility exists that people coming onto the site may ingest contaminated surface soil. This pathway is only complete for persons on the site or in the limited areas of off-site contamination. For groundwater, the only likely point of contact would be if someone were using groundwater as a drinking water source. Since local residents are on City water this pathway is not complete.

- Inhalation of contaminated dust or volatile organic compounds (VOCs). The potential exists for inhalation of contaminated dust from the site. The most likely people to be effected by this would be onsite workers during activities which would disturb soil. VOCs are primarily found in subsurface soils and groundwater. The most likely receptors for this route of exposure would be workers digging up soil releasing VOCs or coming into contact with groundwater when VOCs are volatilizing from the water. This is not currently considered a completed pathway but it may be completed in the future.

- Dermal contact with contaminated soils. This pathway is complete for individuals on the site. There is also a limited amount of off-site surface soil contamination which others could come into contact with. Dermal contact with subsurface soil would only be a completed pathway for persons conducting excavating activities on the site.

3.3 Summary of Environmental Exposure Pathways:

There is no significant habitat in the immediate area of the site which would provide an active breeding or dwelling area for most wild species. Only those animals which have shown tolerance for urban dwelling can reasonably be expected in the area of the site. The Fish and Wildlife Impact Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources.

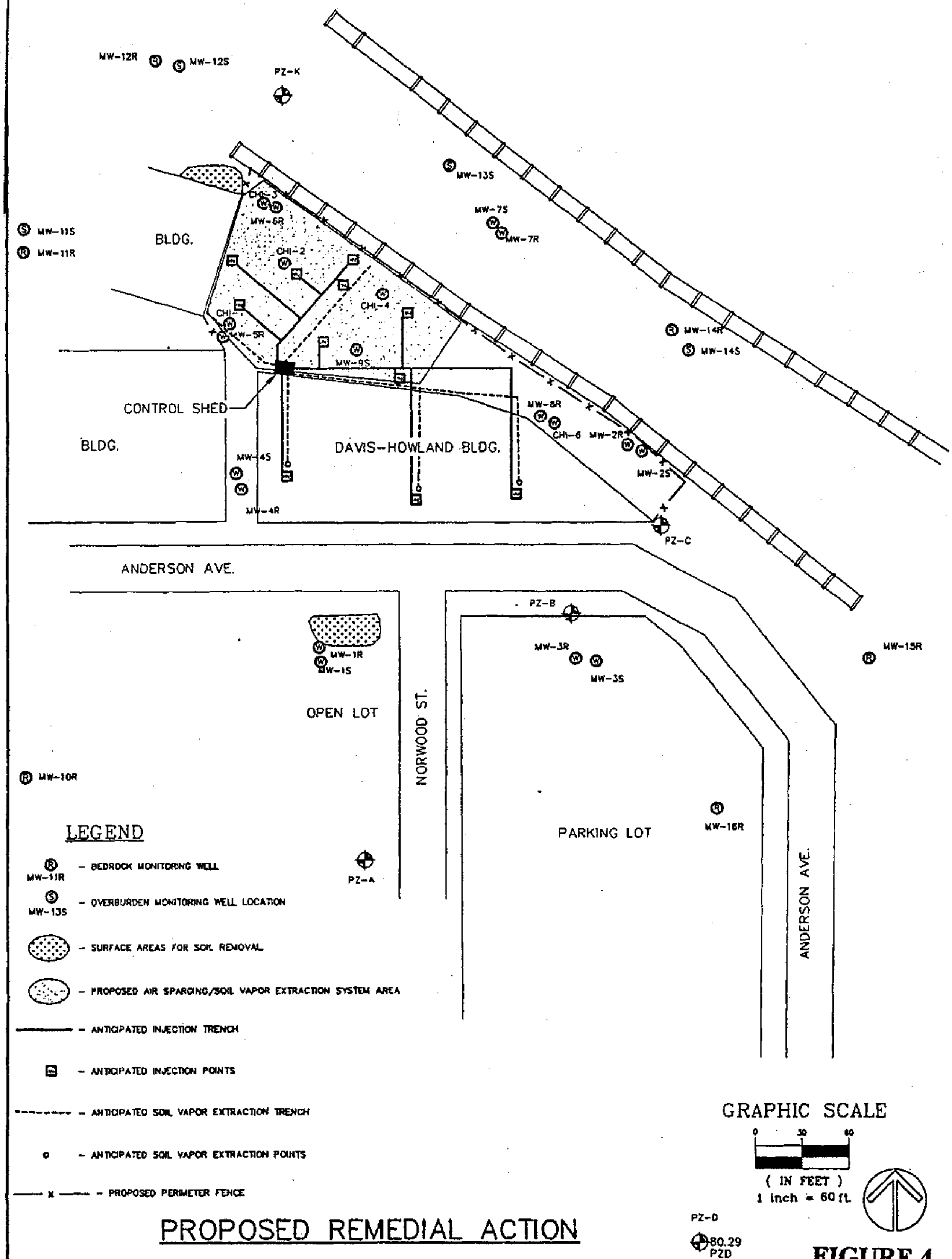
SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The Potential Responsible Parties (PRP) for the site, documented to date, include: the Davis-Howland Oil Company.

While Davis-Howland is the only PRP identified at this time, a portion of the contamination found at the site may not solely be the result of activities conducted by Davis-Howland. Industries which were previously located at the site may have contributed to some portion of the contamination encountered.

The PRPs failed to implement the RI/FS at the site when requested by the NYSDEC. The PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the NYSDEC will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State has incurred.



PROPOSED REMEDIAL ACTION

FIGURE 4

PROPOSED REMEDIAL ACTION
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)

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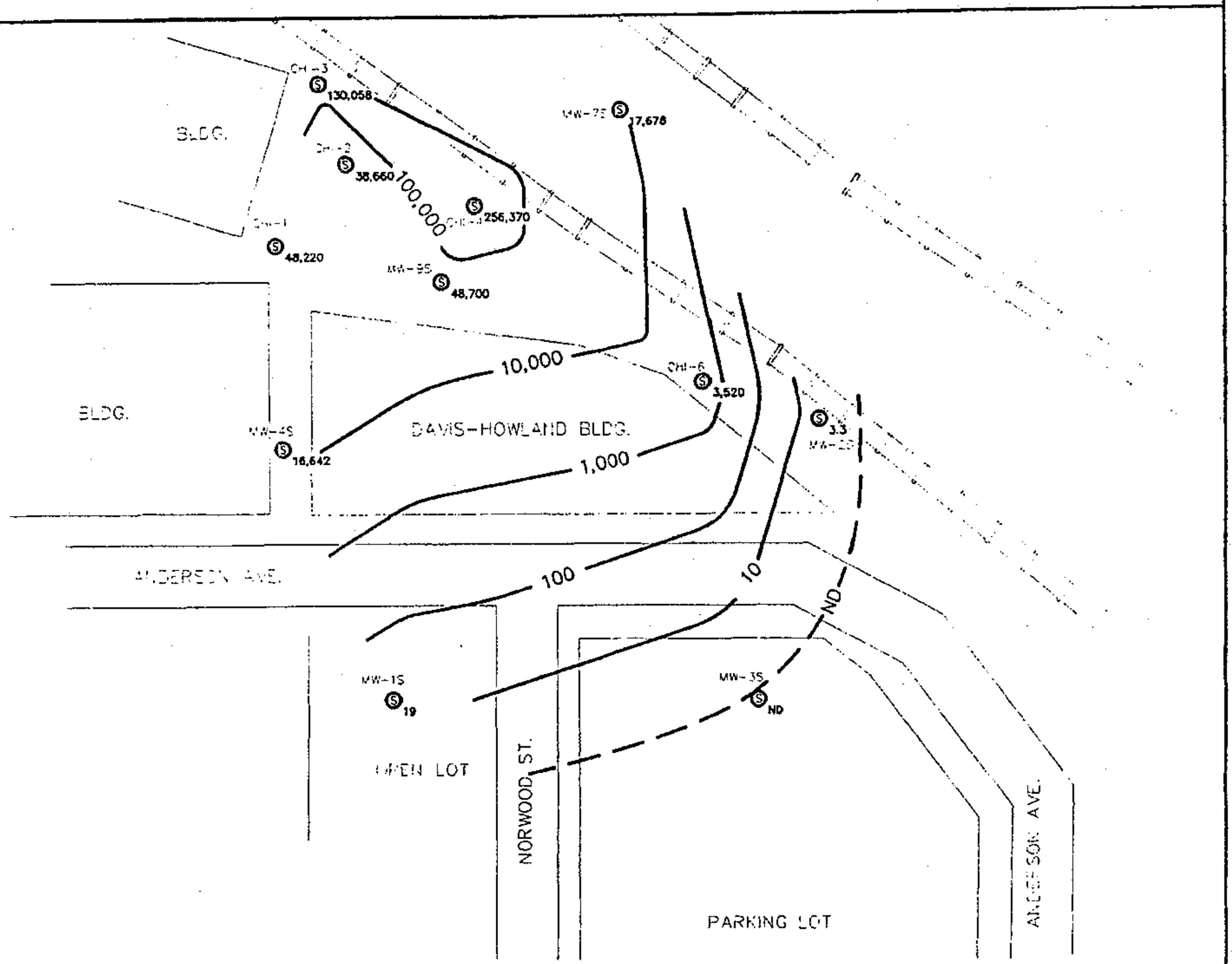

TOTAL VOC'S ISOCONCENTRATION MAP
OVERBURDEN AQUIFER OCTOBER,1995

KEY:

MW-3S – OVERBURDEN WELL

3,520 – TOTAL TARGET VOC CONCENTRATION IN ug/l.

——— – TOTAL TARGET VOC ISOCONCENTRATION LINE
— — (DASHED WHERE INFERRED)

GRAPHIC SCALE

0 30 60

(IN FEET)

FIGURE 5

TOTAL VOC'S ISOCONCENTRATION MAP–OVERBURDEN AQUIFER OCTOBER,1995
DAVIS–HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8–28–088)

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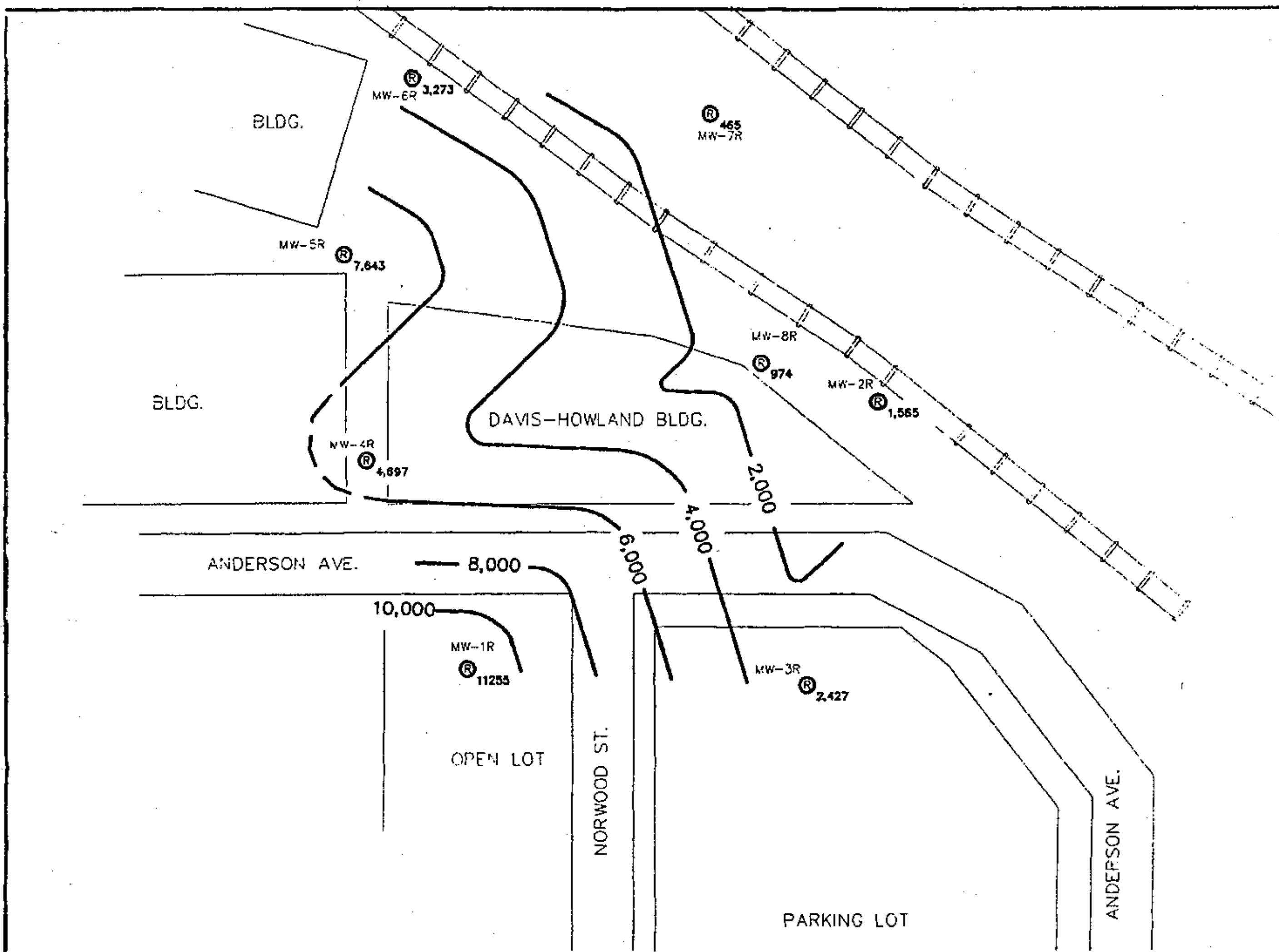

TOTAL VOC'S ISOCONCENTRATION MAP
BEDROCK AQUIFER OCTOBER,1995

KEY:

MW-3R – BEDROCK WELL

3,520 – TOTAL TARGET VOC CONCENTRATION IN ug/l.

– TOTAL TARGET VOC ISOCONCENTRATION LINE (DASHED WHERE INFERRED)

GRAPHIC SCALE

0 30 60

(IN FEET)

FIGURE 6

TOTAL VOC'S ISOCONCENTRATION MAP–BEDROCK AQUIFER OCTOBER,1995
DAVIS–HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)

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SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Eliminate the potential for direct human contact with the contaminated soils on site.
- Mitigate the impacts of contaminated groundwater to the environment, to the extent practicable.
- Prevent, to the extent practicable, migration of soil contaminants to groundwater.
- Provide for attainment of SCGs for groundwater quality at the limits of the area of concern (AOC), to the extent practicable.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with environmental standards, criteria, and guidance, and utilize permanent solutions, alternative technologies, or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Davis-Howland Oil Company site were identified, screened, and evaluated in a Feasibility Study. This evaluation is presented in the report entitled Davis-Howland Oil Company Feasibility Study, dated January 1997.

A summary of the detailed analysis follows. As used in the following text, the time to implement reflects only the time required to construct the remedy, and does not include the time required to design the remedy, procure contracts for design and construction, or to negotiate with responsible parties for implementation of the remedy.

6.1: Description of Alternatives

The potential remedies are intended to address the contaminated soil and groundwater at the site.

<u>Alternative 1: No Action + Monitoring</u>

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Present Worth:	$ 72,000
Capital Cost:	$ 0
Annual O&M:	$ 12,000
Time to Implement	Immediate

Alternative 2: Shallow Groundwater Extraction + Groundwater Treatment + Targeted Surface Soil Excavation and Offsite Disposal + Groundwater Monitoring

This alternative would collect shallow groundwater from the area of highest contamination located in the back of the Davis-Howland building using several extraction wells. Shallow groundwater extraction would target the highest levels of contamination. The goal for this procedure is to remove groundwater contamination which , might in the future, impact human health through exposure in nearby basements or sumps. This pumping would not necessarily achieve drinking water standards, but would be an effective source control. Groundwater would be treated prior to discharge to the sanitary sewer through the use of an air stripper to remove VOCs which constitute the majority of the groundwater contamination. Two areas of surface soil contamination were identified as warranting action. These are located just north of MW-1S and 1R and northwest of MW-6R. These soils are impacted by significant metals contamination. These soils would be excavated and disposed of offsite. Monitoring of groundwater contamination and levels would be conducted in order to assess the effectiveness of the remedy.

Present Worth:	$ 888,000
Capital Cost:	$ 183,000
Annual O&M:	$ 94,000
Time to Implement	6 months

Alternative 3: Shallow Groundwater Sparging + Vapor Extraction +Targeted Surface Soil Excavation and Offsite Disposal+ Groundwater Monitoring

Alternative 3 would entail the installation of several air sparging points in the areas of highest shallow groundwater contamination. Air sparging would strip VOCs from the groundwater. As needed, vapor extraction points would be installed to collected the VOCs released from groundwater and enhance the removal of VOCs found in soil. Soil removal and disposal, and monitoring would be done in the same manner as described in Alternative 2.

Present Worth:	$ 496,000
Capital Cost:	$ 184,000
Annual O&M:	$ 59,000
Time to Implement	6-9 months

Alternative 4: In Well Air Stripping + Targeted Surface Soil Excavation and Offsite Disposal + Groundwater Monitoring

In well air stripping would be utilized to remove VOCs from shallow groundwater in this alternative. These wells utilize air lift to circulate water from a screened zone located below the water table and discharging the water from a screen located in the zone above the water table. As the air moves the water upward, bubbles strip VOCs from the water. The VOCs are removed under low vacuum from the well. The other elements of this alternative would be the same as in Alternative 2.

Present Worth:	$ 927,000
Capital Cost:	$ 426,000
Annual O&M:	$ 74,000
Time to Implement	6 months

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. <u>Compliance with New York State Standards, Criteria, and Guidance (SCGs)</u>. Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The Feasibility Study identified SCGs for this site. The most significant of the SCGs, by media, include the following:

Soil

TAGM HWR-94-4046, Guidance regarding soil clean-up levels.

6 NYCRR Part 376, Land disposal regulations (LDRs).

Groundwater

6 NYCRR Part 703, Ambient Water Quality Standards and Guidance Values

6 NYCRR Parts 750-758 State Pollution Discharge Elimination System (SPDES).

Municipal Sewer Permit, Requirements covering new discharges to the local sanitary sewer.

Air

6 NYCRR Part 212

NYSDEC Air Guide 1.

Alternative 1, No Action, would not change current conditions at the site. Since there are currently contraventions of the soil and groundwater SCGs, it would not achieve the SCGs.

Alternative 2, would address shallow groundwater contamination through extraction and treatment. It might eventually achieve groundwater SCGs. Surface soil excavation would address soil contamination in the areas which have the most significant identified surface soil contamination, however, areas of soil would remain with exceedences of soil clean-up criteria. It is not anticipated that contaminant levels in excavated soil would trigger LDRs.

One of the SCGs relevant to this site is TAGM 4046 which presents soil clean-up objectives. Some of the soil analyses detected the presence of several SVOCs at levels above recommended levels. While these SVOCs are found in surface soil above standards, distribution and past operations at the site seem to indicate that they are not site related. Some of the worst of this contamination would be removed with the soil which was identified as a health risk. The removal of SVOCs would not be comprehensive.

Alternative 3, would treat shallow groundwater through the use of air sparging. It is believed that this approach would achieve better results than the extraction and treatment of shallow groundwater in Alternative 2 in approaching groundwater SCGs. Vapor extraction would collect the VOCs removed from groundwater and enhance the removal of VOCs from soil. This would help in the clean-up of subsurface soil and may meet soil SCGs. As with Alternative 2, SCGs for surface soil would not be universally met due to the fact that some surface soils with non-site related contaminants would remain. Discharge controls on the vapors collected through soil vapor extraction would allow Air SCGs to be met.

Alternative 4 would achieve SCGs to a similar extent as Alternative 3. Shallow groundwater would be stripped of VOCs in the installed wells. Subsurface soil clean-up would be promoted by the recirculation of water around the wells.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

Alternative 1 would do nothing to improve conditions at the site. This alternative would not be protective of human health and the environment.

Alternatives 2-4 would be protective of human health and the environment. The only exposure pathway which is currently complete is contact with contaminated surface soils. Each of these remedies would address the two identified areas of surface soil contamination which are thought to be of concern. Shallow groundwater contamination would be addressed in each of these alternatives. Even though this is not a currently complete exposure pathway, it is of future concern. Inhalation of VOCs escaping from contaminated groundwater is also a non-complete pathway which might be of future concern should highly contaminated shallow groundwater migrate to basements or sumps. This too would be addressed by this alternative's treatment of groundwater contamination. No significant environmental exposures or impacts were identified at this site. Potential receptors are extremely limited at the site.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative 1, No Action has no impacts and would not change the condition of the site.

Each of the other alternatives have similar potential for impacts to site workers and workers in the surrounding buildings as a result of surface soil excavation. The excavation of soil has the potential for causing the mobilization of contaminated dust. This could easily be controlled by proper application of engineering controls such as misting or other dust suppression techniques. Alternatives 3 and 4 involve treating groundwater "in place" through either sparging or in-well air stripping. Both of these processes liberate VOCs from the subject media. Uncontrolled, either of these could expose those on or near the site to VOCs. Air emission controls can effectively prevent any significant exposures. Alternative 3 calls for vapor extraction which, properly applied, would control the release of such vapors. Alternative 4 would control emissions through the application of a low level vacuum above the water column in the well.

While the length of time each remedy would require to meet the Remedial Action Objectives (RAOs) for groundwater cannot be precisely stated, it is anticipated that Alternative 2 (pump and treat) would require longer to achieve RAOs than Alternatives 3 or 4. Alternatives 3 and 4 both contain a more active approach to removing VOCs from groundwater and would be more rapidly effective.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

Alternative 1, No Action would not achieve RAOs and has the lowest long-term effectiveness.

The surface soil removal component of Alternatives 2-4 would be permanent. The soil would be taken offsite and disposed of at an appropriate landfill. We anticipate that no site related residuals would remain in surface soil at the site.

The extraction and collection of groundwater proposed in Alternative 2 would be a permanent groundwater remedy. There would be an element of transferring contamination from one media or system to another because the water discharged to the POTW would have some concentration of VOCs. Also, with pump and treat technology, there is a significant potential for "rebound" in groundwater contaminant levels once the pumps are shut off. Pump and treat may also leave a slightly higher level of residual contamination in subsurface soil. This would need to be monitored for in order to facilitate appropriate response.

Alternatives 3 and 4 would be permanent remedies which remove contamination from the groundwater. Once these remedies achieve RAOs there should be no residual problems with groundwater. No significant potential exposure pathways would remain once either of these alternatives was completed.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 1 would do nothing to reduce toxicity, mobility, or volume of site contamination.

The soil removal component of Alternatives 2, 3, and 4 would eliminate the mobility (leaching potential to groundwater) of contamination in the excavated soils. Landfill disposal would do nothing to reduce toxicity or volume but would eliminate the contact threat posed by this soil.

Alternative 2's groundwater collection system would control the mobility of contaminated groundwater. The volume of contamination would be reduced through the stripping of VOCs from groundwater and the concentration of these in a control media such as carbon. Toxicity would eventually be reduced when the carbon was recycled.

Alternatives 3 and 4 would remove VOC contamination from groundwater and capture it through soil vapor extraction (Alt. 3) or through a vacuum placed on the well (Alt. 4). In either case the VOCs could then be collected by vapor phase carbon. Either alternative would be effective in reducing mobility and volume, and toxicity could be reduced by recycling the carbon.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc..

There would be no difficulties in "implementing" Alternative 1 since it involves no action.

Alternatives 2, 3, and 4 would all be implementable. Alternative 2 would require treatment and disposal to the POTW of a significant quantity of shallow groundwater. Alternatives 3 and 4 would not extract or handle groundwater. Alternatives 2 and 3 involve well established and readily available technologies and materials. Well installation and pumps, in Alternative 2, and vapor extraction, and sparging, in Alternative 3, are provided by numerous vendors. Alternative 4 relies on a newer process available from fewer vendors. The technology is, however, understood and reliable. One site-specific technical concern for Alternative 4 would be the relatively shallow water table in the area behind the site building. This could pose a problem for the reinfiltration of groundwater from the stripping wells. Acquiring POTW discharge approvals would be the primary administrative action needed in Alternative 2 and should be readily achievable.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Total Present Worth
No Action	$0	$12,000	$72,000
Alternative 2 - Pump and Treat	$183,000	$94,000	$888,000
Alternative 3 - Air Sparging	$184,000	$59,000	$496,000
Alternative 4 - In-well Air Stripping	$426,000	$74,000	$927,000

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is focused upon after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised.

In general the public comments received were supportive of the selected remedy. The comments received generally involved questions on the timing of the remedy, the health effects of the current site conditions, and questions pertaining to how the NYSDEC would proceed with the investigation of the Operable Unit 2, bedrock groundwater.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 6, the NYSDEC is selecting **Alternative 3** as the remedy for this site.

This selection is based upon the conclusion that the remedy proposed in Alternative 3 will best achieve each of the assessment criteria to the greatest extent feasible.

Alternative 1 was not selected since it did not meet any of the relevant requirements.

Alternatives 3 and 4 are equally likely to achieve SCGs. Alternative 2 has a slightly lower likelihood of achieving groundwater standards in a reasonable time frame though it would control migration of groundwater contamination.

Alternatives 2, 3, and 4 would all be protective of human health and the environment. Each would control or eliminate the exposure pathways at the site.

Alternatives 2, 3, and 4 would all have very limited short-term impacts on the community. Those impacts present would be easily managed. RAOs would be achieved more quickly with Alternatives 3 and 4 than in Alternative 2.

Alternatives 2, 3, and 4 would have about the same level of long-term effectiveness and permanence. They each would involve removal of contamination and not just the isolation of same. Alternative 2 would have the potential to level slightly more residual contamination in the subsurface.

Reductions in toxicity, mobility, and volume would be comparable for Alternatives 2, 3, and 4.

Alternative 2 would be easiest to implement because of the established technology and the fact that it has the fewest elements. Alternative 3 and 4 would have a similar level of technical implementability, with Alternative 4 complicated by some site specific considerations.

Cost of Remedy

The estimated present worth cost to implement the remedy is $496,000. The cost to construct the remedy is estimated to be $184,000 and the estimated average annual operation and maintenance cost for 6 years is $59,000.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

2. Several air sparging points located in the areas of highest shallow groundwater contamination to reduce contamination in shallow groundwater.

3. Vapor extraction points beneath the site buildings and as needed to collect VOCs released by sparging and enhance removal of VOCs from soils.

4. Vapor phase treatment system for extracted VOCs.

5. Installation of a fence to protect onsite, above ground equipment.

6. Since the remedy results in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. This program will allow the effectiveness of the selected remedy to be monitored and will be a component of the operation and maintenance plan for the site.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials local media and other interested parties.
- Fact Sheet describing RI/FS process and basic site history, 5/95.
- Fact Sheet announcing RI results, 11/96.
- RI Public Meeting, 12/3/96.
- Fact Sheet announcing completion of PRAP and public meeting, 2/97.
- PRAP Public Meeting, 3/5/97.
- In March 1997, a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.

EXHIBIT A
RESPONSIVENESS SUMMARY
Davis-Howland Oil Corporation Site
Operable Unit No. 1: Soils and Shallow Groundwater
Monroe County
8-28-088

This document summarizes the comments and questions received by the New York State Department of Environmental Conservation (NYSDEC) regarding the Proposed Remedial Action Plan (PRAP) for the subject site. A public comment period was held between February 18 and March 20, 1997 to receive comments on the proposal. A public meeting was held on March 5, 1997 at Writers and Books in Rochester, New York to present the results of the investigations performed at the site and to describe the PRAP. The information below summarizes the comments and questions received and the Department's responses to those comments.

DESCRIPTION OF THE SELECTED REMEDY

The major elements of the selected remedy include:

- A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.
- Several air sparging points located in the areas of highest shallow groundwater contamination to reduce contamination in shallow groundwater.
- Vapor extraction points beneath the site buildings and as needed to collect VOCs released by sparging and enhance removal of VOCs from soils.
- Vapor phase treatment system for extracted VOCs.
- Installation of a fence to protect onsite, above ground equipment.
- Since the remedy results in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. This program will allow the effectiveness of the selected remedy to be monitored and will be a component of the operation and maintenance plan for the site.

The information given below is summarized from the March 5, 1997 public meeting and letters received during the comment period. The issues raised have been grouped into the following categories:

I. Questions/Comments Raised During the Public Meeting

   A. Issues Regarding the Remedy

II. Letters Received During the Comment Period

   B. Letter from Davis-Howland Oil Corp., dated March 10, 1997 (received 3/18/97)

I. QUESTIONS/COMMENTS RAISED DURING THE PUBLIC MEETING

A.1 **Issue:** What is the timeline for construction of the remedy?

Response: After the finalization of the ROD, the opportunity to implement the remedy will be offered to the site owner. This negotiation process may take up to ten months. The design process can take up to a year. This means that the construction process may not begin for nearly two years. The actual construction should be complete within one construction season from starting. The remedy will operate until the remedial goals are reached or additional improvements are not practicable.

A.2 **Issue:** Does this mean that the site can't be developed for five to ten years?

Response: Activities at the site which do not interfere with the implementation or operation of the selected remedy will be permissible. Most non-intrusive site development activities would not interfere with the remedy.

A.3 **Issue:** Why will there be a fence around the site?

Response: The purpose of the fence is to protect equipment which will be installed on the surface of the property. This will include carbon filtering units, air pumps, and various surface plumbing.

A.4 **Issue:** What kinds of restrictions will there be on use of the building?

Response: There will be no use restrictions on the building as a result of the remedy except as noted in response A.2. Normal local use codes, and local and state health department requirements will remain in effect.

A.5 **Issue:** What kinds of health problems does the site present now?

Response: There are currently no identified pathways for site contamination to impact the health of residents in the area of the site. Once the remedy is implemented, the potential pathways identified for contact with contaminated groundwater or soil will also be removed.

A.6 **Issue:** Where is the extent of groundwater contamination in bedrock still uncertain?

Response: The primary areas of uncertainty are to the west and south. The investigation of the bedrock groundwater contamination (Operable Unit 2) will seek to determine the extent of this contamination.

A.7 **Issue:** What are the threats to health from the contamination in the bedrock?

Response: There are no completed pathways for this contamination to reach or impact anyone health. The only way which exposure could occur would be if anyone drilled a water supply well into bedrock.

A.8 **Issue:** How deep are the sewers around the site? Is contamination getting into the sewers?

Response: The depth to the sewer is from 8 to 11 feet in the area of the site and the sewer slopes to the west under Anderson Avenue. At the intersection of Anderson and Mirriman Street the sewer drops to about 17 feet below the street. The sewer has been examined and is in good condition. The likelihood is slight that the sewer is either receiving or releasing contamination.

A.9 **Issue:** Is the DEC likely to remediate bedrock groundwater?

Response: The actions which will be taken to address bedrock groundwater contamination can not be determined until the extent of the contamination is known. This is the goal of the next stage of the investigation.

A.10 **Issue:** When will the additional bedrock groundwater monitoring wells be installed?

Response: It is our intention to proceed with the bedrock investigation during the upcoming summer. Additional well will probably be installed at that time.

A.11 **Issue:** How does the DEC intend to address the area north of the railroad tracks?

Response: If there is contamination from the site in the area north of the tracks it will be addressed by the source control activities selected for the site. If bedrock contamination is found to extend into that area a determination will be made based upon the results of the upcoming investigation.

A.12 **Issue:** The remedy should proceed as quickly as possible to allow for additional residential development in the area.

Response: Every effort will be made to proceed with the selected remedy as soon as possible. We will try to avoid any unneeded delays.

A.13 **Issue:** Is the current owner responsible for contamination at the site?

Response: The site has a long industrial history. The operations by the current owner at the site have likely contributed to the contamination encountered.

A.14 **Issue:** What is the cost of the proposed remedy?

Response: The estimated cost of the remedy is $492,000. This includes $184,000 in capital costs and $59,000 per year of operation and maintenance costs.

II. LETTERS RECEIVED DURING THE COMMENT PERIOD

B. Letter from Davis-Howland Oil Corp., dated March 10, 1997 (received 3/18/97)

(Comments in this section are taken *verbatim* from the summary of comments in the comment letter. The letter contained substantial supporting information and is being incorporated into this ROD as part of the Administrative Record.)

B.1 **Issue:** History shows many sources of contamination of the Site and many PRPs. Yet only Davis-Howland is cited.

Response: It is acknowledged in the ROD (Section 4) that there may be additional PRPs responsible for some of the contamination at the site. As part of the Department's responsibilities for engaging PRPs in the design and construction of the remedy, the Department is continuing its evaluation of which other parties, if any, may be involved.

B.2 **Issue:** Most of the site is (and was) owned by others, who became PRPs by virtue of their ownership.

Response: As discussed in B.1, identification of PRPs is an ongoing process and other PRPs may be noticed.

B.3 **Issue:** There is no imminent hazard to the human health of those who live or work in the area.

Response: While there may not be any imminent health hazard to those who live in the area, it has been determined that this site presents a significant threat to the public health or environment. There are several avenues of exposure including, among others, coming in direct contact with contaminated surface soils onsite. Also, there is the potential for exposure to contaminants in shallow groundwater (wet basements on site) or to contaminated soil vapor in on-site buildings. These potential exposures along with the known environmental impacts to soil and groundwater make it appropriate to actively remediate the Site.

B.4 **Issue:** Remediation NOW would reduce the <u>potential</u> (a)ffect on human health.

Response: Yes, the remediation as selected will mitigate potential effects on human health. Moreover, the program also seeks to remediate environmental contamination including addressing the high levels of contamination in groundwater since they far exceed groundwater standards. Even though groundwater is not currently being consumed by local residents, drinking water is defined as the "best use" for groundwater and it is this standard that any remedial action must seek to comply with.

B.5 **Issue:** (But) in over 50 years of contamination, there still is no (a)ffect on human health AND THERE MAY NEVER BE.

Response: Even if that assumption proved to be true, the goal of the remedial program is as set forth in the response to B.6.

B.6 **Issue:** Monitoring (not remediating) the Site can provide adequate notice of any imminent danger.

Response: While monitoring will be an element of the remedy, the goal of the (remedial) program for a specific site is to restore that site to pre-disposal conditions, to the extent feasible and authorized by law. At a minimum, the remedy selected shall eliminate or mitigate all significant threats to the public health and to the environment presented by hazardous waste disposed at the site through the proper application of scientific and engineering principles. It is the Department's belief that of the alternatives evaluated, the selected remedy best meets these goals.

EXHIBIT B
ADMINISTRATIVE RECORD
Davis-Howland Oil Corporation Site
Operable Unit No. 1: Soils and Shallow Groundwater
Monroe County
8-28-088

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1. Record of Decision 03/97

2. Proposed Remedial Action Plan 02/97

3. Referral for Completion of RI/FS, J. Lacey to M. O'Toole 04/30/93

4. Remedial Investigation (RI) Report, Volumes I, II, III, and IV 10/96

5. Feasibility Study (FS) Report 03/97

6. RI/FS Work Plan 03/95

7. Citizen Participation Plan, prepared by NYSDEC 05/95

8. Soil Investigation Report, prepared by Dunn Geoscience 11/26/91

9. Relevant Correspondence

   - G.A. Carlson to M.J. O'Toole, NYSDOH PRAP concurrence letter 02/14/97

   - G.A. Carlson to M.J. O'Toole, NYSDOH ROD concurrence letter 03/97

   - Davis-Howland to M.J. DiPietro, Comments on PRAP 03/10/97

B

Record of Decision – Operable Unit 2

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Davis-Howland Oil Company
Operable Unit 2
City of Rochester, Monroe County
Site Number 828088

March 1998

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor*   JOHN P. CAHILL, *Acting Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Davis-Howland Oil Company Inactive Hazardous Waste Site
Operable Unit 2
Rochester, Monroe County, New York
Site No. 8-28-088

Statement of Purpose and Basis

This Record of Decision (ROD) presents the selected remedial action for the Davis-Howland Oil Company Inactive Hazardous Waste Disposal Site, Operable Unit 2 (OU-2), which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40 CFR 300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Davis-Howland Oil Company Inactive Hazardous Waste Site (OU-2) and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) and the criteria identified for the evaluation of alternatives, the NYSDEC has selected No Further Action with monitoring for Operable Unit Two at this Site (the bedrock aquifer). This remedy includes additional testing and a contingency plan in the event that monitoring does not confirm the anticipated decrease in bedrock contamination once the OU-1 (i.e., shallow soils and groundwater) remedy is implemented. The components of the remedy are as follows:

- Bedrock groundwater will be monitored to confirm that the observed downward trend in contaminant concentration continues.

- Approximately two additional wells will be installed to supplement the existing monitoring network; these will be installed in conjunction with the implementation of the OU-1 remedy.

- A limited pump test will be conducted (also part of OU-1) to confirm the extent of bedrock interconnections and connections between bedrock and overburden.

Contingent Remedy (should contamination not continue to decrease adequately)

- Limited groundwater pump and treat focusing on source areas.
- Treatment and discharge to the POTW of extracted groundwater.
- Appropriate supplemental groundwater monitoring.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

3/24/98
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

TABLE OF CONTENTS

RECORD OF DECISION
Operable Unit 2 - Bedrock Groundwater

DAVIS-HOWLAND OIL COMPANY
Rochester, Monroe County, New York
Site No. 8-28-088
March 1998

SECTION 1: SITE LOCATION AND DESCRIPTION

The Davis-Howland Oil Company site is defined as adjacent parcels of land located on Anderson Avenue in the City of Rochester, Monroe County. Those adjacent parcels are described as 190-220 Anderson Avenue and the portion of 176 Anderson Avenue immediately north and west of 190-220 Anderson. See Figure 1 for the location map and Figure 2 for the detailed site map. The site is approximately 1 acre in size. The site is situated in an area which combines residential, commercial, and industrial facilities. No significant surface water is located in the immediate area of the site. The site is bounded on the south by Anderson Avenue, on the west by light industrial and commercial/retail buildings, and on the north and east by Conrail tracks and right-of-way.

The site is underlain by a thin fill layer (2-5 feet thick), outwash sand and gravel (5-20 feet), glacial till (5-15 feet), and bedrock consisting of the Penfield Dolostone. Shallow groundwater is encountered in the outwash and deep groundwater is encountered in the bedrock unit.

The area is served by a public water supply system and we are aware of no local groundwater usage.

Operable Unit No. 2, which is the subject of this PRAP, consists of bedrock groundwater.

An Operable Unit represents a portion of the site remedy which for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. Operable Unit 1 for this site is described in Section 2.2 below.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

During the course of operations at the Davis-Howland site, there were evidently numerous incidents when material leaked or were spilled onto the ground. There is no single occurrence which can account for the majority of the contamination now found at the site.

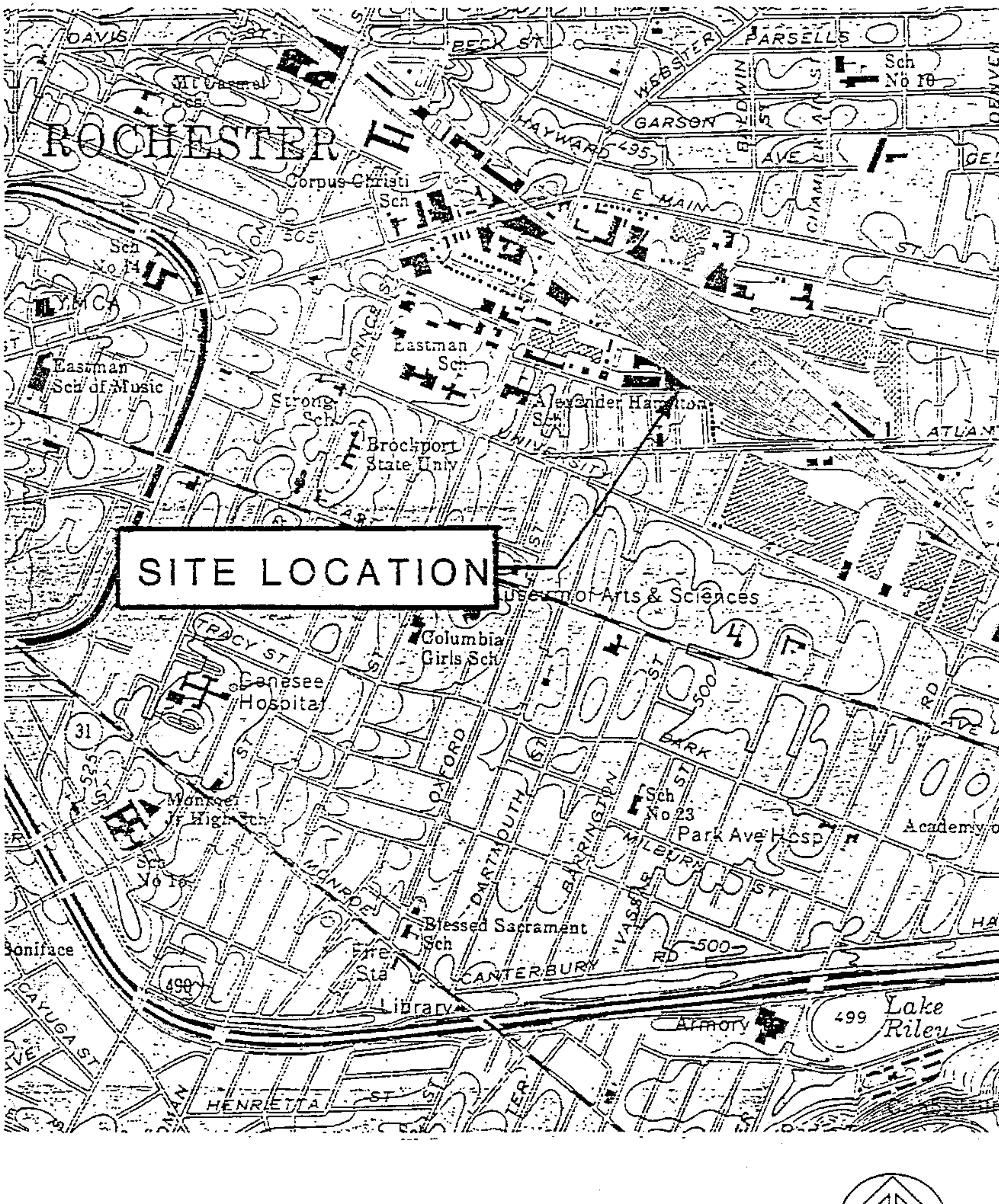
Between 1974 and the early 1990s, there were many reports to the NYSDEC of releases of materials ranging from waste oil and mineral oil to hydrochloric and sulfuric acids at the Davis-Howland site.

In June 1991, NYSDEC staff inspected the site in response to a report of an oil spill. They found several hundred drums of oils and solvents and several areas of stained soils.

FIGURE 1

LOCATION PLAN

DAVIS–HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)



LOCATION PLAN

NOT TO SCALE

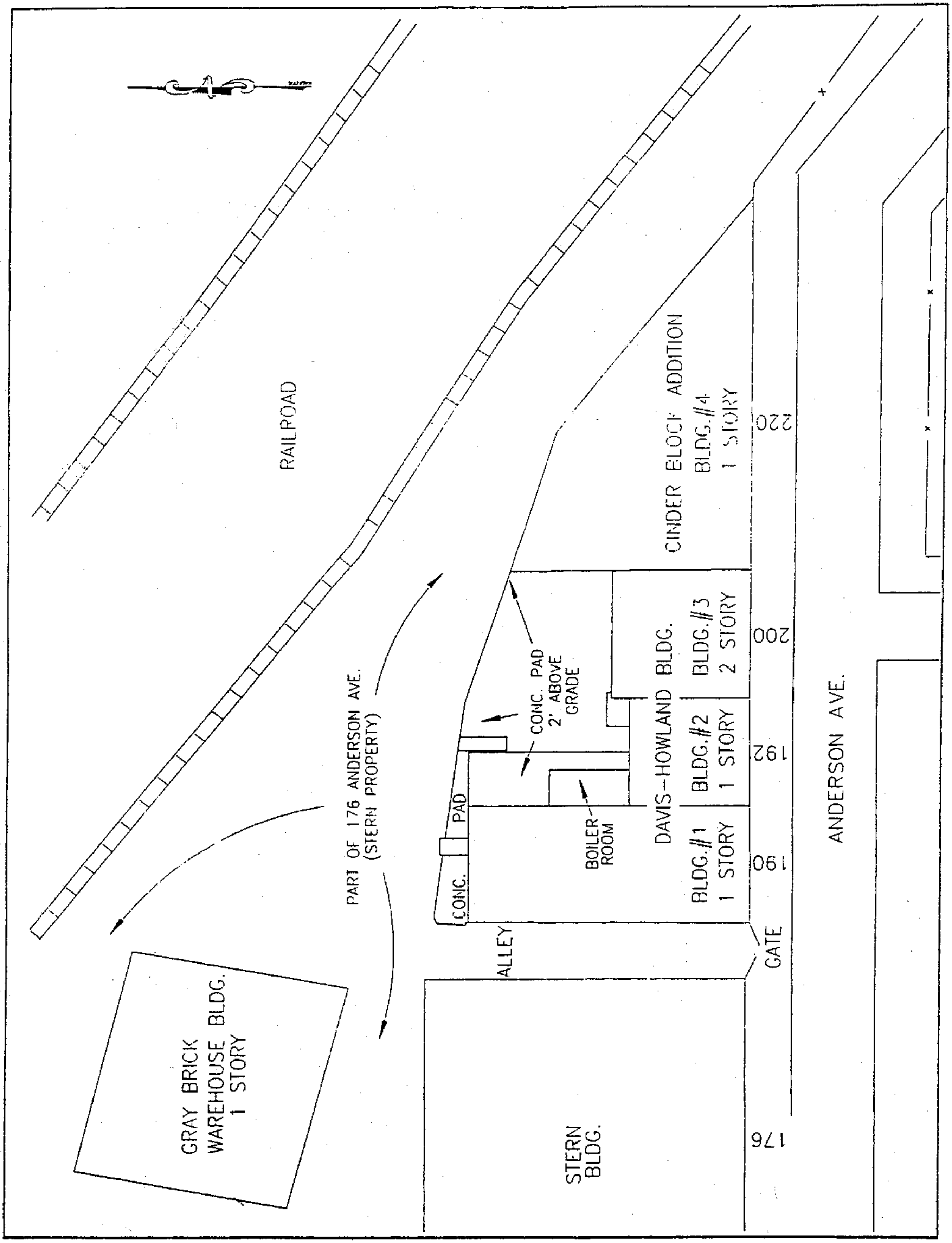


FIGURE 2

GENERAL SITE PLAN
DAVIS-HOWLAND OIL CORPORATION,
ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)

GALSON / LOZIER

9/96 NTS 2240-003

2.2: Remedial History

In June 1991, NYSDEC staff inspected the site and identified numerous drums, some of which were leaking. A follow-up inspection was conducted which included soil sampling and the containerizing of leaking drums. Soil sampling indicated that soil was contaminated with petroleum and solvents.

In October 1991, Dunn Geosciences performed a soil investigation for Davis-Howland. They confirmed the results of the initial DEC inspection.

From April through June 1992, Clean Harbors, Inc. conducted a soil and groundwater sampling effort. Results of this investigation indicated soil contamination and significant contamination of groundwater with chlorinated and non-chlorinated solvents. During the same period, Clean Harbors also conducted a drum removal and surface soil excavation and removal. The soil removal consisted of the removal of the top one foot of soil and subsequent offsite disposal.

In December 1994, the NYSDEC resampled the Clean Harbors wells and found similar types of contamination.

Operable Unit 1 (OU-1), consists of shallow groundwater, metals contaminated surface soil, and VOC contaminated subsurface soil. These media were addressed in the March 1997 Record of Decision.

The Phase I RI was conducted between July 1995 and October 1996. A report entitled "Davis-Howland Oil Corporation Remedial Investigation," dated October 1996, has been prepared describing the field activities and findings of the Phase I RI in detail.

The Phase I RI concluded that the site had significant contamination of soils and shallow groundwater. The main contaminants detected in soil were VOCs, SVOCs, and metals. VOCs were the main contaminant found in the shallow groundwater.

The remedial action for OU-1 consists of the treatment of shallow groundwater by air sparging and treatment of subsurface soils through vapor extraction. Metals contaminated surface soils will be excavated and disposed of offsite.

It is anticipated that the Remedial Design of OU-1 will begin during the spring of 1998. This would allow construction of the OU-1 remedy in 1999 with startup of the remedy later that year. Operation of the OU-1 remedy will likely last for several years.

SECTION 3: CURRENT STATUS

The NYSDEC recently completed a second phase Remedial Investigation (RI) (dated October 1997) regarding additional issues in the bedrock groundwater. This report supplements the original Remedial Investigation (October 1996) and Feasibility Study (March 1997).

3.1: Summary of the Remedial Investigation

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 in two phases. The first phase was conducted between July 1995 and October 1996, the second phase between November 1996 and January 1997. A report entitled "Davis-Howland Oil Corporation Remedial Investigation," dated October 1996, has been prepared describing the field activities and findings of the Phase I RI in detail. The "Phase II Investigation Report," dated October 1997, summarizes the work and findings of the Phase II RI. The focus of the Phase II RI was OU-2, bedrock groundwater along with limited soil sampling to further define some elements of OU-1.

The Phase II RI included the following activities:

- Installation and development of six bedrock monitoring wells.
- Installation and development of four overburden monitoring wells.
- Sampling and analysis of groundwater from all of the Phase I and Phase II monitoring wells.
- Groundwater level monitoring and contouring.
- Surface soil samples from the area around DHSS-7 and DHSS-9, and two soil samples from between DHSS-6 and DHSS-7 (figure 3).
- An air sparging and soil vapor extraction pilot study to assess the effectiveness of these technologies in addressing OU-1 groundwater contamination.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the Davis-Howland Oil Company site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of the NYS Sanitary Code. NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used as SCGs for soil.

Based upon the results of the Remedial Investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media of the site require remediation. These are summarized below. More complete information can be found in the RI Report and Phase II RI Report.

Chemical concentrations are reported in parts per billion (ppb) and parts per million (ppm). For comparison purposes, groundwater SCGs are given.

3.1.1 Nature of Contamination:

As described in the RI Report and Phase II RI Report, bedrock groundwater conditions were characterized through the installation of monitoring wells, collection of water levels, and analysis of groundwater chemistry.

During the RI, groundwater samples were analyzed for volatile organics (VOCs), semivolatile organics (SVOCs), pesticides, PCBs, and metals. Bedrock groundwater was found to contain VOCs including 1,2-dichloroethene, vinyl chloride, 1,1,1-trichloroethane, and xylene. The only SVOC detected at significant levels was 4-Methyl-2-Pentanone. PCBs and pesticides were not detected in bedrock groundwater. In the Phase II, the same VOCs were detected, at significantly lower levels. During Phase I, the total VOCs were at 11,255 parts per billion (ppb) in bedrock well MW-1R, and in Phase II they dropped to 5,479 ppb in the

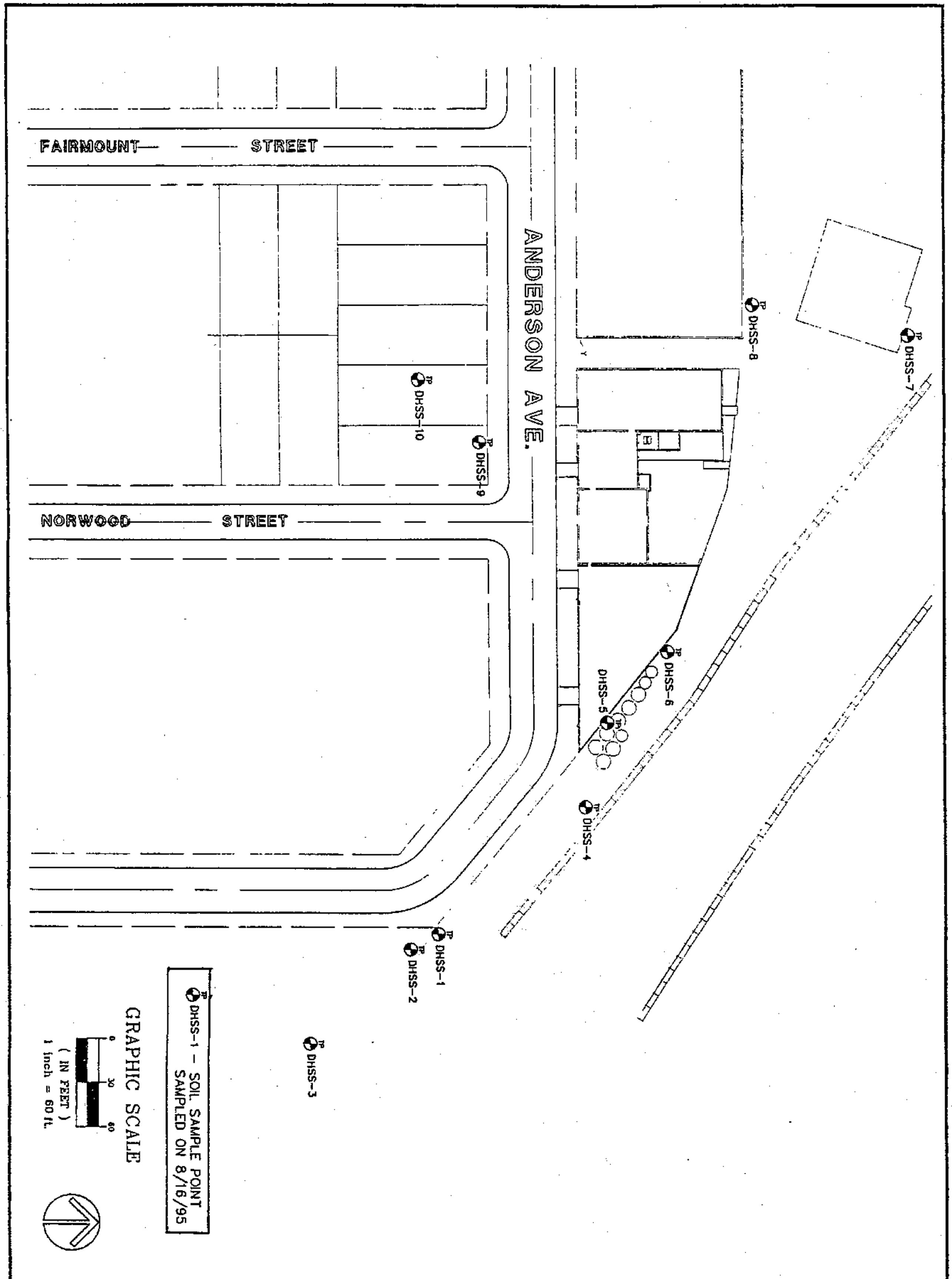


FIGURE 3

SURFACE SOIL SAMPLE PLAN

DAVIS–HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE NO. 8–28–088)

GALSON / LOZIER

Table 1

Bedrock Groundwater - Phase I Results

Contaminant	Concentration Range, ppb Minimum	Maximum	Average	SCG	No. that Exceed	No. of Samples
1,2-Dichloroethene (total)	300	8600	2866	5	8	8
Vinyl Chloride	56	840	402	2	8	8
Trichloroethene	27	740	319	5	8	8
1,1-Dichloroethene	8	88	33	5	8	8
1,1,1-Trichloroethane	10	190	67	5	8	8
1,1-Dichloroethane	28	390	101	5	8	8
4-Methyl-2-Penatanone	5	640	164	50	3	8

Bedrock Groundwater - Phase II Results

Contaminant	Concentration Range, ppb Minimum	Maximum	Average	SCG	No. that Exceed	No. of Samples
1,2-Dichloroethene (total)	4	4200	1496	5	13	14
Vinyl Chloride	ND	420	200	5	12	14
Trichloroethene	3	2200	250	5	13	14
1,1-Dichloroethene	ND	70	27	5	12	14
1,1,1-Trichloroethane	ND	270	42	5	8	14
1,1-Dichloroethane	ND	330	88	5	11	14
Benzene	ND	200	17	0.7	4	14

same well. The only SVOC detected above standards was 2,4-Dichlorophenol in two wells. The metals magnesium and iron were also detected above drinking water standards.

The VOCs detected can have both short and long-term health effects. The short-term impacts include headaches and dizziness, the long-term effects may include damage to the central nervous system and the liver as well as other internal organs. These effects are known to occur in cases of high level and long-term exposure.

3.1.2 Extent of Contamination

The Phase II Remedial Investigation determined that bedrock groundwater was contaminated at the site. The bedrock groundwater is separated from the shallow groundwater and the surface by a layer of material classified as a glacial till. This material consists of clay rich silt with small amounts of sand and gravel encountered.

The bedrock groundwater is primarily contaminated with VOCs. The highest levels are detected in wells on the site and on the south side of Anderson Avenue.

Table 1 summarizes the extent of contamination for the contaminants of concern in bedrock groundwater and compares the data with New York State Class GA groundwater standards. The table is divided into Phase I and Phase II sampling results which seem to indicate a downward trend in contamination.

Bedrock Groundwater

The Phase I RI left several questions about site groundwater contamination unanswered, including, the extent of bedrock groundwater contamination, the direction of flow, and whether the Davis-Howland site was the main source of the contamination. These questions justified the decision to break off the bedrock groundwater at the site into a second operable unit.

Results of the Phase II RI improved the understanding of the site. Groundwater contamination trends are now more clear, with contaminant levels quickly decreasing to the east, north, and west, and decreasing more slowly to the south. Chemical analysis indicates that the site is the primary source of the bedrock contamination and that the contamination is migrating through the glacial till layer. While the unusual water level readings from the Phase I have not been fully explained, they are likely the result of the wells in question intercepting different fracture systems in the bedrock.

Bedrock groundwater flows away from the site in all directions. This may be the result of mounding in the bedrock groundwater due to leakage from the shallow aquifer. A significant component of this offsite flow is to the south and southwest. Bedrock contamination is greatest in the areas of monitoring wells MW-1R and MW-5R which are located on the south side of Anderson Avenue and northwest of the Davis-Howland building, respectively (see Figure 4). Contamination levels decrease in all directions as you move away from the site (see Figure 4). The quickest decrease is to the north and east with a significant decline to the west and south.

The unusual flow pattern at the site may be the result of a complicated fracture system in the bedrock under the site. It may also result from wells intercepting fractures which have different groundwater levels due to connections with deeper units.

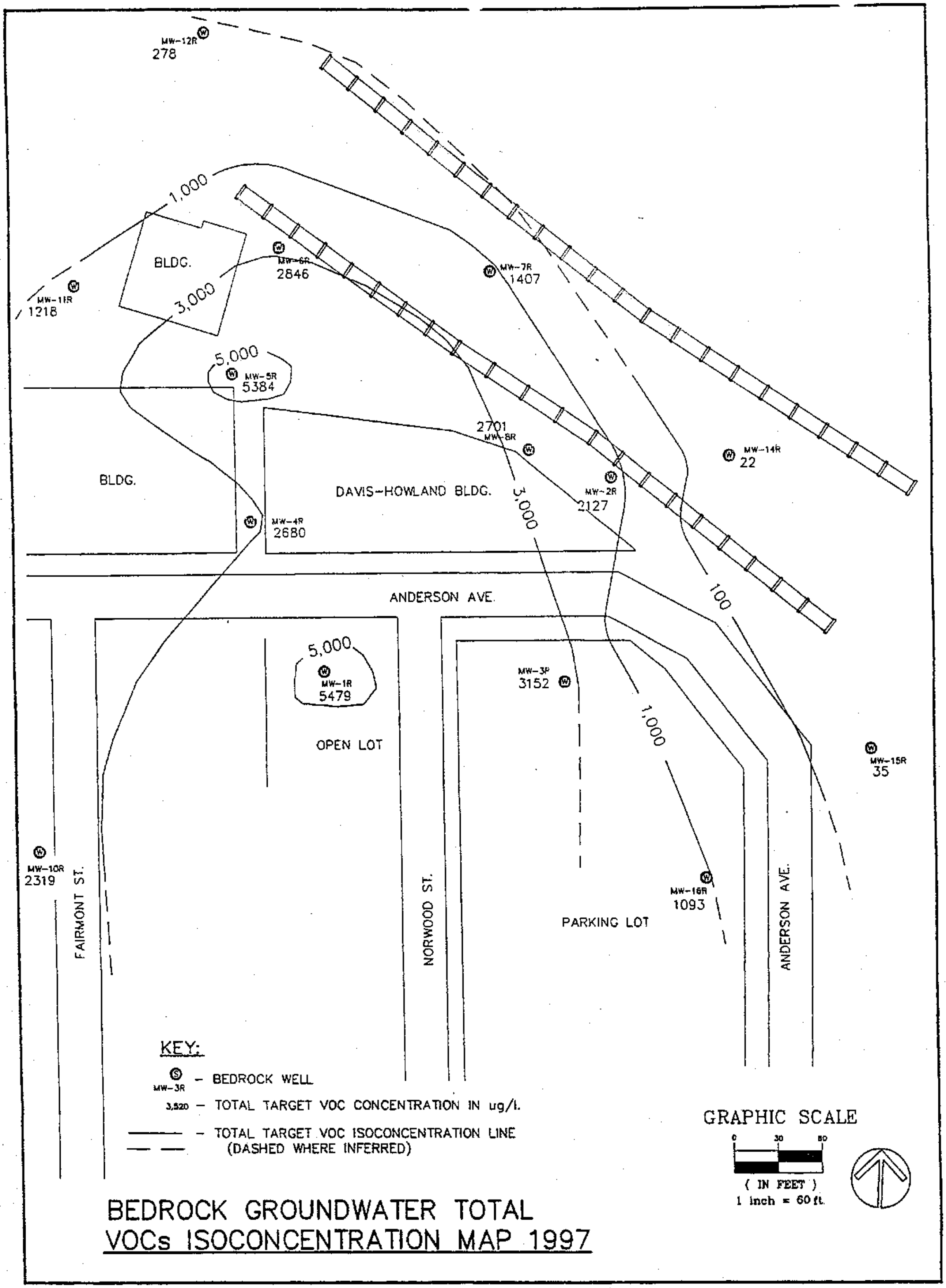


FIGURE 4

BEDROCK GROUNDWATER – TOTAL VOCs ISOCONCENTRATION MAP, JANUARY 1997
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE NO. 8-28-088)

GALSON ENGINEERS

To fully characterize bedrock groundwater contamination and to provide additional monitoring points for determining the effectiveness of the OU-1 remedy, additional field work will be conducted. During the predesign fieldwork leading up to the implementation of the OU-1 remedy, one or more additional wells will be installed to further define the southern extent of the bedrock groundwater plume. These will serve to confirm the extent of contamination and provide additional information regarding the geologic conditions present to the south of the site.

Please note that in Table 1, groundwater contamination values are given in parts per billion (ppb).

Bedrock groundwater contamination consists primarily of VOCs such as 1,2-dichloroethene, trichloroethene, 1,1,1-trichloroethane, and vinyl chloride. Highest levels are for 1,2-dichloroethene (4200 ppb), vinyl chloride (420 ppb), and trichloroethene (2200 ppb).

3.2 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 4.7 of the RI Report.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Pathways which are known to or may exist at the site include:

- For groundwater, the only likely point of contact would be if someone were using groundwater as a drinking water source. Local residents are on City water and there are no indications bedrock groundwater near the site is being used. Therefore, this pathway is not complete.

- Inhalation of volatile organic compounds (VOCs) from contaminated bedrock groundwater would be a pathway if the water or contaminated vapor came into contact with basements. This pathway is not complete because of the depth to bedrock groundwater and the thickness of the intervening till layer (This is a pathway of concern for OU-1).

3.3 Summary of Environmental Exposure Pathways:

There is no significant habitat in the immediate area of the site which would provide an active breeding or dwelling area for most wild species. Only those animals which have shown tolerance for urban dwelling can reasonably be expected in the area of the site. The Fish and Wildlife Impact Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The Potential Responsible Parties (PRP) for the site, documented to date, include: the Davis-Howland Oil Company.

While Davis-Howland is the only PRP identified at this time, a portion of the contamination found at the site may not solely be the result of activities conducted by Davis-Howland. Industries which were previously located at the site may have contributed to some portion of the contamination encountered.

The PRPs failed to implement the RI/FS at the site when requested by the NYSDEC. The PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the NYSDEC will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State has incurred.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to be protective of human health and the environment and meet all Standards, Criteria, and Guidance (SCGs).

The selected remedy for any site should, at a minimum, eliminate or mitigate all significant threats to the public health or the environment presented by the hazardous waste present at he site. The State believes that the remediation already completed (IRM), and the selected remedy for OU-1, which are described in section 3.2, will accomplish this objective provided that it is operated and maintained in a manner consistent with the OU-1 ROD.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The **No Further Action** alternative with groundwater monitoring is appropriate because the previously described soil removal IRM, in combination with the selected remedy for Operable Unit 1, will accomplish the goals set out in Section 5.

The selection of the No Further Action remedy is justified for this operable unit because:

- there is no exposure to people or fish and wildlife,
- chemical releases are limited to the vicinity of the site,
- contaminant concentrations appear to be decreasing through time,
- completion of the OU-1 remedy is expected to accelerate clean-up of OU-2,
- remediation of OU-2 before OU-1 could lead to a worsening of conditions by drawing contamination from the more heavily contaminated shallow groundwater down into bedrock,
- the contingent remedy will be implemented if necessary.

No Further Action is protective of human health and the environment because the IRM in combination with the OU-1 remedy will eliminate known and reasonably anticipated exposure pathways. The New York State Department of Health concurs with this remedy.

Community Acceptance - Concerns of the community regarding the Phase II RI Report and the Proposed Remedial Action Plan were evaluated. A " Responsiveness Summary" was prepared and is attached as

Appendix A. The Responsiveness Summary describes the public comments received and provides the State's responses to those comments.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, Phase II RI, and the discussion in Section 6, the NYSDEC is selecting the **No Further Action** alternative with groundwater monitoring and a backup contingency plan.

It is anticipated that the design of the OU-1 remedy will begin in the spring of 1998 with construction and startup of the remedy in 1999. Deferring any active remediation of the bedrock groundwater should not have any impact on either the nature or the scope of the contingent remedy, should it become necessary to implement it.

To fully characterize bedrock groundwater contamination and to provide additional monitoring points for determining the effectiveness of the OU-1 remedy, approximately two additional monitoring wells will be installed in the area to the south of the site. These wells will serve to delineate the southern extent of the plume and provide additional geologic information in that area.

Maintenance for the proposed remedy will consist of monitoring of bedrock groundwater through the implementation and operation of the selected remedy for OU-1.

A contingent remedy has also been selected for OU-2. This contingency consists of the following elements:

- a low flow bedrock groundwater extraction system to collect water from the identified areas of highest contamination.

- treatment of groundwater (as needed) to meet discharge standards to the local POTW.

- appropriate supplemental monitoring of bedrock contamination.

This contingency will be put into effect if the anticipated reduction in bedrock groundwater contamination does not occur after the construction and activation of the selected OU-1 remedy. It is anticipated that once the shallow contaminant source is addressed, the bedrock contamination will decrease.

Estimated costs for the proposed remedy and the contingent remedy are presented in Table 2.

With the selection of this remedy, the remedy for the overall site (OU-1 and OU-2) will consist of the following: 1) the soil and drum removal actions completed in 1992 that removed the majority of surface contamination; 2) soil vapor extraction and shallow groundwater remediation by air sparging implemented under the OU-1 remedy (likely to begin in 1999); and 3) monitoring of the bedrock groundwater with implementation of a contingent pump and treat remedy, if necessary, as the OU-2 remedy.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.

- A site mailing list was established which included nearby property owners, local political officials local media and other interested parties.
- Fact Sheet describing RI/FS process and basic site history, 5/95.
- Fact Sheet announcing RI results, 11/96.
- RI Public Meeting, 12/3/96.
- Fact Sheet announcing completion of Operable Unit 1 PRAP and public meeting, 2/97.
- Operable Unit 1 PRAP Public Meeting, 3/5/97.
- In March 1997, a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the Operable Unit 1 PRAP.
- Fact Sheet announcing completion of Operable Unit 2 PRAP and public meeting, 1/98.
- Operable Unit 2 PRAP Public Meeting, 2/28/98.
- In March 1998, a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the Operable Unit 2 PRAP.

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Total Present Worth
No Further Action (w/monitoring)	$0	$12,000/6,000(1)	$72,000
Contingency Plan - Pump and Treat	$80,000	$77,000	$470,800

(1) 5 Years bi-annual and 5 years annual

EXHIBIT A
RESPONSIVENESS SUMMARY
Davis-Howland Oil Corporation Site
Operable Unit No. 2: Bedrock Groundwater
Monroe County
8-28-088

This document summarizes the comments and questions received by the New York State Department of Environmental Conservation (NYSDEC) regarding the Proposed Remedial Action Plan (PRAP) for the subject site. A public comment period was held between January 16 and February 18, 1998 to receive comments on the proposal. A public meeting was held on January 28, 1998 at Writers and Books in Rochester, New York to present the results of the investigations performed at the site and to describe the PRAP. The information below summarizes the comments and questions received and the Department's responses to those comments.

DESCRIPTION OF THE SELECTED REMEDY

The No Further Action selection will be supplemented by the following elements:

- bedrock groundwater monitoring and analysis.
- installation of two additional monitoring wells.
- bedrock aquifer testing to assess interconnections of fractures and overburden groundwater.

A contingent remedy has also been selected for OU-2. This contingency consists of the following elements:

- a low flow bedrock groundwater extraction system to collect water from the identified areas of highest contamination.
- treatment of groundwater (as needed) to meet discharge standards to the local POTW.
- appropriate supplemental monitoring of bedrock contamination.

The information given below is summarized from the January 28, 1998 public meeting. The issues raised have been grouped into the following categories:

I. Questions/Comments Raised During the Public Meeting

   A. Issues Regarding Site Conditions
   B. Issues Regarding the Remedy
   C. Issues Regarding Health and Safety
   D. Issues Regarding the OU-1 Remedy

I. QUESTIONS/COMMENTS RAISED DURING THE PUBLIC MEETING

A. Issues Regarding Site Conditions

A.1 **Issue:** Do you think the groundwater contamination is spreading out or downward?

Response: The data collected at the site, during the investigation, indicate that most of the flow in both the shallow and bedrock aquifers is horizontal. Due to local physical characteristics there is also a downward component of flow, away from the surface.

A.2 **Issue:** What do you think the contaminant concentrations were in the bedrock eight years ago?

Response: There is no way to tell what the contaminant concentrations were before the installation of the monitoring wells. Our best "guess," based on current trends, would be that bedrock contamination may have been somewhat higher before the contaminated surface soil was removed and replaced by clean soil.

A.3 **Issue:** Is it certain that this site is the source of the contamination?

Response: Evidence collected during the site investigation points to the conclusion that the Davis-Howland site is the source of the groundwater contamination encountered.

A.4 **Issue:** How long has the site been closed?

Response: We believe that Davis-Howland was active at the site until about 1993. Since that time, portions of the site buildings have been occupied by various tenants.

A.5 **Issue:** Are all of the wells on the south side of Anderson Avenue bedrock wells?

Response: No. Wells MW-1R, 3R, 10R, and 16R are bedrock wells completed in the bedrock unit. Wells MW-1S and 3S are overburden wells screened and completed in the shallow groundwater unit.

A.6 **Issue:** Did there used to be a well south of the current well on Norwood Street?

Response: There was a piezometer, which is a very small diameter "well," used to take preliminary groundwater elevations. These are installed to allow greater accuracy in the placement and installation of the more complicated monitoring wells.

A.7 **Issue:** You said at the previous meeting that groundwater was flowing to the east. What is your conclusion now?

Response: Based upon the data collected during the Phase II RI, bedrock groundwater flow is radial away from the site. In the areas with the highest bedrock groundwater contamination, the prevailing flow directions are to the east and south with the most extensive flow to the south.

A.8 **Issue:** What is a "till layer"?

Response: A till is a kind of mixed deposit which has no distinct structure (layering) and is not well sorted, meaning it may have a wide range of soil material in it, including clay, silt, and sand. Till is a deposit left behind by a glacier. A till may have a significant range of density caused be the conditions under which is was deposited. For example, if the till was compressed by a readvance of the glacier, it would be hard and relatively dry, compared to a till deposited and left uncompressed. In the area of Davis-Howland the till is generally 10 to 15 feet thick and is a fairly dense mixture of clay and silt with a trace of sand and gravel.

A.9 **Issue:** This site is listed as a class 2 site, but I'm hearing that there's little contamination and no threat at the site. What does class 2 really mean? Is it true that because of surface soils, the site is a class 2, even though a soil removal was done already?

Response: Class 2 is the designation that the NYSDEC gives to sites which are believed to pose a significant threat to human health or the environment. Based upon the initial site investigations conducted at Davis-Howland, there was sufficient groundwater contamination and a potential for human exposure which qualified the site as a Class 2. With regard to the bedrock aquifer (OU-2), which was the focus of the recent public meeting, there are no completed exposure pathways, nor are there likely to be any in the future. For soils and shallow groundwater, there is significantly greater likelihood of exposure since the shallow groundwater is nearer the surface and some contaminated soils are present on the surface behind the building.

A.10 **Issue:** How many homes are right in this area?

Response: The nearest residences to the site are to the southeast on Anderson, the south on Norwood, and southwest on Fairmont. There are no residences within 200 feet of the site. Beyond that distance, to the south, the area is primarily residential with many homes within half a mile.

A.11 **Issue:** With all the water we had a couple of weeks ago (from the heavy rains), will the water table at the site be raised?

Response: There may be some increase in the level of the shallow aquifer as a result of the heavy rains, but the bedrock aquifer is not likely to respond as quickly. Furthermore, the majority of the water from heavy downpours runs off along the surface, especially in the winter; the same amount of rain spread over a month's time would impact the aquifer to a greater extent.

B. Issues Regarding the Remedy

B.1 **Issue:** Where is the money coming from to fund the investigation?

Response: The money has come from the 1986 Environmental Quality Bond Act (EQBA) which partially funds the State Superfund program.

B.2 **Issue:** Will the cost of remediation come out of Superfund too?

Response: This will be determined by Department legal staff but it is quite possible that the remedy will be paid for through Superfund.

B.3 **Issue:** Do you know of any future (legal) actions against the owner? Are you going to litigate against the owner?

Response: The NYSDEC will seek to negotiate with the owner to have him undertake the selected site remedy. A determination will be made later regarding possible cost recovery actions.

B.4 **Issue:** Who will perform the actual remediation work?

Response: The work will be done under the supervision of the NYSDEC. The contract will be awarded through the competitive bidding process; we do not now know who the contractor will be.

B.5 **Issue:** Will the State do the testing or will the potentially responsible party (PRP) do their own testing?

Response: The testing activities at the site during design and construction will be conducted by either State workers or consultants working for the State.

B.6 **Issue:** Is the same consultant used up to now going to be used for the remediation? Will the consultant draw up the health and safety plan?

Response: It has not yet been decided who the design consultant will be. The selected consultant will prepare the health and safety plan.

B.7 **Issue:** When is work expected to begin? The project probably won't start until 1999, correct? When will the wells be dug?

Response: It is anticipated that design will begin in the spring of 1998 with the construction of the remedy to begin in 1999. It should not take more than one construction season to complete the remedy. The wells will be installed as part of the predesign field work (likely 1998).

C. Issues Regarding Health and Safety

C.1 **Issue:** Is there an existing site safety plan? We (local fire company) would like to receive the site safety plan when the project goes out to bid.

Response: A site safety plan was prepared to cover the site investigation and the tasks conducted during the investigation. A new site Health and Safety plan will be developed for the remedial action. A copy will be made available at that time.

C.2 **Issue:** What level of protection will you use?

Response: The level of protection used during construction will depend on the potential for contact with hazardous materials and the conditions measured in the field during work. During most of the investigation Level D was used. Level D is basic protection consisting of steel toed boots, eye protection, gloves, and hardhat, as needed.

C.3 **Issue:** What would you say to someone wanting to move into the Norwood/Fairmont block area?

Response: With regard to contamination from the site, we have no reason to discourage anyone interested in moving into this area. The investigations conducted at the site did not identify any completed pathways for site contamination to reach residents in this area.

C.4 **Issue:** Are there known health ramifications from the site as of yet?

Response: We have no knowledge of any health impacts relating to this site.

C.5 **Issue:** Have you sought out health effects information from residences instead of waiting for people to report it?

Response: As was stated at the public meeting, local residents have not been surveyed for health effects information because the results of the environmental investigations conducted to date for this site do not indicate that off-site receptors are likely to be exposed to site related contaminants.

D. Issues Regarding the OU-1 Remedy

Many of the questions asked at the meeting for the OU-2 proposed remedy were about the shallow soils and groundwater which are part of OU-1. Although these questions were addressed at the meeting and are shown below, they are not directly relevant to the selection of the OU-2 remedy.

D.1 **Issue:** Did you consider if the open lot on the south side of Anderson was a source of contamination? Soil contamination was found there, and it was rumored that they stored stuff there. Was the metals contamination found there concentrated in one area? Do you plan to clean up that area?

Response: The open lot is not likely to be a source of the groundwater contamination. If it were a source area we would expect to see contamination in the shallow wells located there and they are clean, only the deep wells are contaminated. The metals (chromium) contamination was very localized and its removal is part of the Operable Unit 1 selected remedy.

D.2 **Issue:** Are the air sparging wells still there?

Response: The air sparging wells are part of the Operable Unit 1(OU-1) selected remedy. They have not yet been installed. We anticipate that the construction will begin during the 1999 construction season.

D.3 **Issue:** Will there be an odor from the remediation work? Have you looked at possible exposures that could occur when you dig up the contaminated soil?

Response: There should be no noticeable odor from the remedial work. During construction air monitoring will be conducted to make sure that no unacceptable releases of either dust or volatile chemicals occurs. If levels exceed pre-determined values, actions will be taken to suppress the release and the procedures being used will be modified. Workers on the site will take appropriate precautions to keep themselves from being exposed to any dangerous levels of contamination.

Vapors collected during operation of the remedy will be treated appropriately before being released to the atmosphere.

D.4 **Issue:** Can we expect storage on site of extracted soil or groundwater? Will any soil be incinerated on site? Should we expect anything to be stored on the site for nine months or more?

Response: No soil or groundwater will be stored onsite during the remediation. There may be days when the soil being excavated will be stockpiled for testing prior to disposal; this will be for a matter of days, not months. None of the site materials will be incinerated onsite, nor do we anticipate incineration of site materials anywhere else.

D.5 **Issue:** Where will the air sparge points be located? Back near where the tanks were? How will you get under the building?

Response: The placement and number of sparging points will be determined during the design of the remedy. They will probably be installed along the back of the building in the areas of highest shallow groundwater contamination. The vapor extraction points will be installed to complement the sparge points. Some of them will be installed through the floor of the building and some in the backyard area. During design, consideration will be given to the possibility of using "horizontal drilling" as one of the installation techniques.

D.6 **Issue:** Someone from an environmental group suggested that it is hazardous to eat vegetables or berries from my backyard. I live two blocks down on Delaware. I called the health department to try and confirm this but got no response.

Response: It would be extremely unlikely to find any contamination from the Davis-Howland site at such a distance from the site. Even in the immediate area of the site, shallow groundwater contamination is at or near undetectable levels once you cross Anderson and other that one small spot at the corner of Norwood and Anderson, soil contamination is restricted to the rear of the site.

D.7 **Issue:** I live across the street from the parking lot on Anderson. Should I take any precautions when the kids go out to ride their bikes or play in the open lots?

Response: It would clearly be advisable to stay off the actual site (don't climb any fences around either the site or the railroad right-of-way). As far as areas outside the site go, basic hygienic practices, like hand washing, are advisable, as they would be in any urban area. Transfer of soil, by children, from their hands to their mouths, should be avoided.

D.8 **Issue:** Regarding the question about if it is safe to eat vegetables - is there also no threat to the Fairmont/Norwood block?

Response: The significant soil contamination is found in the area behind the site. The only identified site soil contamination outside that area, was at the corner of Norwood and Anderson, in a very small area. The contamination found in bedrock groundwater is too deep to be taken up by garden plants.

D.9 **Issue:** Were the heavy metals only found in two areas of the site? Were they the carcinogenic form of chromium? Are all types of chromium carcinogenic? Did you find concentrations of metals in shallow soil?

Response: Many metals occur naturally as a component of most soils. Most of the metals detected at this site were found at concentrations typical for urban areas. Chromium, cadmium, and lead were found at levels of concern near soil samples 7 and 9 (DHSS 7 and 9). DHSS-9 is located near the corner of Anderson and Norwood and had elevated levels of chromium. Phase II sampling of the soil found the soil with elevated chromium to be extremely localized. This spot is also covered with grass, further decreasing the likelihood of contact. The contaminated soil will be removed as part of the OU-1 remedy. DHSS-7, located behind the buildings, had elevated cadmium, lead, and mercury levels. Hexavalent chromium (Cr+6) is a suspected carcinogen. It is unlikely that it would be found in this form under the oxidizing conditions found on the ground surface and we did not specifically test for it.

EXHIBIT B
ADMINISTRATIVE RECORD
Davis-Howland Oil Corporation Site
Operable Unit No. 2: Bedrock Groundwater
Monroe County
8-28-088

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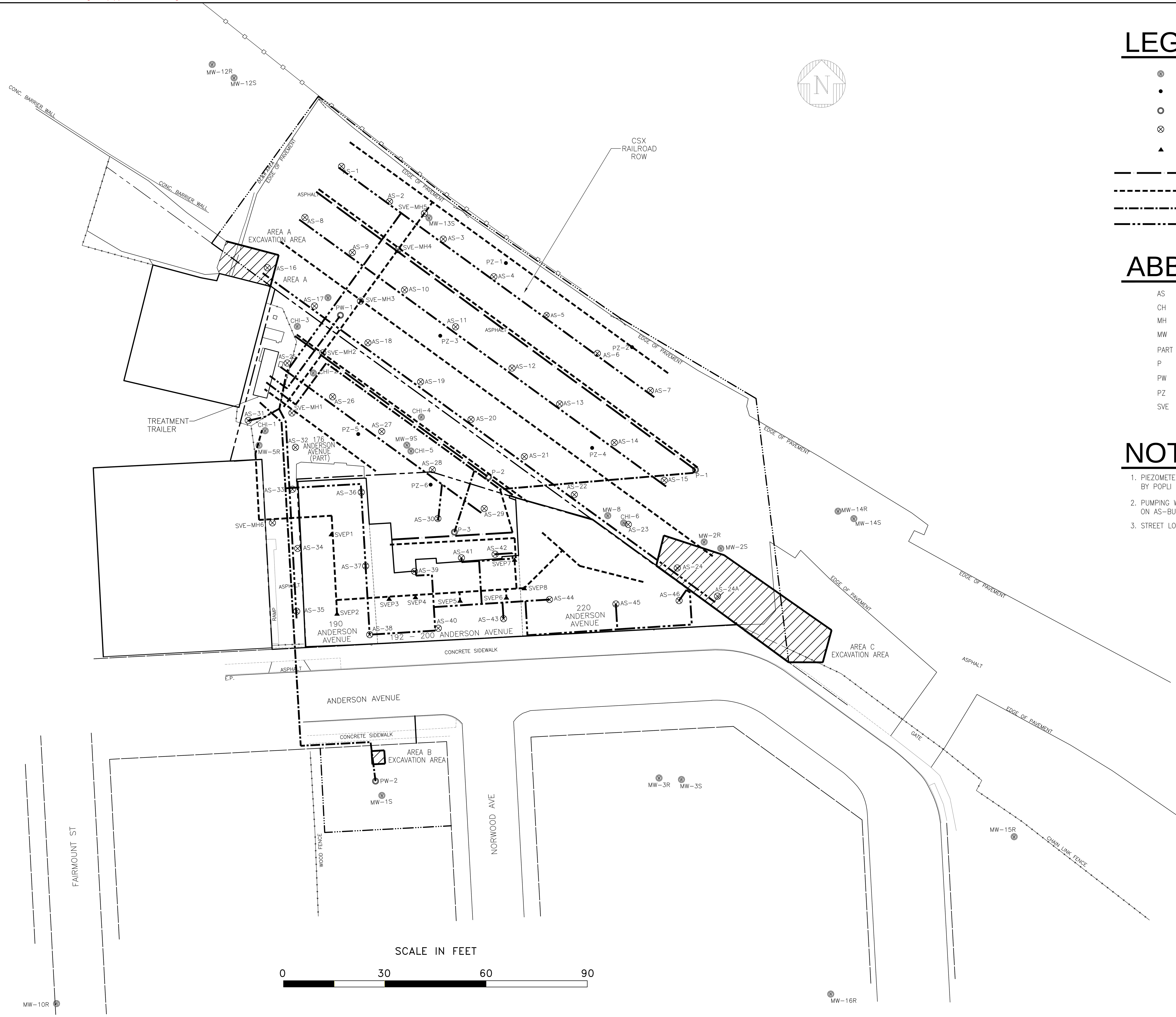
1. Record of Decision 03/98
2. Proposed Remedial Action Plan 01/98
3. Phase II Remedial Investigation (RI) Report 10/97
4. Referral for Completion of RI/FS, J. Lacey to M. O'Toole 04/30/93
5. Remedial Investigation (RI) Report, Volumes I, II, III, and IV 10/96
6. Feasibility Study (FS) Report 03/97
7. RI/FS Work Plan 03/95
8. Citizen Participation Plan, prepared by NYSDEC 05/95
9. Soil Investigation Report, prepared by Dunn Geoscience 11/26/91
10. Relevant Correspondence

    - G.A. Carlson to M.J. O'Toole, NYSDOH PRAP concurrence letter 01/13/98

    - G.A. Carlson to M.J. O'Toole, NYSDOH ROD concurrence letter 03/98

C Site Plan

F:\Davis NY02\2012\Summary of remedial activities figure\Appendix A-1.dwg



LEGEND

⊗	MONITORING WELL
•	PIEZOMETER
○	PUMPING WELL
⊗	AIR SPARGE POINT
▲	SOIL VAPOR EXTRACTION POINT
— — —	SHALLOW GW PUMPING WELL COLLECTION TRENCH
- - - -	SOIL VAPOR EXTRACTION COLLECTION TRENCH/LINE
—··—	PUMPING WELL LINES
—·—	AIR SPARGE LINES

ABBREVIATIONS

AS	AIR SPARGE
CH	CLEAN HARBOR
MH	MANHOLE
MW	MONITORING WELL
PART	PARTIAL
P	SHALLOW OVERBURDEN GROUNDWATER PUMPING WELLS
PW	BEDROCK GROUNDWATER PUMPING WELLS
PZ	PIEZOMETER
SVE	SOIL VAPOR EXTRACTION

NOTES

1. PIEZOMETERS, MONITORING WELLS, BUILDINGS AND PROPERTY LINES ARE BASED ON A SURVEY BY POPLI DESIGN GROUP, ARCHITECTURE AND ENGINEERING P.C. DATED DEC 7, 2012.
2. PUMPING WELL LINES, SOIL VAPOR EXTRACTION LINES AND AIR SPARGE LINES BASED ON AS-BUILT DRAWINGS BY ECOLOGY AND ENVIRONMENT P.C DATED NOVEMBER 2006.
3. STREET LOCATIONS ARE APPROXIMATE.

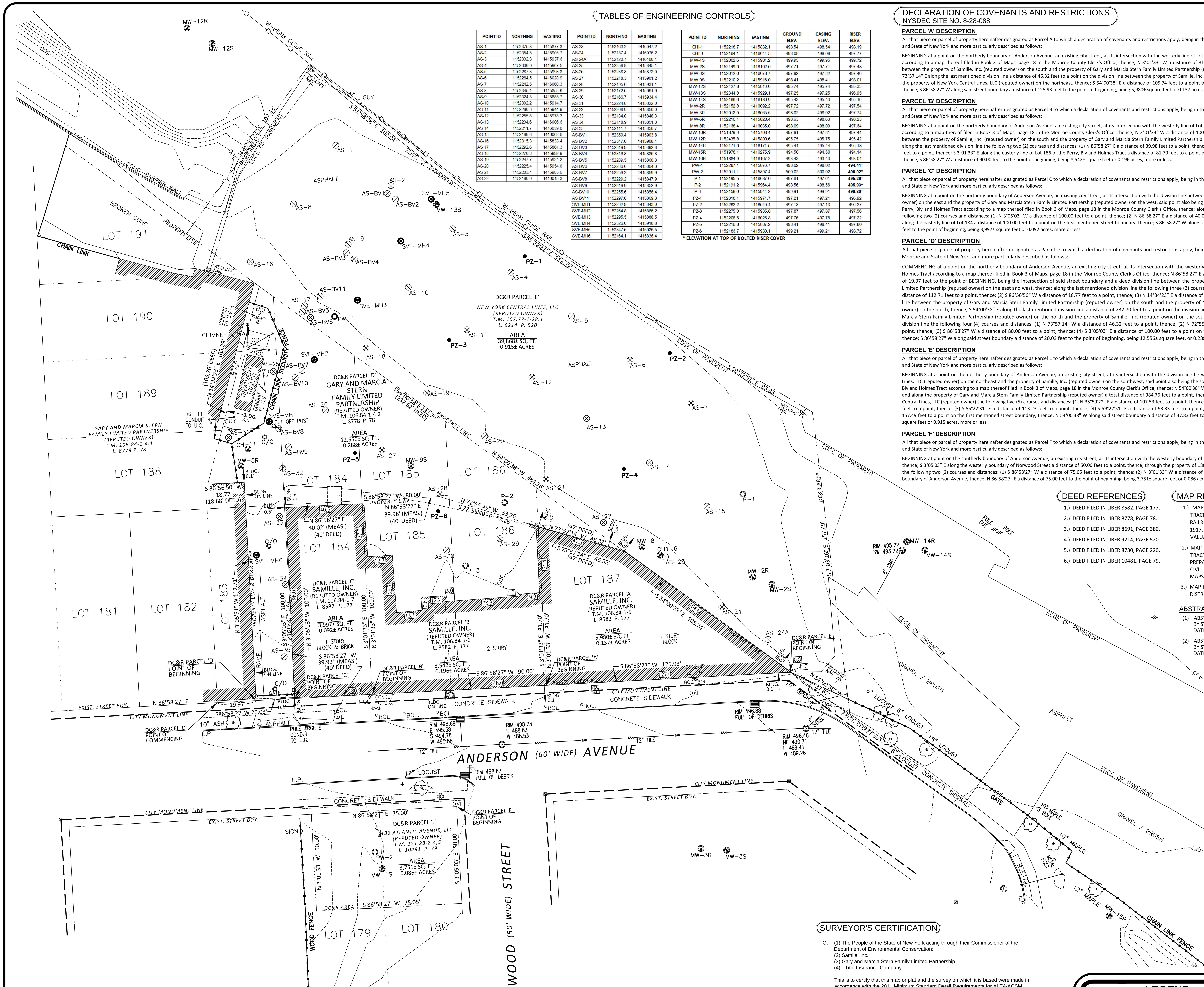
ecology and environment engineering p.c.

APPENDIX A-1

SITE PLAN
FORMER DAVIS HOWLAND OIL CORPORATION SITE
MONROE COUNTY, ROCHESTER, NY

D

Deed Restriction/Environmental Notices



TABLES OF ENGINEERING CONTROLS

POINT ID	NORTHING	EASTING
AS-1	1152375.3	1415877.3
AS-2	1152354.5	1415905.7
AS-3	1152332.3	1415937.6
AS-4	1152309.9	1415967.5
AS-5	1152287.3	1415998.8
AS-6	1152264.5	1416028.9
AS-7	1152242.5	1416060.3
AS-8	1152345.1	1415855.6
AS-9	1152324.3	1415883.7
AS-10	1152302.2	1415914.7
AS-11	1152280.3	1415944.9
AS-12	1152255.8	1415978.3
AS-13	1152234.6	1416006.6
AS-14	1152211.7	1416039.0
AS-15	1152189.3	1416068.6
AS-16	1152315.3	1415833.4
AS-17	1152292.6	1415861.3
AS-18	1152270.8	1415892.9
AS-19	1152247.7	1415924.2
AS-20	1152225.4	1415954.0
AS-21	1152203.4	1415985.6
AS-22	1152180.9	1416015.3

POINT ID	NORTHING	EASTING
AS-23	1152163.2	1416047.2
AS-24	1152137.4	1416076.2
AS-24A	1152120.7	1416100.1
AS-25	1152258.8	1415845.1
AS-26	1152238.8	1415872.0
AS-27	1152218.3	1415901.2
AS-28	1152195.6	1415931.1
AS-29	1152172.6	1415961.9
AS-30	1152166.7	1415934.4
AS-31	1152224.8	1415822.0
AS-32	1152208.9	1415850.0
AS-33	1152184.0	1415848.3
AS-34	1152148.9	1415851.3
AS-35	1152111.7	1415850.7
AS-BV1	1152350.4	1415903.8
AS-BV2	1152347.6	1415908.1
AS-BV3	1152319.9	1415882.8
AS-BV4	1152316.8	1415886.8
AS-BV5	1152289.5	1415860.3
AS-BV6	1152286.6	1415864.3
AS-BV7	1152259.2	1415859.9
AS-BV8	1152229.2	1415847.9
AS-BV9	1152219.9	1415852.9
AS-BV10	1152255.6	1415856.4
AS-BV11	1152297.6	1415869.3
SVE-MH1	1152232.9	1415843.0
SVE-MH2	1152264.8	1415866.2
SVE-MH3	1152295.5	1415888.5
SVE-MH4	1152326.0	1415910.8
SVE-MH5	1152347.6	1415926.5
SVE-MH6	1152164.1	1415836.4

POINT ID	NORTHING	EASTING	GROUND ELEV.	CASING ELEV.	RISER ELEV.
CHI-1	1152218.7	1415832.1	498.54	498.54	498.19
CHI-6	1152164.1	1416044.5	498.08	498.08	497.77
MW-1S	1152002.6	1415901.2	499.95	499.95	499.72
MW-2S	1152149.0	1416102.0	497.71	497.71	497.48
MW-3S	1152012.0	1416078.7	497.82	497.82	497.46
MW-9S	1152210.2	1415916.0	498.41	498.41	498.01
MW-12S	1152427.8	1415813.6	495.74	495.74	495.33
MW-13S	1152344.8	1415929.1	497.25	497.25	496.95
MW-14S	1152166.6	1416180.9	495.43	495.43	495.16
MW-2R	1152152.8	1416092.2	497.72	497.72	497.54
MW-3R	1152012.9	1416065.5	498.02	498.02	497.74
MW-5R	1152210.1	1415828.4	498.63	498.63	498.23
MW-8R	1152168.4	1416035.0	498.09	498.09	497.64
MW-10R	1151879.3	1415708.4	497.81	497.81	497.44
MW-12R	1152435.8	1415800.6	495.75	495.75	495.42
MW-14R	1152171.0	1416171.5	495.44	495.44	495.18
MW-15R	1151978.1	1416275.9	494.50	494.50	494.14
MW-16R	1151884.9	1416167.2	493.43	493.43	493.04
PW-1	1152287.1	1415876.7	498.02	498.02	**494.41***
PW-2	1152011.1	1415897.4	500.02	500.02	**496.92***
P-1	1152195.5	1416087.0	497.61	497.61	**495.26***
P-2	1152191.2	1415964.4	498.56	498.56	**495.93***
P-3	1152158.6	1415944.2	499.91	499.91	**496.80***
PZ-1	1152318.1	1415974.7	497.21	497.21	496.92
PZ-2	1152268.2	1416049.4	497.13	497.13	496.87
PZ-3	1152275.0	1415935.8	497.87	497.87	497.56
PZ-4	1152208.5	1416025.8	497.76	497.76	497.22
PZ-5	1152216.8	1415887.2	498.41	498.41	497.80
PZ-6	1152186.7	1415930.1	499.21	499.21	498.72

*** ELEVATION AT TOP OF BOLTED RISER COVER**

DECLARATION OF COVENANTS AND RESTRICTIONS
NYSDEC SITE NO. 8-28-088

PARCEL 'A' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel A to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 187 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 3°01'33" W a distance of 81.70 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the south and the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the north, thence; S 73°57'14" E along the last mentioned division line a distance of 46.32 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the southwest and the property of New York Central Lines, LLC (reputed owner) on the northeast, thence; S 54°00'38" E a distance of 105.74 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W along said street boundary a distance of 125.93 feet to the point of beginning, being 5,980± square feet or 0.137 acres, more or less.

PARCEL 'B' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel B to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 185 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 3°01'33" W a distance of 100.00 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the south and the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the north, thence; along the last mentioned division line the following two (2) courses and distances: (1) N 86°58'27" E a distance of 39.98 feet to a point, thence; (2) S 72°55'49" E a distance of 53.26 feet to a point, thence; S 3°01'33" E along the easterly line of Lot 186 of the Perry, Bly and Holmes Tract a distance of 81.70 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W a distance of 90.00 feet to the point of beginning, being 8,542± square feet or 0.196 acres, more or less.

PARCEL 'C' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel C to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the division line between the property of Samille, Inc. (reputed owner) on the east and the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the west, said point also being the southwest corner of Lot 184 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; along the last mentioned division line the following two (2) courses and distances: (1) N 3°05'03" W a distance of 100.00 feet to a point, thence; (2) N 86°58'27" E a distance of 40.02 feet to a point, thence; S 3°01'33" E along the easterly line of Lot 184 a distance of 100.00 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W along said street boundary a distance of 39.92 feet to the point of beginning, being 3,997± square feet or 0.092 acres, more or less.

PARCEL 'D' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel D to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

COMMENCING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 183 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 86°58'27" E along said street boundary a distance of 19.97 feet to the point of BEGINNING, being the intersection of said street boundary and a deed division line between the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the east and west, thence; along the last mentioned division line the following three (3) courses and distances: (1) N 03°05'51" W a distance of 112.71 feet to a point, thence; (2) S 86°56'50" W a distance of 18.77 feet to a point, thence; (3) N 14°34'23" E a distance of 105.29 feet to a point on the division line between the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the south and the property of New York Central Lines, LLC (reputed owner) on the north, thence; S 54°00'38" E along the last mentioned division line a distance of 232.70 feet to a point on the division line between the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the north and the property of Samille, Inc. (reputed owner) on the south, thence; along the last mentioned division line the following four (4) courses and distances: (1) N 73°57'14" W a distance of 46.32 feet to a point, thence; (2) N 72°55'49" W a distance of 53.26 feet to a point, thence; (3) S 86°58'27" W a distance of 80.00 feet to a point, thence; (4) S 3°05'03" E a distance of 100.00 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W along said street boundary a distance of 20.03 feet to the point of beginning, being 12,556± square feet, or 0.288 acres, more or less.

PARCEL 'E' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel E to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the division line between the property of New York Central Lines, LLC (reputed owner) on the northeast and the property of Samille, Inc. (reputed owner) on the southwest, said point also being the southeast corner of Lot 187 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 54°00'38" W along the last mentioned division line and along the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) a total distance of 384.76 feet to a point, thence; through the property of New York Central Lines, LLC (reputed owner) the following five (5) courses and distances: (1) N 35°59'22" E a distance of 107.53 feet to a point, thence; (2) S 51°58'28" E a distance of 109.04 feet to a point, thence; (3) S 55°22'31" E a distance of 113.23 feet to a point, thence; (4) S 59°22'51" E a distance of 93.33 feet to a point, thence; (5) S 7°03'26" E a distance of 157.49 feet to a point on the first mentioned street boundary, thence; N 54°00'38" W along said street boundary a distance of 37.83 feet to the point of beginning, being 39,868± square feet or 0.915 acres, more or less

PARCEL 'F' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel F to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at point on the southerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly boundary of Norwood Street, an existing city street, thence; S 3°05'03" E along the westerly boundary of Norwood Street a distance of 50.00 feet to a point, thence; through the property of 186 Atlantic Avenue, LLC (reputed owner) the following two (2) courses and distances: (1) S 86°58'27" W a distance of 75.05 feet to a point, thence; (2) N 3°01'33" W a distance of 50.00 feet to a point on the southerly boundary of Anderson Avenue, thence; N 86°58'27" E a distance of 75.00 feet to the point of beginning, being 3,751± square feet or 0.086 acres, more or less.

DEED REFERENCES

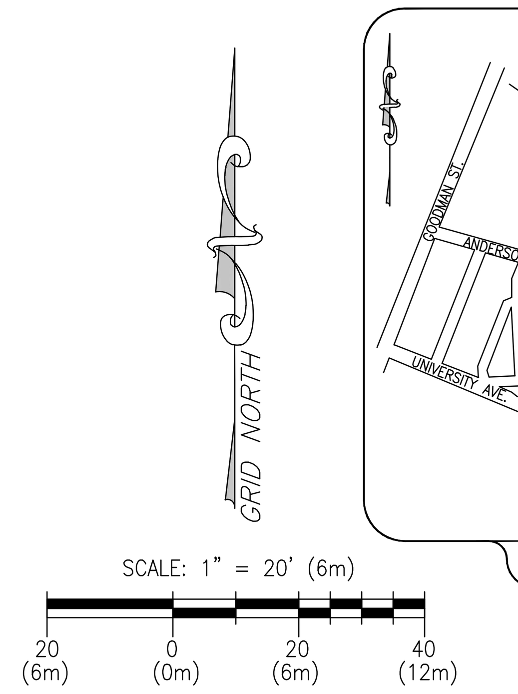
1.) DEED FILED IN LIBER 8582, PAGE 177.
2.) DEED FILED IN LIBER 8778, PAGE 78.
3.) DEED FILED IN LIBER 8691, PAGE 380.
4.) DEED FILED IN LIBER 9214, PAGE 520.
5.) DEED FILED IN LIBER 8730, PAGE 220.
6.) DEED FILED IN LIBER 10481, PAGE 79.

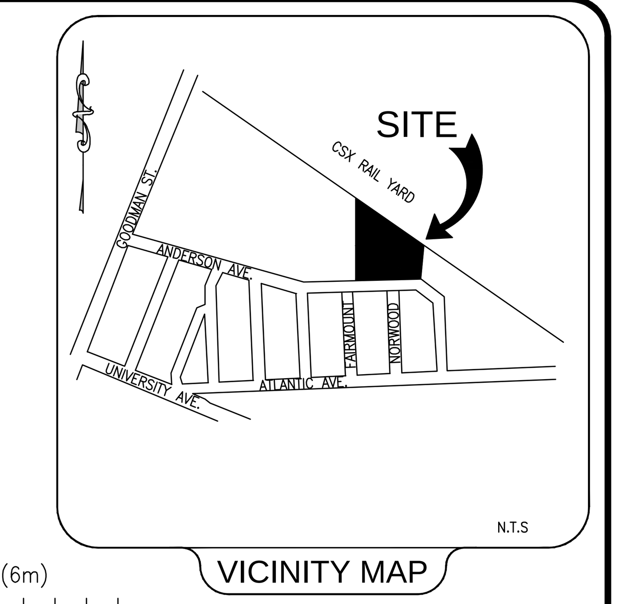
MAP REFERENCES

1.) MAP ENTITLED "RIGHT OF WAY AND TRACK MAP NEW YROK CENTRAL RAILROAD - V76/3", DATED JUNE 30, 1917, PREPARED BY OFFICE OF THE VALUATION ENGINEER (NYCRR).
2.) MAP ENTITLED "PERRY, BLY & HOLMES TRACT" DATED AUGUST 1, 1871, PREPARED BY CHARLES R. BABBITT, CITY CIVIL ENGINEER, FILED IN LIBER 3 OF MAPS, PAGE 18.
3.) MAP ENTITLED "ROCHESTER CITY SURVEY DISTRICT 26 MAP 16.

ABSTRACTS OF TITLE

(1) ABSTRACT OT TITLE NO. 174327, PREPARED BY STEWART TITLE INSURANCE COMPANY, DATED OCTOBER 23, 2012.
(2) ABSTRACT OT TITLE NO. 174328, PREPARED BY STEWART TITLE INSURANCE COMPANY, DATED OCTOBER 23, 2012.





VICINITY MAP

This property is subject to a Declaration of Covenants and Restrictions (DC&R) held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law.

THE ENGINEERING AND INSTITUTIONAL CONTROLS for the DC&R are set forth in more detail in the Site Management Plan ("SMP"). A copy of the SMP must be obtained by any party with an interest in the property. The SMP may be obtained from the New York State Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@gw.dec.state.ny.us.

Restrictions to Parcels A, B and C

- Compliance with the Declaration of Covenants & Restrictions and the SMP by the Grantor and the Grantor's Successors and assigns;
- All Engineering Controls must be operated and maintained as specified in the SMP;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP;
- Groundwater, soil vapor and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- The use and development of the site is limited to industrial uses only as described in 6 NYCRR Part 375-1.8(g)(2)(iv).
- The property may not be used for higher level of use, such as unrestricted or restricted residential or commercial use without additional remediation and amendment of the DC&R , 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 groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed on Parcels A, B, C, D, E and F and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- Land Use Restriction- The use and development of the site is limited to industrial uses only as defined in 6 NYCRR Part 375 1.8(g)(2)(iv).

DC&R AREA ACCESS

THE DEC OR THEIR AGENT MAY ACCESS THE RESTRICTED AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT

SURVEYOR'S CERTIFICATION

TO: (1) The People of the State of New York acting through their Commissioner of the Department of Environmental Conservation;
(2) Samile, Inc.
(3) Gary and Marcia Stern Family Limited Partnership
(4) - Title Insurance Company -

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 4, 7a, 8, 11a and 13 of Table A thereof. The field work was completed on November 14, 2012.

Date of Plat or Map: December 7, 2012

DRAFT

JEFFREY F. PHILLIPS, LS 50773
FOR: POPLI DESIGN GROUP
555 Penbrooke Drive
Penfield, NY 14526
Phone: 585-388-2060

SURVEY NOTES

1. COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (CORS) - NEW YORK STATE PLANE COORDINATE SYSTEM, WEST ZONE.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. MAPPING UNITS ARE U.S. SURVEY FEET.
4. THE CONTOUR INTERVAL IS 1 FOOT.
5. UTILITIES SHOWN HEREON ARE BASED ON VISIBLE EVIDENCE. THE UNDERGROUND POSITION OF ALL UTILITIES SHOWN SHOULD BE CONSIDERED APPROXIMATE.

LEGEND

MONITORING WELL	STORM DRAIN MANHOLE
PIEZOMETER	CATCH BASIN
PUMPING WELL	ELECTRIC MANHOLE
AIR SPARGE	BOL. BOLLARD / POST
SOIL VAPOR EXTRACTION	CITY MONUMENT
GAS VALVE	48.0 BUILDING DIMENSION
WATER VALVE	U.G. UNDER GROUND
C/O CLEAN OUT	
SANITARY SEWER MANHOLE	

SURVEY BY:

PREPARED FOR:

T:\Proposals\Survey\1_company logos_EcologyLogo.jpg

SURVEYOR JOB NUMBER:	EN4024.04
SURVEY CREW	W. STRATTON, N. DUNN
DRAWN BY:	W. STRATTON
CHECKED BY:	J. PHILLIPS

REVISIONS

ALTA/ACSM Land Title Survey

FOR THE PROPERTIES OF

SAMILLE, INC.
(#190, #192-200 & #220 ANDERSON AVENUE
T.M. 106.84-1-5,6,7)

AND

GARY AND MARCIA STERN FAMILY LIMITED PARTNERSHIP
(#188 ANDERSON AVENUE
T.M. 106.84-1-4.2)

City of Rochester, County of Monroe, State of New York

SCALE: 1" = 20'   DATE: DECEMBER 19, 2012

Davis-Howland Oil Corporation Site
Site No. 828088
200 Anderson Avenue
Rochester, Monroe County, NY
Tax Map ID: 106.84-1-6

ENVIRONMENTAL NOTICE

THIS ENVIRONMENTAL NOTICE is made the 8th day of August 2013, by the New York State Department of Environmental Conservation (Department), having an office for the transaction of business at 625 Broadway, Albany, New York 12233

WHEREAS, a parcel of real property identified as Davis-Howland Oil Corporation (Site 828088), located on 200 Anderson Avenue in the City of Rochester, County of Monroe, State of New York, which is part of lands conveyed by Davis-Howland Oil Corp to Samille Inc. by deed dated 01/28/1995 and recorded in the Monroe County Clerk's Office on 03/01/1995 in Book 8582 of Deeds at Page 177 and being more particularly described in Appendix "A", attached to this noticed and made a part hereof, and hereinafter referred to as " the Property" and is the subject of a remedial program performed by the Department; and

WHEREAS, the Department approved a cleanup to address contamination disposed at the Property and such cleanup was conditioned upon certain limitations.

NOW, THEREFORE, the Department provides notice that:

FIRST, the Property subject to this Environmental Notice is as shown on a map attached to this Notice as Appendix "B" as Parcel B and made a part hereof.

SECOND, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsequently created to protect the environment of the State and the health of the State's citizens, hereinafter referred to as "the Relevant Agency," is first obtained, where contamination remains at the Property subject to the provisions of the Site Management Plan ("SMP"), there shall be no disturbance or excavation of the Property which threatens the integrity of the engineering controls or which results or may result in a significantly increased threat of harm or damage at any site as a result of exposure to soils. A violation of this provision is a violation of 6 NYCRR 375-1.11 (b)(2).

THIRD, no person shall disturb, remove, or otherwise interfere with the installation, use, operations, and maintenance of engineering controls required for the Remedy, including but not limited to those engineering controls described in the SMP and listed below, unless in each instance they first obtain a written waiver of such prohibition from the Department or Relevant Agency.

FOURTH, the remedy was designed to be protective for the following uses: Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv). Therefore, any use for purposes other than Industrial without the express written waiver of such prohibition by the Relevant Agency may result in a significantly increased threat of harm or damage at any site.

FIFTH, no person shall use the groundwater underlying the Property without treatment rendering it safe for 'drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the Department or Relevant Agency. Use of the groundwater without appropriate treatment may result in a significantly increased threat of harm or damage at any site.

SIXTH, it is a violation of 6 NYCRR 375-1.11(b) to use the Property in a manner inconsistent with this environmental notice.

IN WITNESS WHEREOF, the undersigned, acting by and though the Department of Environmental Conservation as Designee of the Commissioner, has executed this instrument the day written below.

By: ______________________
Michael J. Ryan, P.E.
Assistant Director
Division of Environmental Remediation

STATE OF NEW YORK)
) ss:
COUNTY OF Albany)

On the 8th day of August, in the year 2013, before me, the undersigned, personally appeared Michael J. Ryan, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his signature on the instrument, the individual, or the person upon behalf of which individual acted, executed the instrument.

____
Notary Public – State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2014

Appendix A

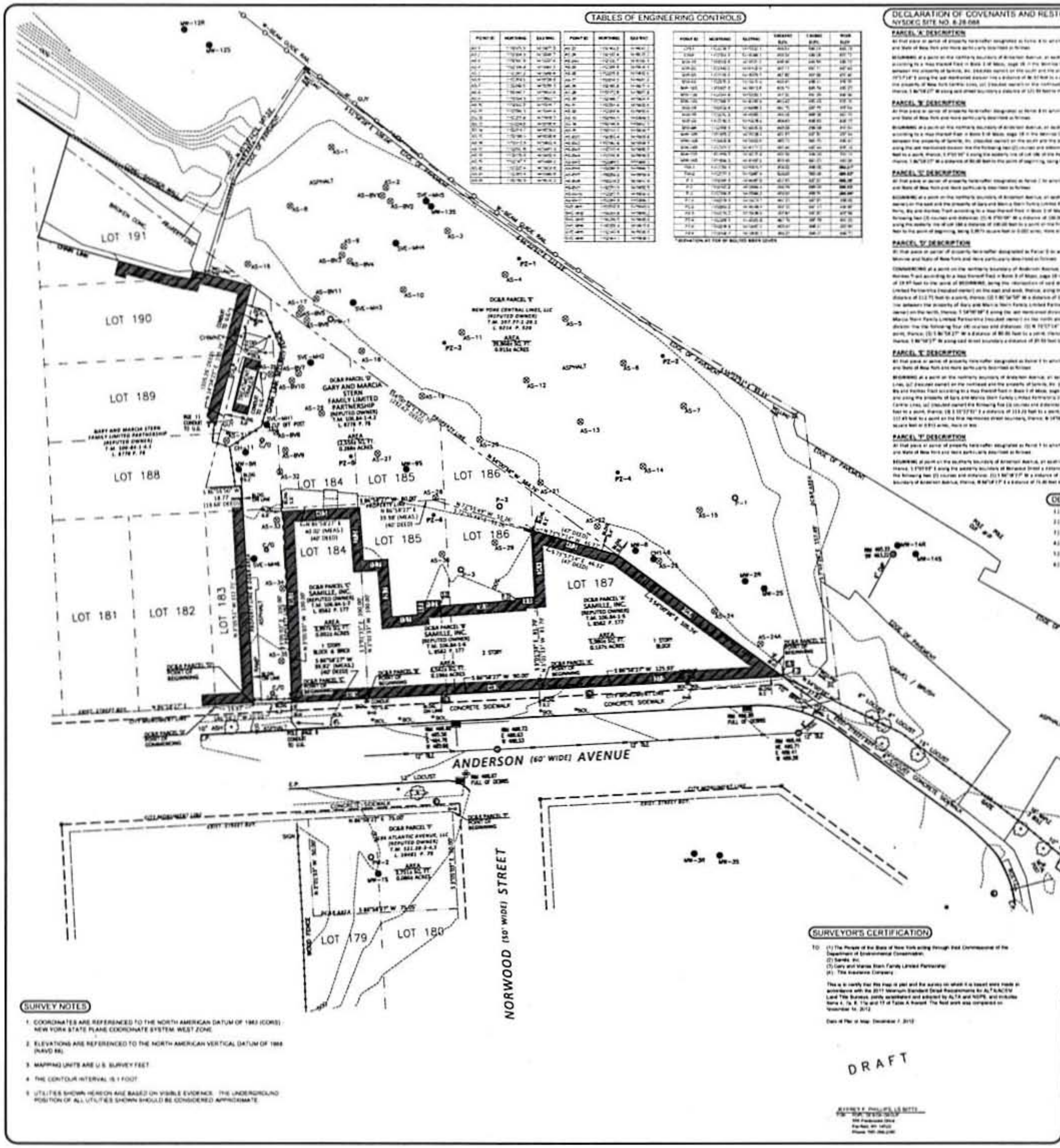
Metes and Bounds Description

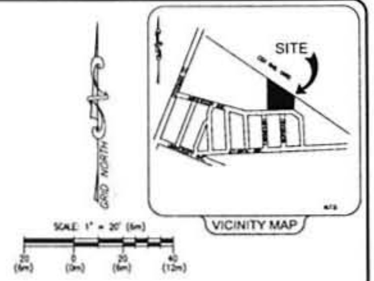
PARCEL 'B' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel B to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 185 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N3° 0 I' 33" W a distance of 100.00 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the south and the property of Gary and Marcia Stem Family Limited Partnership (reputed owner) on the north, thence; along the last mentioned division line the following two (2) courses and distances: (I) N86° 58' 27 "E a distance of 39.98 feet to a point, thence; (2) S 72° 55 49 "E a distance of 53.26 feet to a point, thence; S3° 01 '33" E along the easterly line of Lot 186 of the Perry, Bly and Holmes Tract a distance of 81.70 feet to a point on the first mentioned street boundary, thence; S 86 ° 58 '27" W a distance of 90.00 feet to the point of beginning, being 8,542 +- square feet or 0.196 acres more or less.

Appendix B
Map





This property is subject to a Declaration of Covenants and Restrictions (DC&R) held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law.

THE ENGINEERING AND INSTITUTIONAL CONTROLS for the DC&R are set forth in more detail in the Site Management Plan ("SMP"). A copy of the SMP must be obtained by any party with an interest in the property. The SMP may be obtained from the New York State Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@gw.dec.state.ny.us.

Restrictions to Parcels A, B and C

- Compliance with the Declaration of Covenants & Restrictions and the SMP by the Grantor and the Grantor's Successors and assigns;
- All Engineering Controls must be operated and maintained as specified in the SMP;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP;
- Groundwater, soil vapor and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- The use and development of the site is limited to industrial uses only as described in 6 NYCRR Part 375-1.8(g)(2)(iv).
- The property may not be used for higher level of use, such as unrestricted or restricted residential or commercial use without additional remediation and amendment of the DC&R, 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 groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed on Parcels A, B, C, D, E and F and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- Land Use Restriction- The use and development of the site is limited to industrial uses only as defined in 6 NYCRR Part 375 1.8(g)(2)(iv).

DC&R AREA ACCESS

THE DEC OR THEIR AGENT MAY ACCESS THE RESTRICTED AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT

UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

SURVEY NOTES

1. COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (CORS) NEW YORK STATE PLANE COORDINATE SYSTEM, WEST ZONE.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. MAPPING UNITS ARE U.S. SURVEY FEET.
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LEGEND

MONITORING WELL	STORM DRAIN MANHOLE
PIEZOMETER	CATCH BASIN
PUMPING WELL	ELECTRIC MANHOLE
AIR SPARGE	BOLLARD / POST
SOIL VAPOR EXTRACTION	CITY MONUMENT
GAS VALVE	BUILDING DIMENSION
WATER VALVE	U.G. UNDER GROUND
CLEAN OUT	
SANITARY SEWER MANHOLE	

ALTA/ACSM Land Title Survey

FOR THE PROPERTIES OF

SAMILLE, INC.

(#190, #182-200 & #220 ANDERSON AVENUE T.M. 106.84-1-5,6,7)

AND

GARY AND MARCIA STERN FAMILY LIMITED PARTNERSHIP

(#186 ANDERSON AVENUE T.M. 106.84-1-4.2)

City of Rochester, County of Monroe, State of New York

SCALE: 1" = 20'

DATE: DECEMBER 16, 2012

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 27th day of July, 2017, between Owner(s) Anderson Acquisitions, LLC, having an office at 501 South Clinton Avenue, Rochester, New York 14620, County of Monroe, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 190 Anderson Avenue in the City of Rochester, County of Monroe and State of New York, known and designated on the tax map of the County Clerk of Monroe as tax map parcel numbers: Section 106.840 Block 0001 Lot 007.00, being the same as that property conveyed to Grantor by deed dated February 16, 2017 and recorded in the Monroe County Clerk's Office in Liber and Page 11822/429, and by correction deed dated April 7, 2017 and recorded in the Monroe County Clerk's Office in Liber and Page 11845/69. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.200 +/- acres, and is hereinafter more fully described in the Land Title Survey dated March 1, 2017 prepared by Gary L. Dutton, L.L.S., which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: R8-20161104-114, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

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

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential, Restricted Residential or Commercial purposes as defined in 6NYCRR 375-1.8(g)(i), (ii) and (iii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation

Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: 828088
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the

recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Anderson Acquisitions, LLC:

By: ______________________

Print Name: Thomas Gangemi

Title: member Date: 7/19/17

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Monroe)

On the 19 day of July, in the year 2017, before me, the undersigned, personally appeared Thomas Gangemi, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

____
Notary Public - State of New York

CHARLES J. SANTOLI
Notary Public in the State of New York
Monroe County
Commission Expires 4/4/18

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: ______________________
Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 27 day of July, in the year 2017, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, ~~executed~~ the instrument.

____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

SCHEDULE "A" PROPERTY DESCRIPTION

LOT DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND stuate in the City of Rochester County of Monroe, State of New York, and being more particularly bounded and described as follows:

Commencing at a point on the north right of way line of Anderson Avenue at its intersection with the east line of lands conveyed to GARY I by liber 8691 d. 380; said point also being the intersection of the west line of lot 184 with the north line of Anderson Avenue; thence

1) northerly along a east line of lands of Gary I, a distance of 100.00 feet to a point; thence

2) Easterly, forming an interior angle of 90°-00'-00" , along a south line of said Gary I ,a distance of 40.00 feet, to a point; thence

3) Southerly, forming an interior angle of 90°-00'-00", along a West line of lands conveyed to Samille Inc., a distance of 100.00 feet , to a point on the North right of way line of Anderson Avenue; thence

4) Westerly, forming an interior angle of 90°-00'-00", along the North right of way line of Anderson Avenue, a distance of 40.00 feet to the point of beginning.

Intending to describe a parcel of land containing 4000 square feet of land

Notes

Tax Map Section 106.840 Block 0001 Lot 7.00 (106.840-0001-007.00)

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 3rd day of May, 2018, between Owner(s) 220 Anderson Ave LLC, having an office at 30 West Broad Street, Suite 406, Rochester, New York 14614, County of Monroe, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 192-200 Anderson Avenue in the City of Rochester, County of Monroe and State of New York, known and designated on the tax map of the County Clerk of Monroe as tax map parcel number: Section 106.84 Block 1 Lot 6, being a portion of the property conveyed to Grantor by deed dated November 1, 2017 and recorded in the Monroe County Clerk's Office in Instrument No. 201711010740. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.1964 +/- acres, and is hereinafter more fully described in the Land Title Survey dated April 11, 2017 prepared by Gary L. Dutton, L.L.S., which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, Grantor, is the owner of real property located at the address of 220 Anderson Avenue in the City of Rochester, County of Monroe and State of New York, known and designated on the tax map of the County Clerk of Monroe as tax map parcel number: Section 106.84 Block

1 Lot 5, being a portion of the property conveyed to Grantor by deed dated November 1, 2017 and recorded in the Monroe County Clerk's Office in Instrument No. 201711010740. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.1375 +/- acres, and is hereinafter more fully described in the Land Title Survey dated April 11, 2017 prepared by Gary L. Dutton, L.L.S., which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: R8-20170905-104, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

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

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential, Restricted Residential or Commercial purposes as defined in 6NYCRR 375-1.8(g)(i), (ii) and (iii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:	Site Number: 828088 Office of General Counsel NYSDEC 625 Broadway Albany New York 12233-5500
With a copy to:	Site Control Section Division of Environmental Remediation

NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

220 Anderson Ave LLC:

By: ______________________

Print Name: JOHN NACCA

Title: MANAGING MEMBER Date: 4/25/18

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Monroe)

On the April day of 25, in the year 20 18, before me, the undersigned, personally appeared JOHN NACCA, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

____
Notary Public - State of New York

CHARLES J. SANTOLI
Notary Public in the State of New York
Monroe County
Commission Expires 4/4/22

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: ______________________
Michael J. Ryan, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 3rd day of May, in the year 2018, before me, the undersigned, personally appeared Michael J. Ryan, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature ~~on the~~ instrument, the individual, or the person upon behalf of which the individual ~~acted, executed~~ executed the instrument.

____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

SCHEDULE "A" PROPERTY DESCRIPTION

LEGAL DESCRIPTION 192-200 ANDERSON AVENUE

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Rochester, County of Monroe, State of New York, being part of lots 185 & 186 of the Perry, Bly & Holmes Tract, being more particularly bounded and described as follows:

Commencing at a point on the north right of way line of Anderson Avenue at its intersection with the east line of lands conveyed to GARY I by liber 8691 d. 380; said point also being the southwest corner of lot 184; thence Easterly, along the north right of way line of Anderson Avenue, a distance of 130.00 feet to the southeast corner of lot 186, said point being the true point of beginning of the lands to be herein described; thence

1) Northerly, along the East line of lot 186, a distance of 82.18 feet to a point; thence

2) Northwesterly, forming an interior angle of 109°-37'-10", along a southwesterly line of lands of Gary I., a distance of 53.08 feet to a point; thence

3) Westerly, forming an interior angle of 160°-22'-50", along the south line of Gary I., a distance of 40.00 feet; thence

4) Southerly, forming an interior angle of 90°-00'-00", along the West line of of lot 185, a distance of 100.00 feet to a point on the North right of way line of Anderson Avenue; thence

5) Easterly, forming an interior angle of 90°-00'-00", along the North Right of way line of Anderson Avenue, a distance of 90.00 feet to the point of beginning.

Course (5) forms an interior angle of 90°-00'-00" with course (1)

Intending to describe a parcel of land containing 8554.4 square feet of land or 0.1964 acres more or less.

LEGAL DESCRIPTION 220 ANDERSON AVENUE

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Rochester, County of Monroe, State of New York, being part of lot 187 of the Perry, Bly & Holmes Tract, bounded and described as follows:

Commencing at a point on the north right of way line of Anderson Avenue at its intersection with the east line of lands conveyed to GARY I by liber 8691 d. 380; said point also being the southwest corner of lot 184; thence Easterly, along the North right of way line of Anderson Avenue a distance of 130.00 feet to the Southwest corner of lot 187, said point being the true point of beginning of the lands to be herein described; thence

1) Easterly, along the north line of Anderson Avenue, a distance of 125.95 feet to a point; thence

2) Northwesterly, forming an interior angle of 39°-00'-55". along a Southwesterly line of lands of Goodman Yard LLC, a distance of 105.74 feet to a point; thence

3) Northwesterly, forming an interior angle of 160°-36'-15", along the Southwesterly Line of Gary I., a distance of 46.49 feet; thence

4) Southerly, forming an interior angle of 70°-22'-50", along the west line of lot 187, a distance of 82.18 feet to a point on the North right of way line of Anderson Avenue and the point of beginning.

Course (4) forms an interior angle of 90°-00'-00" with course (1)

Intending to describe a parcel of land containing 5991.36 square feet of land or 0.1375 acres more or less.

ALTA/ACSM Land Title Survey

SURVEY NOTES

1. COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (CORS) - NEW YORK STATE PLANE COORDINATE SYSTEM, WEST ZONE.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. MAPPING UNITS ARE U.S. SURVEY FEET.
4. THE CONTOUR INTERVAL IS 1 FOOT.
5. UTILITIES SHOWN HEREON ARE BASED ON VISIBLE EVIDENCE. THE UNDERGROUND POSITION OF ALL UTILITIES SHOWN SHOULD BE CONSIDERED APPROXIMATE.

TABLES OF ENGINEERING CONTROLS

POINT ID	NORTHING	EASTING
AS-1	1152375.3	1415877.3
AS-2	1152354.5	1415905.7
AS-3	1152332.3	1415937.6
AS-4	1152309.9	1415967.5
AS-5	1152287.3	1415998.8
AS-6	1152264.5	1416028.9
AS-7	1152242.5	1416060.3
AS-8	1152345.1	1415855.6
AS-9	1152324.3	1415883.7
AS-10	1152302.2	1415914.7
AS-11	1152280.3	1415944.9
AS-12	1152255.8	1415978.3
AS-13	1152234.6	1416006.6
AS-14	1152211.7	1416039.0
AS-15	1152189.3	1416068.6
AS-16	1152315.3	1415833.4
AS-17	1152292.6	1415861.3
AS-18	1152270.8	1415892.9
AS-19	1152247.7	1415924.2
AS-20	1152225.4	1415954.0
AS-21	1152203.4	1415985.6
AS-22	1152180.9	1416015.3

POINT ID	NORTHING	EASTING
AS-23	1152163.2	1416047.2
AS-24	1152137.4	1416076.2
AS-24A	1152120.7	1416100.1
AS-25	1152258.8	1415845.1
AS-26	1152238.8	1415872.0
AS-27	1152218.3	1415901.2
AS-28	1152195.6	1415931.1
AS-29	1152172.6	1415961.9
AS-30	1152166.7	1415934.4
AS-31	1152224.8	1415822.0
AS-32	1152208.9	1415850.0
AS-33	1152184.0	1415848.3
AS-34	1152148.9	1415851.3
AS-35	1152111.7	1415850.7
AS-BV1	1152350.4	1415903.8
AS-BV2	1152347.6	1415908.1
AS-BV3	1152319.9	1415882.8
AS-BV4	1152316.8	1415886.8
AS-BV5	1152289.5	1415860.3
AS-BV6	1152286.6	1415864.3
AS-BV7	1152259.2	1415859.9
AS-BV8	1152229.2	1415847.9
AS-BV9	1152219.9	1415852.9
AS-BV10	1152255.6	1415856.4
AS-BV11	1152297.6	1415869.3
SVE-MH1	1152232.9	1415843.0
SVE-MH2	1152264.8	1415866.2
SVE-MH3	1152295.5	1415888.5
SVE-MH4	1152326.0	1415910.8
SVE-MH5	1152347.6	1415926.5
SVE-MH6	1152164.1	1415836.4

POINT ID	NORTHING	EASTING	GROUND ELEV.	CASING ELEV.	RISER ELEV.
CH-1	1152218.7	1415832.1	498.54	498.54	498.19
CH-6	1152164.1	1416044.5	498.08	498.08	497.77
MW-1S	1152002.6	1415901.2	499.95	499.95	499.72
MW-2S	1152149.0	1416102.0	497.71	497.71	497.48
MW-3S	1152012.0	1416078.7	497.82	497.82	497.46
MW-9S	1152210.2	1415916.0	498.41	498.41	498.01
MW-12S	1152427.8	1415813.6	495.74	495.74	495.33
MW-13S	1152344.8	1415929.1	497.25	497.25	496.95
MW-14S	1152166.6	1416180.9	495.43	495.43	495.16
MW-2R	1152152.8	1416092.2	497.72	497.72	497.54
MW-3R	1152012.9	1416065.5	498.02	498.02	497.74
MW-5R	1152210.1	1415828.4	498.63	498.63	498.23
MW-8R	1152168.4	1416035.0	498.09	498.09	497.64
MW-10R	1151879.3	1415708.4	497.81	497.81	497.44
MW-12R	1152435.8	1415800.6	495.75	495.75	495.42
MW-14R	1152171.0	1416171.5	495.44	495.44	495.18
MW-15R	1151978.1	1416275.9	494.50	494.50	494.14
MW-16R	1151884.9	1416167.2	493.43	493.43	493.04
PW-1	1152287.1	1415876.7	498.02	498.02	494.41*
PW-2	1152011.1	1415897.4	500.02	500.02	496.92*
P-1	1152195.5	1416087.0	497.61	497.61	495.26*
P-2	1152191.2	1415964.4	498.56	498.56	495.93*
P-3	1152158.6	1415944.2	499.91	499.91	496.80*
PZ-1	1152318.1	1415974.7	497.21	497.21	496.92
PZ-2	1152268.2	1416049.4	497.13	497.13	496.87
PZ-3	1152275.0	1415935.8	497.87	497.87	497.56
PZ-4	1152208.5	1416025.8	497.76	497.76	497.22
PZ-5	1152216.8	1415887.2	498.41	498.41	497.80
PZ-6	1152186.7	1415930.1	499.21	499.21	498.72

* ELEVATION AT TOP OF BOLTED RISER COVER

DEED REFERENCES

1.) DEED FILED IN LIBER 8582, PAGE 177.
2.) DEED FILED IN LIBER 8778, PAGE 78.
3.) DEED FILED IN LIBER 8691, PAGE 380.
4.) DEED FILED IN LIBER 9214, PAGE 520.
5.) DEED FILED IN LIBER 8730, PAGE 220.
6.) DEED FILED IN LIBER 10481, PAGE 79.
7.) DEED FILED IN LIBER 11444, PAGE 444.
8.) DEED FILED IN LIBER 11693, PAGE 52.

MAP REFERENCES

1.) MAP ENTITLED "RIGHT OF WAY AND TRACK MAP NEW YROK CENTRAL RAILROAD - V76/3", DATED JUNE 30, 1917, PREPARED BY OFFICE OF THE VALUATION ENGINEER (NYCRR).
2.) MAP ENTITLED "PERRY, BLY & HOLMES TRACT" DATED AUGUST 1, 1871, PREPARED BY CHARLES R. BABBITT, CITY CIVIL ENGINEER, FILED IN LIBER 3 OF MAPS, PAGE 18.
3.) MAP ENTITLED "ROCHESTER CITY SURVEY DISTRICT 26 MAP 16.

ABSTRACTS OF TITLE

(1) ABSTRACT OT TITLE NO. 174327, PREPARED BY STEWART TITLE INSURANCE COMPANY, DATED OCTOBER 23, 2012.
(2) ABSTRACT OT TITLE NO. 174328, PREPARED BY STEWART TITLE INSURANCE COMPANY, DATED OCTOBER 23, 2012.

DECLARATION OF COVENANTS AND RESTRICTIONS
NYSDEC SITE NO. 8-28-088

PARCEL 'A' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel A to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 187 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 3°01'33" W a distance of 81.70 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the south and the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the north, thence; S 73°57'14" E along the last mentioned division line a distance of 46.32 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the southwest and the property of New York Central Lines, LLC (reputed owner) on the northeast, thence; S 54°00'38" E a distance of 105.74 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W along said street boundary a distance of 125.93 feet to the point of beginning, being 5,980± square feet or 0.137 acres, more or less.

PARCEL 'B' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel B to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 185 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 3°01'33" W a distance of 100.00 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the south and the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the north, thence; along the last mentioned division line the following two (2) courses and distances: (1) N 86°58'27" E a distance of 39.98 feet to a point, thence; (2) S 72°55'49" E a distance of 53.26 feet to a point, thence; S 3°01'33" E along the easterly line of Lot 186 of the Perry, Bly and Holmes Tract a distance of 81.70 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W a distance of 90.00 feet to the point of beginning, being 8,542± square feet or 0.196 acres, more or less.

PARCEL 'C' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel C to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the division line between the property of Samille, Inc. (reputed owner) on the east and the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the west, said point also being the southwest corner of Lot 184 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; along the last mentioned division line the following two (2) courses and distances: (1) N 3°05'03" W a distance of 100.00 feet to a point, thence; (2) N 86°58'27" E a distance of 40.02 feet to a point, thence; S 3°01'33" E along the easterly line of Lot 184 a distance of 100.00 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W along said street boundary a distance of 39.92 feet to the point of beginning, being 3,997± square feet or 0.092 acres, more or less.

PARCEL 'D' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel D to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

COMMENCING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 183 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 86°58'27" E along said street boundary a distance of 19.97 feet to the point of BEGINNING, being the intersection of said street boundary and a deed division line between the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the east and west, thence; along the last mentioned division line the following three (3) courses and distances: (1) N 03°05'51" W a distance of 112.71 feet to a point, thence; (2) S 86°56'50" W a distance of 18.77 feet to a point, thence; (3) N 14°34'23" E a distance of 105.29 feet to a point on the division line between the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the south and the property of New York Central Lines, LLC (reputed owner) on the north, thence; S 54°00'38" E along the last mentioned division line a distance of 232.70 feet to a point on the division line between the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the north and the property of Samille, Inc. (reputed owner) on the south, thence; along the last mentioned division line the following four (4) courses and distances: (1) N 73°57'14" W a distance of 46.32 feet to a point, thence; (2) N 72°55'49" W a distance of 53.26 feet to a point, thence; (3) S 86°58'27" W a distance of 80.00 feet to a point, thence; (4) S 3°05'03" E a distance of 100.00 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W along said street boundary a distance of 20.03 feet to the point of beginning, being 12,556± square feet, or 0.288 acres, more or less.

PARCEL 'E' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel E to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the division line between the property of New York Central Lines, LLC (reputed owner) on the northeast and the property of Samille, Inc. (reputed owner) on the southwest, said point also being the southeast corner of Lot 187 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 54°00'38" W along the last mentioned division line and along the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) a total distance of 384.76 feet to a point, thence; through the property of New York Central Lines, LLC (reputed owner) the following five (5) courses and distances: (1) N 35°59'22" E a distance of 107.53 feet to a point, thence; (2) S 51°58'28" E a distance of 109.04 feet to a point, thence; (3) S 55°22'31" E a distance of 113.23 feet to a point, thence; (4) S 59°22'51" E a distance of 93.33 feet to a point, thence; (5) S 7°03'26" E a distance of 157.49 feet to a point on the first mentioned street boundary, thence; N 54°00'38" W along said street boundary a distance of 37.83 feet to the point of beginning, being 39,868± square feet or 0.915 acres, more or less

PARCEL 'F' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel F to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at point on the southerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly boundary of Norwood Street, an existing city street, thence; S 3°05'03" E along the westerly boundary of Norwood Street a distance of 50.00 feet to a point, thence; through the property of 186 Atlantic Avenue, LLC (reputed owner) the following two (2) courses and distances: (1) S 86°58'27" W a distance of 75.05 feet to a point, thence; (2) N 3°01'33" W a distance of 50.00 feet to a point on the southerly boundary of Anderson Avenue, thence; N 86°58'27" E a distance of 75.00 feet to the point of beginning, being 3,751± square feet or 0.086 acres, more or less.

This property is subject to a Declaration of Covenants and Restrictions (DC&R) held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law.

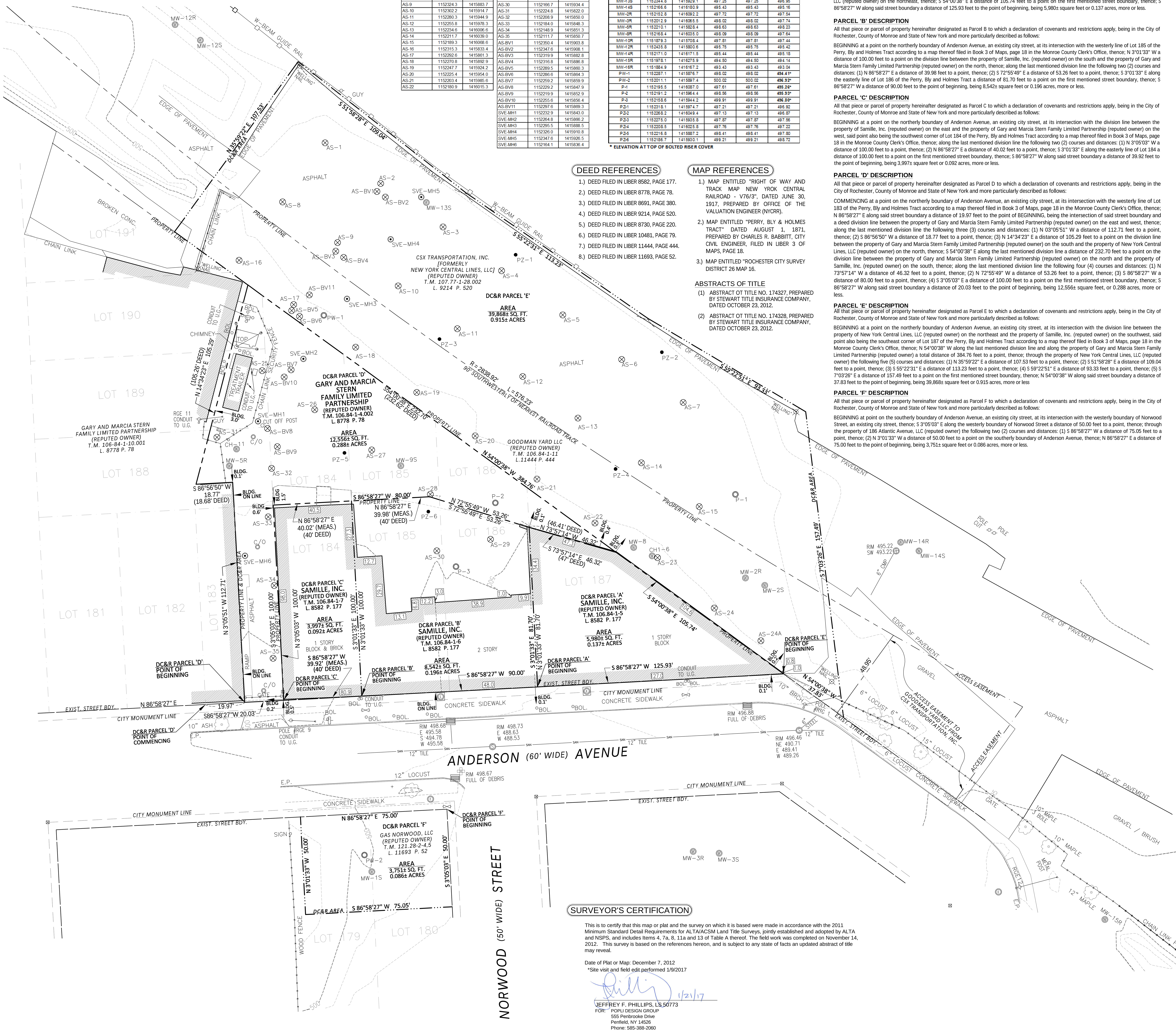
THE ENGINEERING AND INSTITUTIONAL CONTROLS for the DC&R are set forth in more detail in the Site Management Plan ("SMP"). A copy of the SMP must be obtained by any party with an interest in the property. The SMP may be obtained from the New York State Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@gw.dec.state.ny.us.

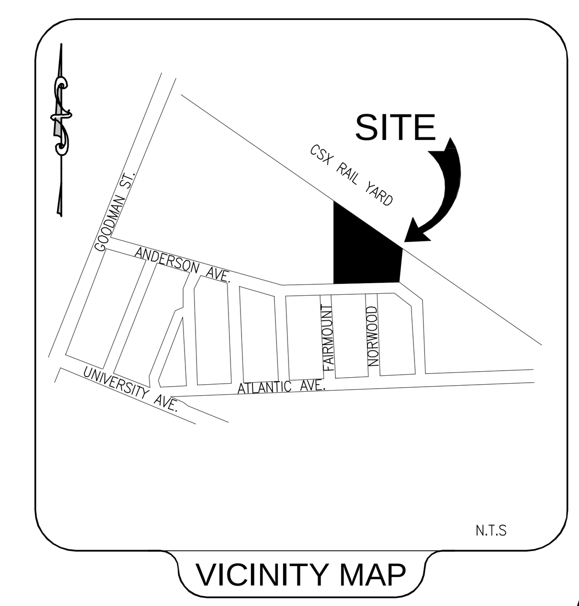
Restrictions to Parcels A, B and C

- Compliance with the Declaration of Covenants & Restrictions and the SMP by the Grantor and the Grantor's Successors and assigns;
- All Engineering Controls must be operated and maintained as specified in the SMP;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP;
- Groundwater, soil vapor and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- The use and development of the site is limited to commercial uses only as described in 6 NYCRR Part 375-1.8(g)(2)(iii).
- The property may not be used for higher level of use, such as unrestricted or restricted residential or commercial use without additional remediation and amendment of the DC&R , 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 groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed on Parcels A, B, C, D, E and F and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- Land Use Restriction- The use and development of the site is limited to industrial uses only as defined in 6 NYCRR Part 375 1.8(g)(2)(iv).

DC&R AREA ACCESS

THE DEC OR THEIR AGENT MAY ACCESS THE RESTRICTED AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT





VICINITY MAP

SURVEYOR'S CERTIFICATION

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 4, 7a, 8, 11a and 13 of Table A thereof. The field work was completed on November 14, 2012. This survey is based on the references hereon, and is subject to any state of facts an updated abstract of title may reveal.

Date of Plat or Map: December 7, 2012
*Site visit and field edit performed 1/9/2017

1/21/17

JEFFREY F. PHILLIPS, LS 50773
FOR: POPLI DESIGN GROUP
555 Penbrooke Drive
Penfield, NY 14526
Phone: 585-388-2060

REVISIONS:		
1	CONFIRM / REVISED TAX ID'S AND OWNERSHIP	1/17
2	UPDATE TOPOGRAPHY AT N.W. CORNER OF MAPPING	1/17
3	REVISE RESTRICTIONS TO COMMERCIAL USE [PREVIOUSLY INDUSTRIAL]	1/17
4		
5		
6		
7		
8		
9		
10		
11		

DRAWN BY: JP
CHECKED BY: RW
DATE: DECEMBER 19, 2012
SCALE: 1" = 20'

STATE OF NEW YORK ★ JEFFREY F. PHILLIPS ★ 050773 LICENSED LAND SURVEYOR

POPLI DESIGN GROUP
555 Penbrooke Drive - Penfield, NY 14526
main: 585.388.2060 - fax 585.388.2070

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

PROJECT
ALTA/ACSM Land Title Survey
FOR THE PROPERTIES OF
SAMILLE, INC. (#190, #192-200 & #220 ANDERSON AVENUE T.M. 106.84-1-5,6,7)
AND
GARY AND MARCIA STERN FAMILY LIMITED PARTNERSHIP (#188 ANDERSON AVENUE T.M. 106.84-1-4.002)
City of Rochester, County of Monroe, State of New York

PROJECT NO. EN4024.04
DRAWING NO.

E CSX Access Agreement

01010-3 1.05.F

Rec'd M.G.P. 4/12/01

M-STEFFAN E&E

CSX TRANSPORTATION

Bob Ratchford
Manager
Contract Administration

500 Water Street, SC J180
Jacksonville, FL 32202-4423
(904) 359-1167
FAX: (904) 359-3665
E-Mail: Robert_Ratchford@csx.com

-9 2001

March 30, 2001

Agreement No. NYC-039294

Mr. David Chiusano
Environmental Engineer
New York Department of Environmental Conservation
50 Wolf Rd.
Albany, NY 12233-7010

Dear Mr. Chiusano:

Attached is fully-executed original of Supplemental Agreement No. NYC-039294, dated February 23, 2001.

If the supplemental agreement involves work within CSXT right of way, it is your responsibility to schedule any modifications or additional installations with CSXT Roadmaster, Telephone: (716) 238-4864 (ideally between the hours of 6:30 AM and 8:30 AM), FAX: (716) 238-4868, at least seven (7) days in advance of the date you desire to commence the project. No work is to be performed on Railroad property without Roadmaster's authorization.

Very truly yours,

Bob Ratchford

Bob Ratchford

Attachment

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENT AGREEMENT, Made as of February 23, 2001, by and between CSX TRANSPORTATION, INC., a Virginia corporation, as Operator for New York Central Lines LLC, a Delaware limited liability company, a wholly-owned subsidiary of Consolidated Rail Corporation, a Pennsylvania corporation, whose mailing address is 500 Water Street, Jacksonville, Florida 32202, hereinafter, jointly called "Railroad," and NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION, a municipal corporation, political subdivision or state agency, under the laws of the State of New York, whose mailing address is 50 Wolf Rd., Albany, New York 12233-7010, hereinafter called "Licensee," WITNESSETH:

This Supplemental Agreement, effective February 23, 2001, will serve to amend Agreement, dated November 17, 2000, between Railroad and Licensee, covering facility(ies), at Rochester, Monroe County, New York, as follows:

Clarify CSXT work area as described in Exhibit B and revised Exhibit A, page 2 of 2, which exhibits are incorporated into and made a part hereof by reference.

Except as provided in this Supplemental Agreement, all other terms and conditions of the Agreement shall remain in effect.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly signed, sealed and delivered in duplicate effective the day and year first above written.

CSX TRANSPORTATION, INC.:

By: ______________________(L.S.)
Sheila W. Bazar
Print/Type Name: Director Property Services

Print/Type Title: ____________________

NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION

By: ______________________(L.S.)

Who, by the execution hereof, affirms that he/she has the authority to do so and to bind the Licensee to the terms and conditions of this Agreement.

Print/Type Name: Richard K. Randles

Print/Type Title: DIRECTOR OF MANAGEMENT & BUDGET

Tax ID Number: 14-601 3200

PJK

FILE

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Western Remedial Action, Room 352
50 Wolf Road, Albany, New York 12233-7010
Phone: (518) 457-0315 • **FAX:** (518)457-3972
Website: www.dec.state.ny.us

RECEIVED
2/11/01

John P. Cahill
Commissioner

POSTED 02-13-01

February 8, 2001

Exhibit B

Mr. Rick Adams
AMEC Earth and Environmental, Inc.
239 Littleton Road
Suite 1B
Westford, MA 01886

ROE: NYDOT
Rochester, NY
EPS. 0029801
TASK No. 5050

OVERNIGHT DELIVERY

Dear Mr. Adams:

**Re: Proposed Clarification: CSXT Right of Entry Agreement NYC-039294
Remediation of the Davis-Howland Site 8-28-088**

As we discussed in our telephone conversation today, enclosed is a proposed revision to Exhibit A (page 2 of 2) to the Right of Entry Agreement. A copy of the agreement is also enclosed. The proposed change is needed to address confusion in this figure regarding which portion of CSXT property the Department needs access to for the purpose of completing the work. The existing figure depicts a boxed area with a label that says "limit of work." This implies that this boxed area is the only portion of CSXT property where we need access. In fact, this boxed area refers to the limits of some paving that is part of the project. As can be seen, the same boxed area is also labeled "Pavement Limit Line." Exhibit A also shows two areas of soil excavation (Area A to the northwest and Area B to the southeast) that are outside of the pavement limit line. Although this implies that our need for access goes beyond the limit of pavement, we would like to remove any uncertainty.

To correct the confusion, the revision to Exhibit A shows an area now labeled as "Work Area - CSXT Property." This more clearly shows the portions of CSXT property where we need access in order to complete the project. To further clarify the area of CSXT property in question, I have also enclosed an excerpt of the "Right of Way and Track Map (Line Code 4800, Milepost 369.0 to 370.0, VAL Section 0760, dated 8-21-91)" showing the area for access.

If you need any other additional information, please contact me at 518-457-0315 or by email at ajenglis@gw.dec.state.ny.us. Thank you for your assistance in this matter.

Sincerely,

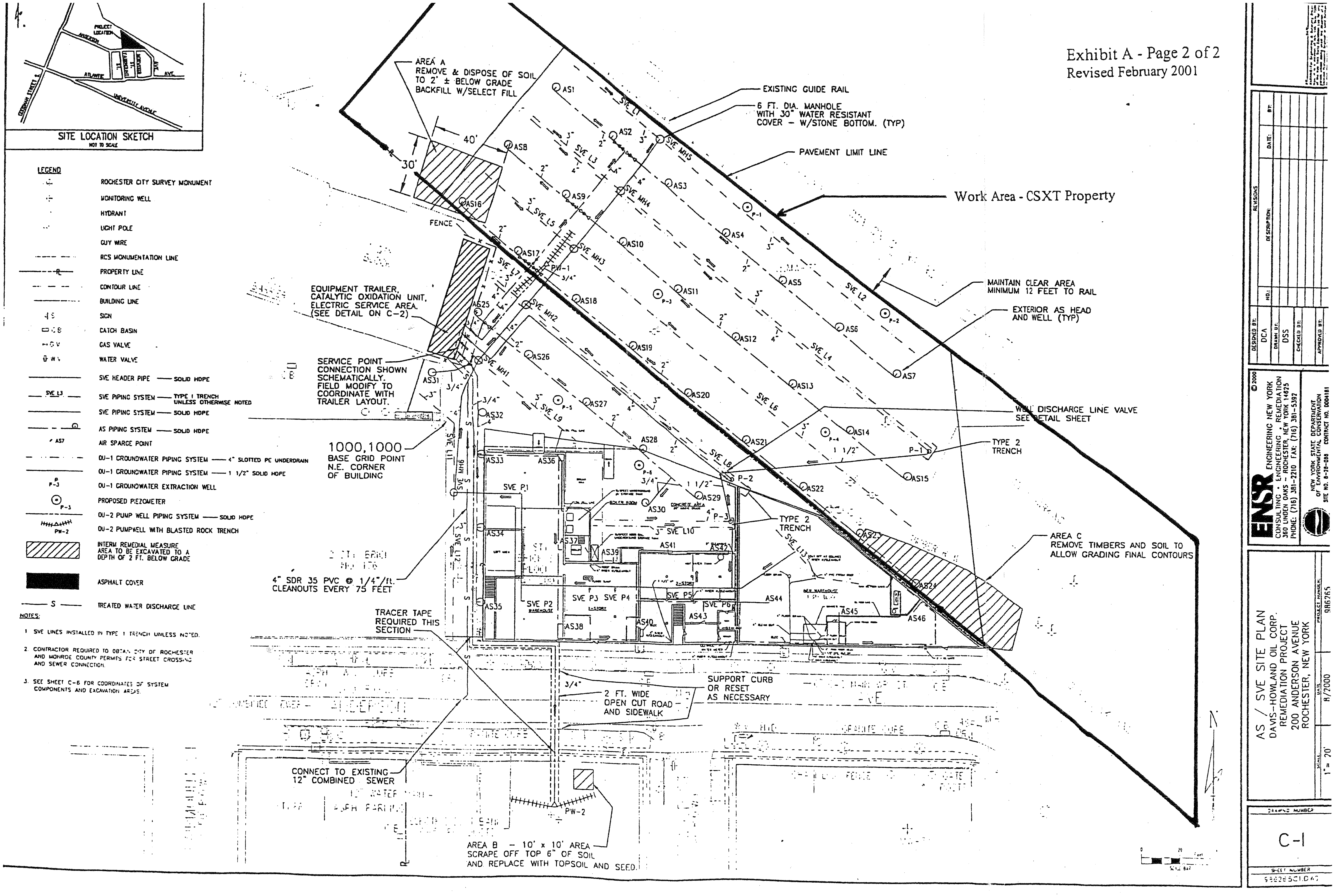
Andrew J. English

Andrew J. English, P.E.
Chief, Remedial Section B

Enclosures

cc: w/enc. D. Chiusano
M. Steffan, E&E Buffalo

Exhibit A - Page 2 of 2
Revised February 2001



ecology and environment engineering, p.c.
International Specialists in the Environment
Buffalo Corporate Center
368 Pleasant View Dr.
Lancaster, New York 14086
Phone: 716-684-8060 Fax: 716-684-0844

Buffalo, New York

RECEIVED
APR 16 2001
LU ENGINEERS

Transmittal Form

WE ARE SENDING TO: Name: Mr. Robert Galasso

Company: LU Engineers

Address: 2230 Penfield Road, Penfield, New York 14526

☒ Attached ☐ Under Separate Cover

___ Prints
___ Project Information
X Shop Drawings
___ Photos
___ Copy of Approvals
___ Samples
___ Change Orders
X Other (explain) ___

Copies	Date	No.	Description
1	4/12/01		CSX / Dec Access Agreement modification

WE ARE TRANSMITTING as checked below:

___ For Approval
___ As Requested
___ For Review and Comment
X For Your Use
___ Returned from Loan
___ Other (explain)
___ Copies for Approval
___ Copies for Distribution
___ Corrected Prints

REMARKS: Bob- This is the copy of the final access agreement for the Davis Howland site from CSX. This should give the contractor plenty of room for operations.

Signed: Michael G. Steffan Dated: 4/12/01
ecology and environment engineering, p.c..

COPY TO: CTF 000699.NY.02
D. Miller, E&E

Ad #1

c. *Section 01010 - Summary of the Work, Article 1.05 USE OF SITE, page 01010-3;* Insert an additional item F. to read as follows, **"Attached, as *Attachment C*, is the material documenting the CSX Transportation, Inc. (CSX) access agreement with the Department. Bidders shall rely on the content of the agreement for all work on CSX property. Contractor shall pay all fees, flagging costs, necessary insurances and incidentals required to complete the work on CSX property. All costs shall be bid and paid under bid item LS-1, Site Preparation."**

ADDENDUM #1
DAVIS HOWLAND OIL CORPORATION
CONTRACT D004181

ATTACHMENT C – CSX ACCESS AGREEMENT

RIGHT-OF-ENTRY:
Request for Access to CSX Transportation, Inc. Property for Certain Environmental Remediation Work

This Right-of-Entry, made and effective as of November 17, 2000, responds to your request for access, application dated July 6, 2000, to conduct certain environmental remediation work on the property of CSX Transportation, Inc. ("Railroad"), at Rochester, Monroe County, New York, as designated on the attached map or drawing (the "Property") (Exhibit A). The environmental remediation work to be performed (the "Work") is part of the remedial action selected for the Davis-Howland Oil Co. Superfund Site, Registry No. 8-28-088, 200 Anderson Avenue, Rochester, New York (the "Site") and is described in Exhibit B.

Railroad hereby grants to New York Department of Environmental Conservation, a municipal corporation, political subdivision or state agency, under the laws of the State of New York, whose mailing address is 50 Wolf Rd., Albany, NY 12233-7010, and its agents, employees, servants, and designated contractor(s) and subcontractor(s), hereinafter called "Licensee," the right and permission to enter upon Railroad property for the sole purpose of performing the Work described in Exhibit B at the Property designated in Exhibit A, which exhibits are incorporated into and made a part hereof by reference, subject to the following terms, conditions and provisions:

1. COST

All costs of the Work shall be borne solely by Licensee.

2. SCHEDULE; DURATION; SCOPE

a. The Work will begin on or around November 30, 2000.

b. Should additional work be required during the term of this Right-of-Entry, Licensee shall provide Railroad written notice and a detailed scope of work for the additional work, and obtain the written approval of the CSXT Project Manager at least fifteen (15) days before Licensee commences such work.

c. Licensee shall not engage in the following activities without first obtaining separate written consent of Railroad:

i. enter upon any property (other than the Property) in which Railroad has an ownership or leasehold interest, regardless of the proximity of such property to the Property; or

ii. perform any work, or engage in any activity other than the Work, while on the Property, regardless of the closeness in nature of such work or activity to the Work.

d. This Right-of-Entry and the license granted herein does not constitute a grant of any permanent easement. Except as otherwise provided in Section 10 herein, this Right-of-Entry may be terminated at any time by either party giving thirty (30) days' written notice to the other for any reason whatsoever.

e. If not terminated earlier, this Right-of-Entry and the permission conferred shall terminate upon receipt by Railroad of Licensee's written notice of completion of the Work, unless extended in writing by Railroad.

3. PERFORMANCE STANDARDS

a. The Work shall be performed in a good and workmanlike manner consistent with the standard of care and practice of environmental professionals; in compliance with all federal, state and local laws, ordinances, rules and regulations, and administrative or judicial decisions and orders; in a manner so as not to disturb the occupancy, business or quiet enjoyment of any other tenants or licensees of Railroad's property; and in a manner so as to avoid harm to person(s) or property or delays to or interference with Railroad's operations.

b. All persons entering the Property pursuant to this Right-of-Entry shall wear safety glasses with side shields, hard hats and steel-toed safety shoes, and shall abide by Railroad's Safety Rules and Procedures (Exhibit C) and any safety instructions given by Railroad.

c. Precautions must be taken by Licensee to avoid interference with or damage to Railroad's real and personal property, including but not limited to signal and communication facilities. No equipment of Licensee shall be placed or operated, no monitor or test well(s) shall be drilled or installed, and no Work shall be performed at a distance closer than fifteen (15) feet from the centerline of any active Railroad track, without the express, prior approval of the Chief Regional Engineer. Railroad shall furnish personnel, flagmen or watchmen which, in Railroad's sole opinion, may be necessary to protect Railroad's facilities and traffic during the performance of the Work by Licensee. Licensee shall reimburse Railroad for the actual cost of said service, including all applicable surcharges, promptly upon receipt of bill(s) therefor.

d. Drilling and all other equipment shall be moved across Railroad track(s) ONLY at a public crossing, unless Licensee has entered into Railroad's standard Private Road Crossing Agreement or has obtained special advance permission from the Chief Regional Engineer. Licensee agrees not to enter upon or foul track until given signal to do so by a flagman.

e. Licensee's equipment must stay clear of all wire lines at, over or near the Property, as well as any other utility or structure located thereon, including fiber optic lines.

f. Licensee expressly agrees to comply with the location, contact, excavation and protection regulations of the Occupational Safety and Health Act and state "One Call" - "Call Before You Dig" requirements. Licensee shall be responsible for all claims for damages to underground facilities of any entity or person caused by the performance of Work.

4. NOTICE; SPLIT SAMPLES

a. Licensee shall notify Railroad's Chief Regional Engineer, One Bell Crossing Road, Selkirk, NY 12158, and Environmental Manager (or his designee) Mr. Paul J. Kurzanski, Senior Manager, Environmental Remediation Department, CSX Transportation, Inc., 500 Water Street - J275, Jacksonville, FL 32202, at least ten (10) days before proceeding with any phase of the Work on the Property, and shall receive permission from them prior to entry or the start of any Work. Additionally, Licensee shall provide said Environmental Manager or his designee with forty-eight (48) hours notice of the actual commencement of the Work so that the Environmental Manager may arrange for the Railroad's own consultants to be present during the Work.

b. Licensee shall allow Railroad or its consultant to split samples.

5. DOCUMENTATION

Licensee shall provide, without charge to Railroad, by first class mail to the Environmental Manager at the address listed in Subsection 4a: (i) within fifteen (15) days of receipt, copies of results or reports of soil tests, well logs, and test results generated from the sampling and analysis of groundwater, sediment or soil, or from test or monitoring wells located on the Property, or any other reports relating to the Work; (ii) within fifteen (15) days of receipt, copies of all correspondence from any government agency regarding the Work or in any other way relating to the Site; (iii) within fifteen (15) days of completion, all final reports relating to the Work or the Site, including as-built drawings and any completion notices.

6. MONITOR WELLS

a. Any monitoring or test wells which Licensee installs must be constructed with quality materials using methodologies to prevent groundwater cross-contamination. Such wells must be flush mounted and have watertight locking caps and/or located steel protective casings to insure well integrity. The wells must be installed in such a manner as not to pose a hazard or impediment to vehicular or pedestrian traffic on the Property or adjacent property.

b. Wells must have identification tags to include, at a minimum, the following: well number, date installed, total depth of well, screened interval and by whom installed.

c. If Railroad determines, in its sole but reasonably exercised discretion, that all or any monitoring or test wells, or the location(s) thereof, should be changed, altered or entirely removed, Licensee, as its sole risk, cost and expense, shall make such changes, alterations or removal, as the case may be, in a manner satisfactory to Railroad, and restore the Property affected to the condition which existed prior to commencement of the Work, within thirty (30) days of Railroad's request. If Licensee fails to make such changes, alterations, or removal and restoration of the Property, Railroad may remove such wells and make such restoration at the sole risk, cost and expense of Licensee.

d. If Licensee desires to revise, renew, relocate, or change in any manner all or any monitoring or test wells, or if Licensee is required to change or alter the same, plans therefor shall be submitted to and approved by the Environmental manager listed in Subsection 4a, before any such change is made, and the terms and conditions of this Right-of-Entry shall apply to the revised, renewed, changed or relocated wells.

e. After expiration or termination of this Right-of-Entry, Licensee, at its sole cost, shall immediately abandon all wells in accordance with applicable state procedures, and at the request of the Railroad, restore the Property affected by the Work to a condition satisfactory to Railroad's Chief Regional Engineer. Licensee shall also furnish Railroad with documentation to the appropriate agency that well(s) have been properly closed.

7. OCCUPANTS

The permission herein granted is subject to all existing uses and occupancies of the Property heretofore granted by Railroad to third parties. Licensee acknowledges that in agreeing to this Right-of-Entry, Railroad acts on its own behalf only and has no authority to act, and does not claim to act, on behalf of any other entity or person with respect to any right any such other entity or person may have to object to this Right-of-Entry. Licensee shall be responsible to protect the rights and facilities of any third party occupier of the Property and of any owner of any other recorded interest in the Property.

8. SAMPLING WASTES

Any waste materials, including without limitation purge waters or other remediation-derived waste, generated during performance of the Work shall be handled in accordance with federal, state and local laws and regulations and shall not be permanently stored (i.e., no more than 30 days) on Railroad property. In the event of leakage or spillage onto any Railroad property or any adjacent property of any remediation-derived waste or other solid or hazardous wastes, hazardous substances or hazardous materials as a result of the Work, Licensee shall immediately notify railroad and, at Licensee's sole expense, promptly clean the property (and any adjacent or nearby property to which such leakage or spillage may have spread) to the satisfaction of Railroad and any governmental agency having jurisdiction over the leakage or spillage. Should the leakage or spillage result in a fine, penalty, cost or charge being incurred by Railroad, Licensee shall take responsibility for same.

9. INDEMNITY; INSURANCE

a. In consideration for Railroad granting its permission to undertake the Work at the Property, Licensee hereby agrees to accept its responsibility for and pay as necessary, in accordance with New York State laws and consistently with the Court of Claims Act, all claims, demands, payments, suits, actions, recoveries and judgements of every nature and description brought or recovered against Licensee by reason of the negligent (tortious act or omission) act of Licensee or its employees which are caused by or arise from the Work, provided that such claim or loss is directly attributable to such Work, or directly attributable to Licensee's presence at the Property or from the presence of any physical facility installed, used, maintained or removed as part of the Work; and provided further that Licensee shall not be responsible for any claims, losses, or damages arising from the negligence or misconduct of Railroad or its employees, agents, and/or contractors.

b. Prior to commencement of occupation or use of the Property for the Work, Licensee shall cause its contractor in charge of the Work to procure, and shall also maintain, or cause to be maintained, during continuance of this Right-of-Entry, at Licensee's sole cost and expense, Commercial General Liability (CGL) insurance, naming Licensee (and its contractor as the case may be) as insured and Railroad as additional insured, covering Licensee's direct and assumed contractual (i.e., indemnification) liability under this Right-of-Entry, with coverage of not less than TWO MILLION AND 00/100 U.S. DOLLARS ($2,000,000.00) Combined Single Limit per occurrence for bodily injury and property damage. If said policy does not automatically cover Licensee's contractual liability under this Right-of-Entry, a specific endorsement adding such coverage shall be purchased or caused to be purchased by Licensee, and indicated on the Certificate of Insurance.

c. In addition to the above-described CGL insurance, if (with the separate written consent of Railroad) Licensee will undertake, or cause to be undertaken, any construction or demolition activity within fifty (50) feet of any Railroad track or any Railroad bridge, trestle or tunnel, then Licensee shall also cause its contractor to purchase, a policy of Railroad Protective Liability (RPL) insurance, naming Railroad as the insured, with coverage of not less than TWO MILLION AND 00/100 U.S. DOLLARS ($2,000,000.00) Combined Single Limit per occurrence, with an aggregate of SIX MILLION AND 00/100 U.S. DOLLARS ($6,000,000.00). Such policy must be written on ISO/RIMA form of Railroad Protective Insurance - Insurance Services Offices Form No. CG 00 35, including Pollution Exclusion Amendment CG 28 31. At Railroad's option, in lieu of purchasing RPL insurance (but not CGL insurance), Licensee may pay Railroad a Construction Risk Fee of ONE THOUSAND, FIVE HUNDRED AND 00/100 U.S. DOLLARS ($1,500.00) and thereby be relieved of any obligation to purchase said RPL insurance for the benefit of Railroad, Licensee shall send Railroad its check for the above amount, payable to Railroad, with the return of the signed duplicate originals of this Right-of-Entry.

d. Licensee's contractor shall also carry, for the benefit of Licensee and its employees, Worker's Compensation Insurance as required by the state in which the Work is to be performed. This policy shall include Employer's Liability Insurance with a limit of not less than ONE MILLION AND 00/100 U.S. DOLLARS ($1,000,000.00) per occurrence. Unless prohibited by law, such insurance shall waive subrogation against Railroad. Licensee's contractor shall also maintain Automobile Liability Insurance in an amount not less than ONE MILLION AND 00/100 U.S. DOLLARS ($1,000,000.00) covering all owned, non-owned and hired vehicles.

e. If any insurance policy required under Section 9 hereof is written on a "claims made" basis instead of an "occurrence" basis, Licensee's contractor shall arrange for adequate time for reporting losses. Failure to arrange for adequate reporting time shall be at Licensee's sole risk. Upon its execution of this Right-of-Entry, Licensee's contractor shall furnish Railroad with the original and two copies of any RPL policy along with Certificate(s) of Insurance naming Railroad as Certificate Holder, which shall specifically refer to this Right-of-Entry by date, name, and the location covered. Copies of Additional Insured and Waiver of Subrogation endorsements shall be attached to the Certificate(s). All policies obtained pursuant to this Section 9 shall contain a provision requiring that such policy cannot be canceled or altered without first providing Railroad with thirty (30) days advance written notice. Furnishing of insurance by Licensee shall not limit its liability under this Right-of-Entry, but shall be additional security therefor.

f. Licensee shall promptly notify Railroad's Chief Regional Engineer of any loss, damage, injury or death arising out of or in connection with Work performed under this Right-of-Entry.

10. NO ASSIGNMENT; MODIFICATION, SURVIVAL

a. This Right-of-Entry and the license granted herein shall not be assigned by Licensee without Railroad's separate written consent.

b. Except as otherwise provided herein, this Right-of-Entry may be modified or amended only in a separate writing executed by both Railroad and Licensee.

c. The provisions of Sections 3, 5, 6 and 9 shall survive the expiration or any earlier termination of this Right-of-Entry.

If the provisions and terms of this Right-of-Entry are acceptable to Licensee, please have the appropriate official sign both copies in the space provided below, and then return both duplicate originals to the undersigned, together with all other documents or instruments required to be submitted to Railroad by the terms hereof. Your copy will be executed by the Railroad and returned.

Witness for Licensor:

Bob Ratchford

CSX TRANSPORTATION, INC.

By: Karen E. Mohler

Print/Type Name: Karen E. Mohler
~~Director - Contract Administration~~

Print/Type Title: ____________

Witness for Licensee:

[signature]

NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION

By: [signature]

Who, by the execution hereof, affirms that he/she has the authority to do so and to bind the Licensee to the terms and conditions of this Agreement.

Print/Type Name: Richard K. Randles

Print/Type Title: DIRECTOR OF MANAGEMENT & BUDGET

Tax Identification Number: 14-6011320O

Authority under Ordinance or
Resolution No Section 3-0301 para 2 sub b of
dated the Environmental Conservation Law

EXHIBIT "C"

CSX TRANSPORTATION - ENVIRONMENTAL DEPARTMENT

SAFETY RULES AND PROCEDURES WHILE ON CSXT PROPERTY

Effective January 1, 1996, "The CSX Safe Way," a manual containing CSX Transportation's (CSXT) General Safety Rules, mandatory Departmental Safety Rules, recommended Work Practices, and CSX Policies and Programs was revised. The following Rules, Practices, and Policies are excerpted for your guidance. While on CSXT property, all consultants, contractors and visitors must comply with these requirements.

GENERAL SAFETY RULES

1. Consultant/Contractor must ensure that:
   a. "job briefings are conducted prior to work activity and subsequently when activity changes."
   c. "co-workers are warned of unsafe acts and hazards."
   e. "safety rules and all company policies that relate to our job tasks are complied with."
   f. "our work place is drug and alcohol free."
   g. "the behavior in our work place is civil and courteous."
   h. "local, state and federal laws and regulations that relate to our job tasks are observed."
   i. "oral and written report of accidents and injuries are made as soon as possible to the supervisor or employee in charge."

3. "Do not attempt to mount, dismount, or cross over moving locomotives or cars."

6. Consultant/Contractor "must be familiar with and wear approved personal protective equipment and clothing as required" and comply with applicable OSHA requirements.

8. "Do not wear finger rings outside an office environment."

16. "When working on or about tracks:
    a. be alert for the movement of cars, locomotives, or equipment at any time, in either direction, on any track;
    b. do not cross within 25 feet of the end of standing cars, equipment, or locomotives, except when proper protection is provided."

    Note: Proper Protection: Always ensure that a CSXT Flagman is present or the track is taken out of service by the proper CSXT authority, prior to starting any work on or about our tracks!

17. "Do not cross over coupled, moving freight cars."

18. "Do not take refuge under any car, equipment or locomotive."

20. "Do not go under any equipment unless proper protection is provided."

25. "Do not attempt to mount, dismount, or cross over moving equipment."

26. "Seat belts must be worn while operating or riding in motor vehicles that are equipped with them."

27. "Ensure that your work area and environment are clean and orderly, and protected from controllable hazards.

ENGINEERING AND MECHANICAL - DEPARTMENTAL SAFETY RULES AND RECOMMENDED SAFE WORK PRACTICES

E/M-10 Hi-Rail Vehicles:

a. "Occupy track only with proper authority."
b. "Stop on-track equipment when the operator's attention cannot be directed exclusively to controlling the movement."

* "Be aware of the effects of the weather on starting and stopping hi-rail equipment."

E/M-12 Lifting and Carrying:

a. "Use provided material handling and lifting devices when lifting heavy objects."
b. "Ensure walkways are free of slipping or tripping hazards before lifting or carrying material."

* "Wear back support belts whenever you lift."
* "Designate one person to call signals when two or more people are lifting."

E/M-14 Motor Vehicles:

b. "If two or more people are occupying the motor vehicle, designate one person to guide backing movements from the ground."
c. "Apply the parking brake to a stationary vehicle if the engine must be left running in order to accomplish its intended task."

* "Whenever possible back into parking spaces."

E/M-16 Personal Protective Equipment:

a. "Wear head protection provided by the company at all times while on duty, except when working in an office, when riding in a highway motor vehicle, or while in a designated lunch break area. Non-hardhat areas may be designated by local management."

b. "Wear approved safety glasses with sideshields at all times while on duty, except when working in an office, while in a lunch area, or while in a locker room."

c. "When working in areas where hearing protection may be required, have approved hearing protection devices available on your person, and wear them where required by posted notice or special instructions."

d. "Wear hi-top (6-inch or more) safety-toe shoes with laces, oil-resistant soles, and a distinct separation between heel and sole when working outside of an office environment . . ."

ENGINEERING - DEPARTMENTAL SAFETY RULES AND RECOMMENDED SAFE WORK PRACTICES

E-2 Excavations, Pits, and Manholes

a. "Shore vertical excavations of four feet deep or more."
b. "Call utility locators before you dig."
c. "Protect all open holes and trenches with adequate barricades."

E-10 On or Around and Crossing Tracks

b. "When observing passing trains or equipment, always look in the direction from which the train or equipment is coming."

* "Use caution when working on or around and crossing tracks."
* "Look in both directions when approaching or crossing tracks."
* "Be alert for dragging bands, shifting loads, etc."

Please ensure that your employees (and all subcontractors), who are or will be working on or about CSX Transportation property, comply with these revised standards of safety conduct. If you have any questions, or need further clarification of anything listed above, please contact your project manager. If there's ever any doubt, the safe course must always be taken!

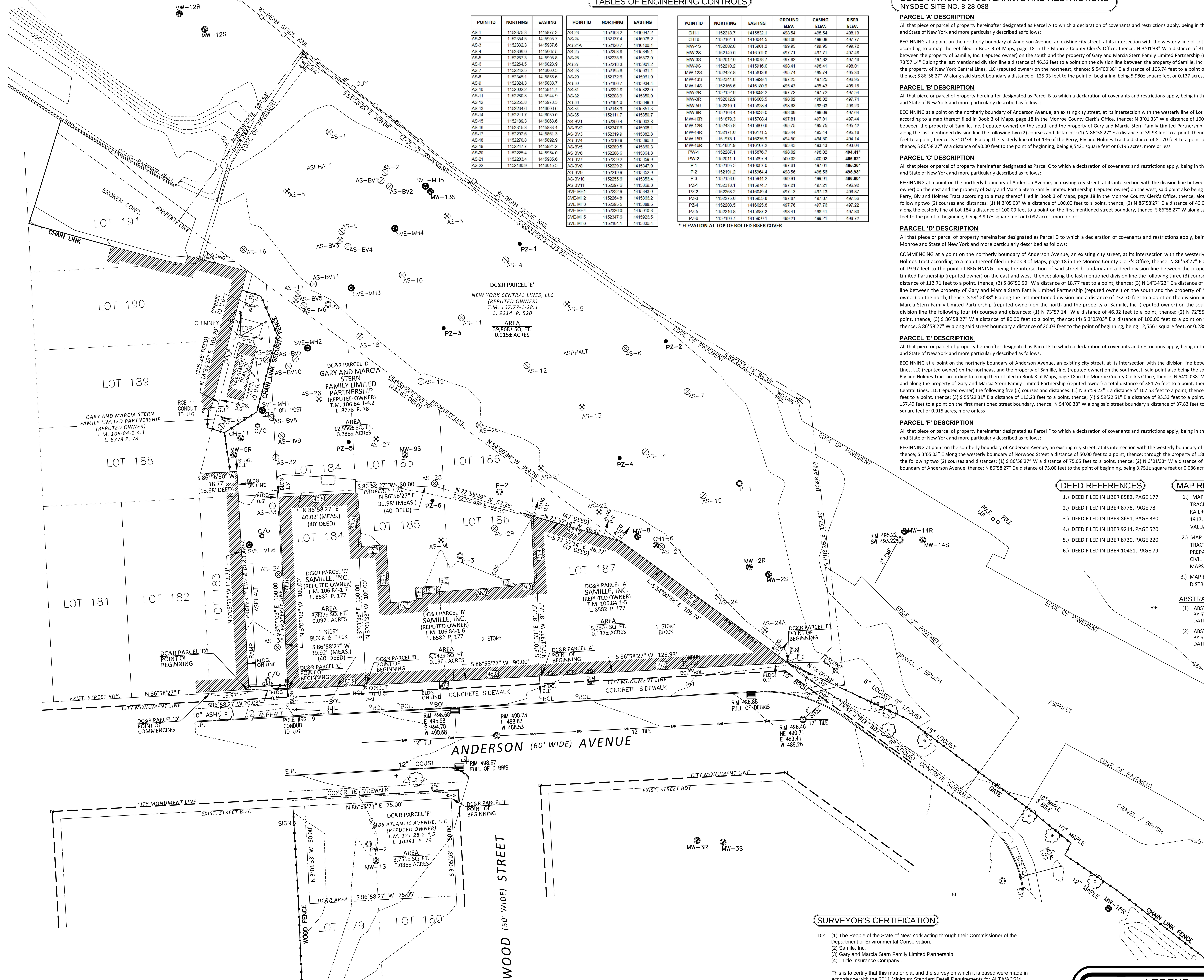
Remember: No job is so important, no service so urgent that we cannot take time to perform all work safely.

CSXT Environmental Department

*Recommended Safe Work Practice

F

Metes and Bounds Survey (ALTA Survey)



TABLES OF ENGINEERING CONTROLS

POINT ID	NORTHING	EASTING
AS-1	1152375.3	1415877.3
AS-2	1152354.5	1415905.7
AS-3	1152332.3	1415937.6
AS-4	1152309.9	1415967.5
AS-5	1152287.3	1415998.8
AS-6	1152264.5	1416028.9
AS-7	1152242.5	1416060.3
AS-8	1152345.1	1415855.6
AS-9	1152324.3	1415883.7
AS-10	1152302.2	1415914.7
AS-11	1152280.3	1415944.9
AS-12	1152255.8	1415978.3
AS-13	1152234.6	1416006.6
AS-14	1152211.7	1416039.0
AS-15	1152189.3	1416068.6
AS-16	1152315.3	1415833.4
AS-17	1152292.6	1415861.3
AS-18	1152270.8	1415892.9
AS-19	1152247.7	1415924.2
AS-20	1152225.4	1415954.0
AS-21	1152203.4	1415985.6
AS-22	1152180.9	1416015.3

POINT ID	NORTHING	EASTING
AS-23	1152163.2	1416047.2
AS-24	1152137.4	1416076.2
AS-24A	1152120.7	1416100.1
AS-25	1152258.8	1415845.1
AS-26	1152238.8	1415872.0
AS-27	1152218.3	1415901.2
AS-28	1152195.6	1415931.1
AS-29	1152172.6	1415961.9
AS-30	1152166.7	1415934.4
AS-31	1152224.8	1415822.0
AS-32	1152208.9	1415850.0
AS-33	1152184.0	1415848.3
AS-34	1152148.9	1415851.3
AS-35	1152111.7	1415850.7
AS-BV1	1152350.4	1415903.8
AS-BV2	1152347.6	1415908.1
AS-BV3	1152319.9	1415882.8
AS-BV4	1152316.8	1415886.8
AS-BV5	1152289.5	1415860.3
AS-BV6	1152286.6	1415864.3
AS-BV7	1152259.2	1415859.9
AS-BV8	1152229.2	1415847.9
AS-BV9	1152219.9	1415852.9
AS-BV10	1152255.6	1415856.4
AS-BV11	1152297.6	1415869.3
SVE-MH1	1152232.9	1415843.0
SVE-MH2	1152264.8	1415866.2
SVE-MH3	1152295.5	1415888.5
SVE-MH4	1152326.0	1415910.8
SVE-MH5	1152347.6	1415926.5
SVE-MH6	1152164.1	1415836.4

POINT ID	NORTHING	EASTING	GROUND ELEV.	CASING ELEV.	RISER ELEV.
CHI-1	1152218.7	1415832.1	498.54	498.54	498.19
CHI-6	1152164.1	1416044.5	498.08	498.08	497.77
MW-1S	1152002.6	1415901.2	499.95	499.95	499.72
MW-2S	1152149.0	1416102.0	497.71	497.71	497.48
MW-3S	1152012.0	1416078.7	497.82	497.82	497.46
MW-9S	1152210.2	1415916.0	498.41	498.41	498.01
MW-12S	1152427.8	1415813.6	495.74	495.74	495.33
MW-13S	1152344.8	1415929.1	497.25	497.25	496.95
MW-14S	1152166.6	1416180.9	495.43	495.43	495.16
MW-2R	1152152.8	1416092.2	497.72	497.72	497.54
MW-3R	1152012.9	1416065.5	498.02	498.02	497.74
MW-5R	1152210.1	1415828.4	498.63	498.63	498.23
MW-8R	1152168.4	1416035.0	498.09	498.09	497.64
MW-10R	1151879.3	1415708.4	497.81	497.81	497.44
MW-12R	1152435.8	1415800.6	495.75	495.75	495.42
MW-14R	1152171.0	1416171.5	495.44	495.44	495.18
MW-15R	1151978.1	1416275.9	494.50	494.50	494.14
MW-16R	1151884.9	1416167.2	493.43	493.43	493.04
PW-1	1152287.1	1415876.7	498.02	498.02	**494.41***
PW-2	1152011.1	1415897.4	500.02	500.02	**496.92***
P-1	1152195.5	1416087.0	497.61	497.61	**495.26***
P-2	1152191.2	1415964.4	498.56	498.56	**495.93***
P-3	1152158.6	1415944.2	499.91	499.91	**496.80***
PZ-1	1152318.1	1415974.7	497.21	497.21	496.92
PZ-2	1152268.2	1416049.4	497.13	497.13	496.87
PZ-3	1152275.0	1415935.8	497.87	497.87	497.56
PZ-4	1152208.5	1416025.8	497.76	497.76	497.22
PZ-5	1152216.8	1415887.2	498.41	498.41	497.80
PZ-6	1152186.7	1415930.1	499.21	499.21	498.72

* ELEVATION AT TOP OF BOLTED RISER COVER

DECLARATION OF COVENANTS AND RESTRICTIONS
NYSDEC SITE NO. 8-28-088

PARCEL 'A' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel A to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 187 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 3°01'33" W a distance of 81.70 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the south and the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the north, thence; S 73°57'14" E along the last mentioned division line a distance of 46.32 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the southwest and the property of New York Central Lines, LLC (reputed owner) on the northeast, thence; S 54°00'38" E a distance of 105.74 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W along said street boundary a distance of 125.93 feet to the point of beginning, being 5,980± square feet or 0.137 acres, more or less.

PARCEL 'B' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel B to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 185 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 3°01'33" W a distance of 100.00 feet to a point on the division line between the property of Samille, Inc. (reputed owner) on the south and the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the north, thence; along the last mentioned division line the following two (2) courses and distances: (1) N 86°58'27" E a distance of 39.98 feet to a point, thence; (2) S 72°55'49" E a distance of 53.26 feet to a point, thence; S 3°01'33" E along the easterly line of Lot 186 of the Perry, Bly and Holmes Tract a distance of 81.70 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W a distance of 90.00 feet to the point of beginning, being 8,542± square feet or 0.196 acres, more or less.

PARCEL 'C' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel C to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the division line between the property of Samille, Inc. (reputed owner) on the east and the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the west, said point also being the southwest corner of Lot 184 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; along the last mentioned division line the following two (2) courses and distances: (1) N 3°05'03" W a distance of 100.00 feet to a point, thence; (2) N 86°58'27" E a distance of 40.02 feet to a point, thence; S 3°01'33" E along the easterly line of Lot 184 a distance of 100.00 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W along said street boundary a distance of 39.92 feet to the point of beginning, being 3,997± square feet or 0.092 acres, more or less.

PARCEL 'D' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel D to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

COMMENCING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly line of Lot 183 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 86°58'27" E along said street boundary a distance of 19.97 feet to the point of BEGINNING, being the intersection of said street boundary and a deed division line between the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the east and west, thence; along the last mentioned division line the following three (3) courses and distances: (1) N 03°05'51" W a distance of 112.71 feet to a point, thence; (2) S 86°56'50" W a distance of 18.77 feet to a point, thence; (3) N 14°34'23" E a distance of 105.29 feet to a point on the division line between the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the south and the property of New York Central Lines, LLC (reputed owner) on the north, thence; S 54°00'38" E along the last mentioned division line a distance of 232.70 feet to a point on the division line between the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) on the north and the property of Samille, Inc. (reputed owner) on the south, thence; along the last mentioned division line the following four (4) courses and distances: (1) N 73°57'14" W a distance of 46.32 feet to a point, thence; (2) N 72°55'49" W a distance of 53.26 feet to a point, thence; (3) S 86°58'27" W a distance of 80.00 feet to a point, thence; (4) S 3°05'03" E a distance of 100.00 feet to a point on the first mentioned street boundary, thence; S 86°58'27" W along said street boundary a distance of 20.03 feet to the point of beginning, being 12,556± square feet, or 0.288 acres, more or less.

PARCEL 'E' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel E to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at a point on the northerly boundary of Anderson Avenue, an existing city street, at its intersection with the division line between the property of New York Central Lines, LLC (reputed owner) on the northeast and the property of Samille, Inc. (reputed owner) on the southwest, said point also being the southeast corner of Lot 187 of the Perry, Bly and Holmes Tract according to a map thereof filed in Book 3 of Maps, page 18 in the Monroe County Clerk's Office, thence; N 54°00'38" W along the last mentioned division line and along the property of Gary and Marcia Stern Family Limited Partnership (reputed owner) a total distance of 384.76 feet to a point, thence; through the property of New York Central Lines, LLC (reputed owner) the following five (5) courses and distances: (1) N 35°59'22" E a distance of 107.53 feet to a point, thence; (2) S 51°58'28" E a distance of 109.04 feet to a point, thence; (3) S 55°22'31" E a distance of 113.23 feet to a point, thence; (4) S 59°22'51" E a distance of 93.33 feet to a point, thence; (5) S 7°03'26" E a distance of 157.49 feet to a point on the first mentioned street boundary, thence; N 54°00'38" W along said street boundary a distance of 37.83 feet to the point of beginning, being 39,868± square feet or 0.915 acres, more or less

PARCEL 'F' DESCRIPTION

All that piece or parcel of property hereinafter designated as Parcel F to which a declaration of covenants and restrictions apply, being in the City of Rochester, County of Monroe and State of New York and more particularly described as follows:

BEGINNING at point on the southerly boundary of Anderson Avenue, an existing city street, at its intersection with the westerly boundary of Norwood Street, an existing city street, thence; S 3°05'03" E along the westerly boundary of Norwood Street a distance of 50.00 feet to a point, thence; through the property of 186 Atlantic Avenue, LLC (reputed owner) the following two (2) courses and distances: (1) S 86°58'27" W a distance of 75.05 feet to a point, thence; (2) N 3°01'33" W a distance of 50.00 feet to a point on the southerly boundary of Anderson Avenue, thence; N 86°58'27" E a distance of 75.00 feet to the point of beginning, being 3,751± square feet or 0.086 acres, more or less.

DEED REFERENCES

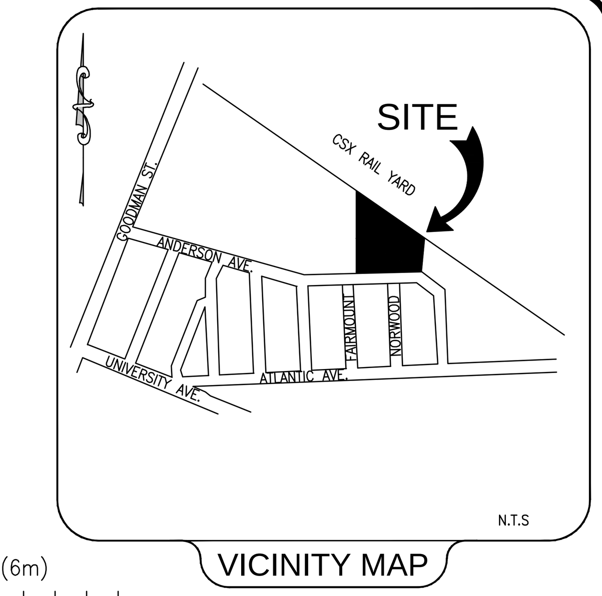
1.) DEED FILED IN LIBER 8582, PAGE 177.
2.) DEED FILED IN LIBER 8778, PAGE 78.
3.) DEED FILED IN LIBER 8691, PAGE 380.
4.) DEED FILED IN LIBER 9214, PAGE 520.
5.) DEED FILED IN LIBER 8730, PAGE 220.
6.) DEED FILED IN LIBER 10481, PAGE 79.

MAP REFERENCES

1.) MAP ENTITLED "RIGHT OF WAY AND TRACK MAP NEW YROK CENTRAL RAILROAD - V76/3", DATED JUNE 30, 1917, PREPARED BY OFFICE OF THE VALUATION ENGINEER (NYCRR).
2.) MAP ENTITLED "PERRY, BLY & HOLMES TRACT" DATED AUGUST 1, 1871, PREPARED BY CHARLES R. BABBITT, CITY CIVIL ENGINEER, FILED IN LIBER 3 OF MAPS, PAGE 18.
3.) MAP ENTITLED "ROCHESTER CITY SURVEY DISTRICT 26 MAP 16.

ABSTRACTS OF TITLE

(1) ABSTRACT OT TITLE NO. 174327, PREPARED BY STEWART TITLE INSURANCE COMPANY, DATED OCTOBER 23, 2012.
(2) ABSTRACT OT TITLE NO. 174328, PREPARED BY STEWART TITLE INSURANCE COMPANY, DATED OCTOBER 23, 2012.



VICINITY MAP

GRID NORTH

SCALE: 1" = 20' (6m)

20 (6m) 0 (0m) 20 (6m) 40 (12m)

This property is subject to a Declaration of Covenants and Restrictions (DC&R) held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law.

THE ENGINEERING AND INSTITUTIONAL CONTROLS for the DC&R are set forth in more detail in the Site Management Plan ("SMP"). A copy of the SMP must be obtained by any party with an interest in the property. The SMP may be obtained from the New York State Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@gw.dec.state.ny.us.

Restrictions to Parcels A, B and C

- Compliance with the Declaration of Covenants & Restrictions and the SMP by the Grantor and the Grantor's Successors and assigns;
- All Engineering Controls must be operated and maintained as specified in the SMP;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP;
- Groundwater, soil vapor and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- The use and development of the site is limited to industrial uses only as described in 6 NYCRR Part 375-1.8(g)(2)(iv).
- The property may not be used for higher level of use, such as unrestricted or restricted residential or commercial use without additional remediation and amendment of the DC&R , 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 groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed on Parcels A, B, C, D, E and F and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- Land Use Restriction- The use and development of the site is limited to industrial uses only as defined in 6 NYCRR Part 375 1.8(g)(2)(iv).

DC&R AREA ACCESS

THE DEC OR THEIR AGENT MAY ACCESS THE RESTRICTED AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT

SURVEYOR'S CERTIFICATION

TO: (1) The People of the State of New York acting through their Commissioner of the Department of Environmental Conservation;
(2) Samile, Inc.
(3) Gary and Marcia Stern Family Limited Partnership
(4) - Title Insurance Company -

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 4, 7a, 8, 11a and 13 of Table A thereof. The field work was completed on November 14, 2012.

Date of Plat or Map: December 7, 2012

DRAFT

JEFFREY F. PHILLIPS, LS 50773
FOR: POPLI DESIGN GROUP
555 Penbrooke Drive
Penfield, NY 14526
Phone: 585-388-2060

SURVEY NOTES

1. COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (CORS) - NEW YORK STATE PLANE COORDINATE SYSTEM, WEST ZONE.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. MAPPING UNITS ARE U.S. SURVEY FEET.
4. THE CONTOUR INTERVAL IS 1 FOOT.
5. UTILITIES SHOWN HEREON ARE BASED ON VISIBLE EVIDENCE. THE UNDERGROUND POSITION OF ALL UTILITIES SHOWN SHOULD BE CONSIDERED APPROXIMATE.

LEGEND

- MONITORING WELL
- PIEZOMETER
- PUMPING WELL
- AIR SPARGE
- SOIL VAPOR EXTRACTION
- GAS VALVE
- WATER VALVE
- C/O CLEAN OUT
- SANITARY SEWER MANHOLE
- STORM DRAIN MANHOLE
- CATCH BASIN
- ELECTRIC MANHOLE
- BOL. BOLLARD / POST
- CITY MONUMENT
- 48.0 BUILDING DIMENSION
- U.G. UNDER GROUND

SURVEY BY:

PREPARED FOR:

T:\Proposals\Survey\1_company logos_EcologyLogo.jpg

SURVEYOR JOB NUMBER:	EN4024.04
SURVEY CREW	W. STRATTON, N. DUNN
DRAWN BY:	W. STRATTON
CHECKED BY:	J. PHILLIPS

REVISIONS

ALTA/ACSM Land Title Survey

FOR THE PROPERTIES OF

SAMILLE, INC.
(#190, #192-200 & #220 ANDERSON AVENUE
T.M. 106.84-1-5,6,7)

AND

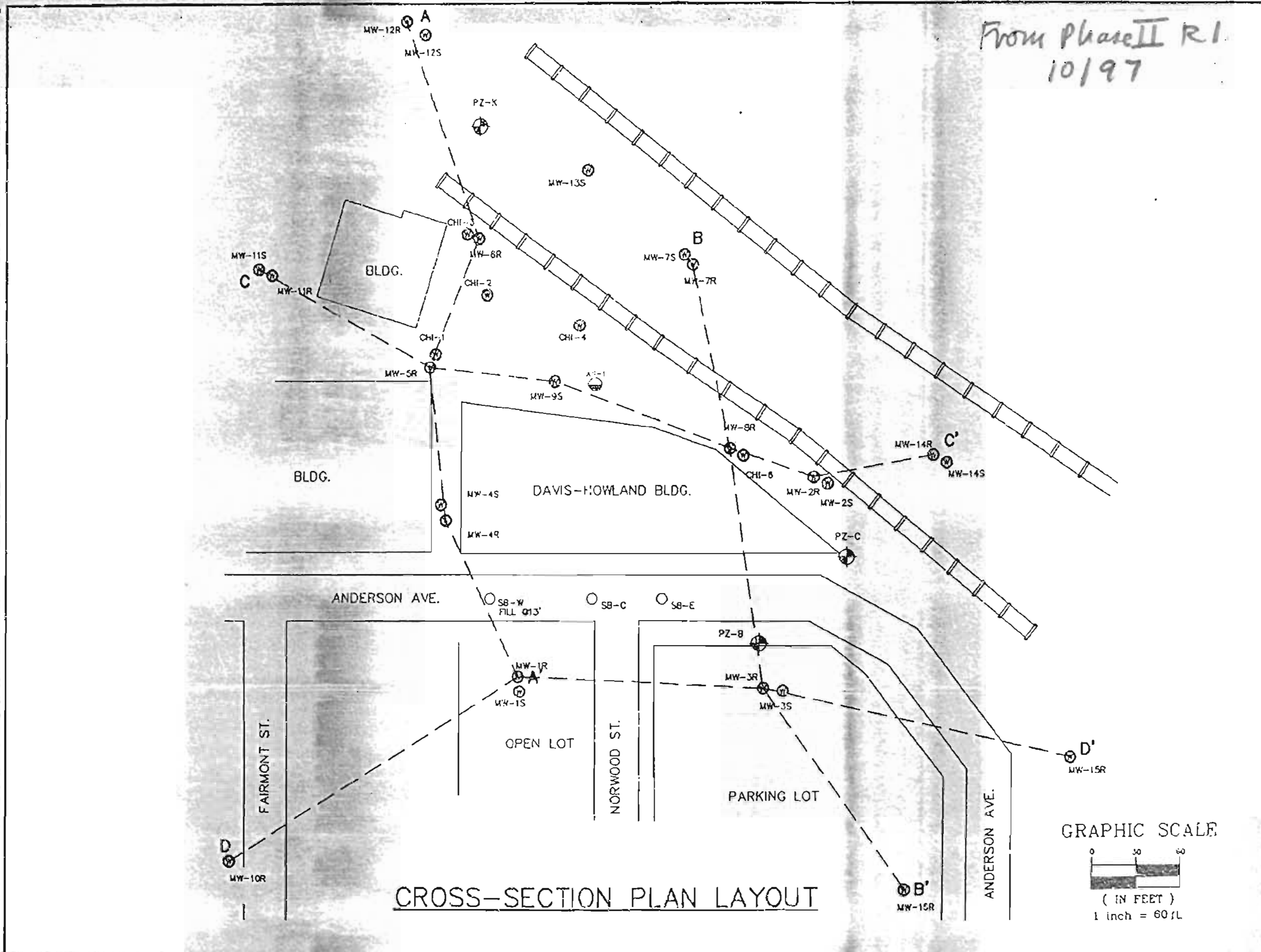
GARY AND MARCIA STERN FAMILY LIMITED PARTNERSHIP
(#188 ANDERSON AVENUE
T.M. 106.84-1-4.2)

City of Rochester, County of Monroe, State of New York

SCALE: 1" = 20' DATE: DECEMBER 19, 2012

G Geologic Cross-Sections

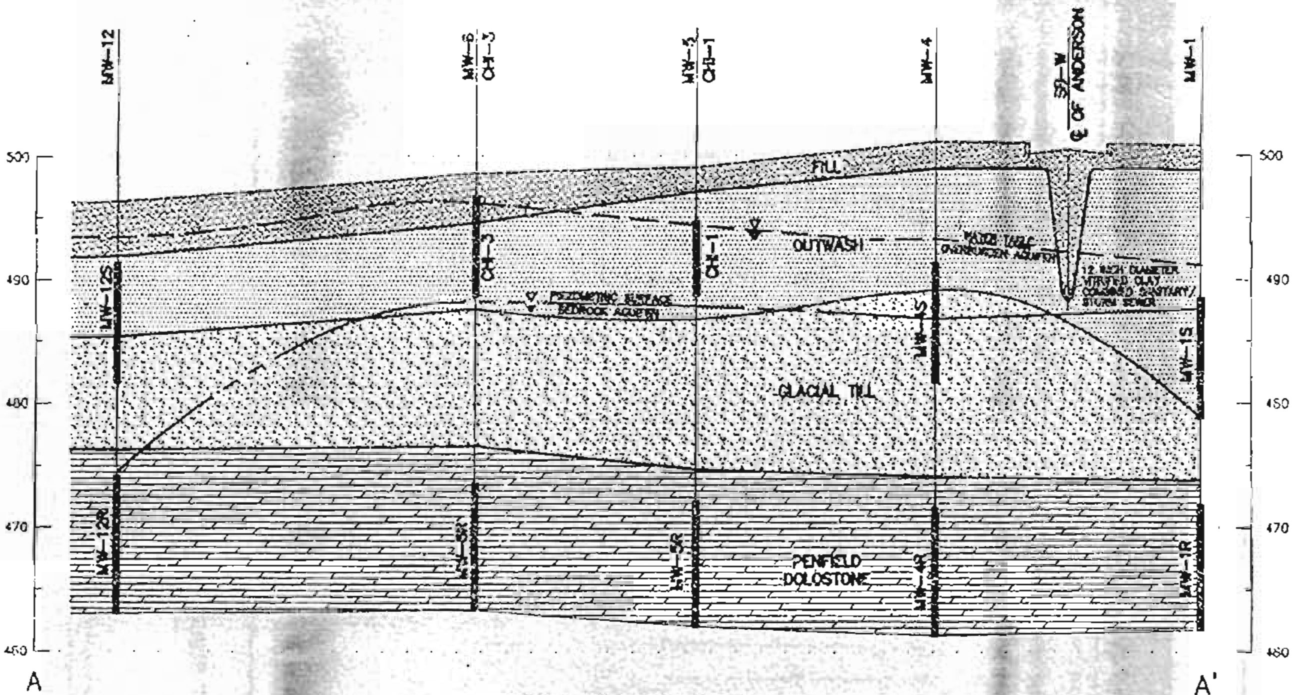
From Phase II RI
10/97



GALSON ENGINEERING

FIGURE 4-4
CROSS-SECTION PLAN LAYOUT
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8-28-086)

FIGURE NO.
4-4



CROSS-SECTION A-A'

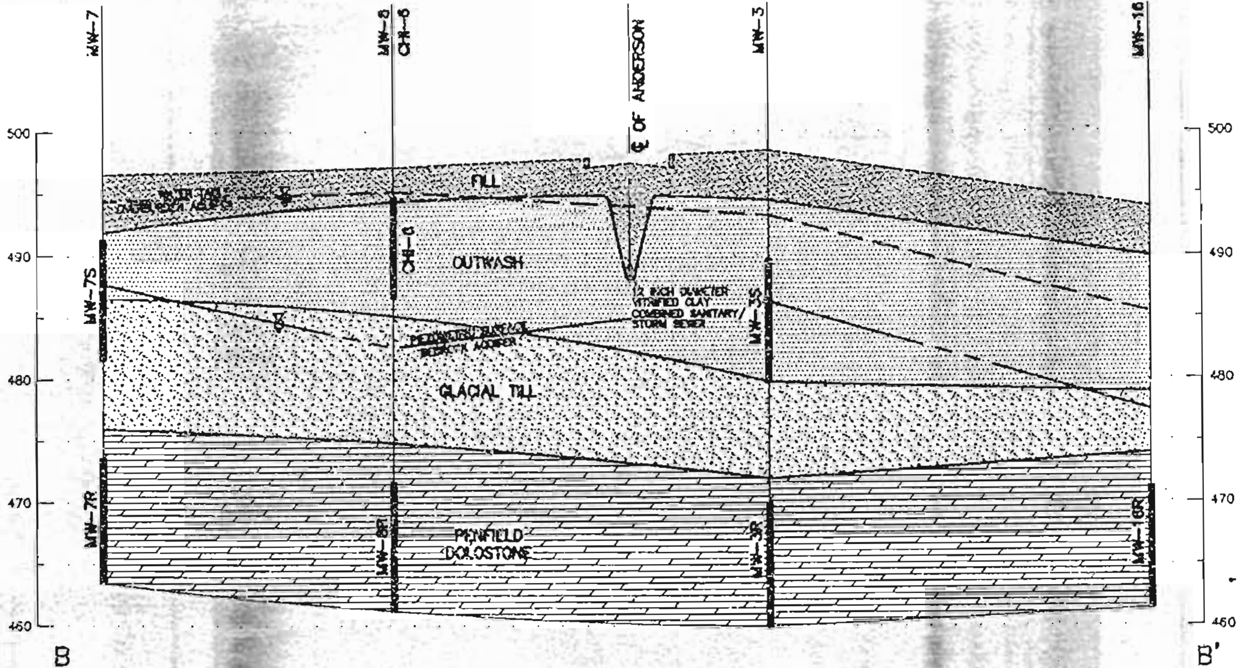
GROUNDWATER ELEVATION DATA FROM 3/25/97

SCALE
HORZ. 1 inch = 50 ft.
VERT. 1 inch = 10 ft.

GALSON ENGINEERS

FIGURE 4-5A
CROSS-SECTION A-A'
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE NO. 8-28-086)

FIGURE NO.
4-5A



CROSS-SECTION B-B'

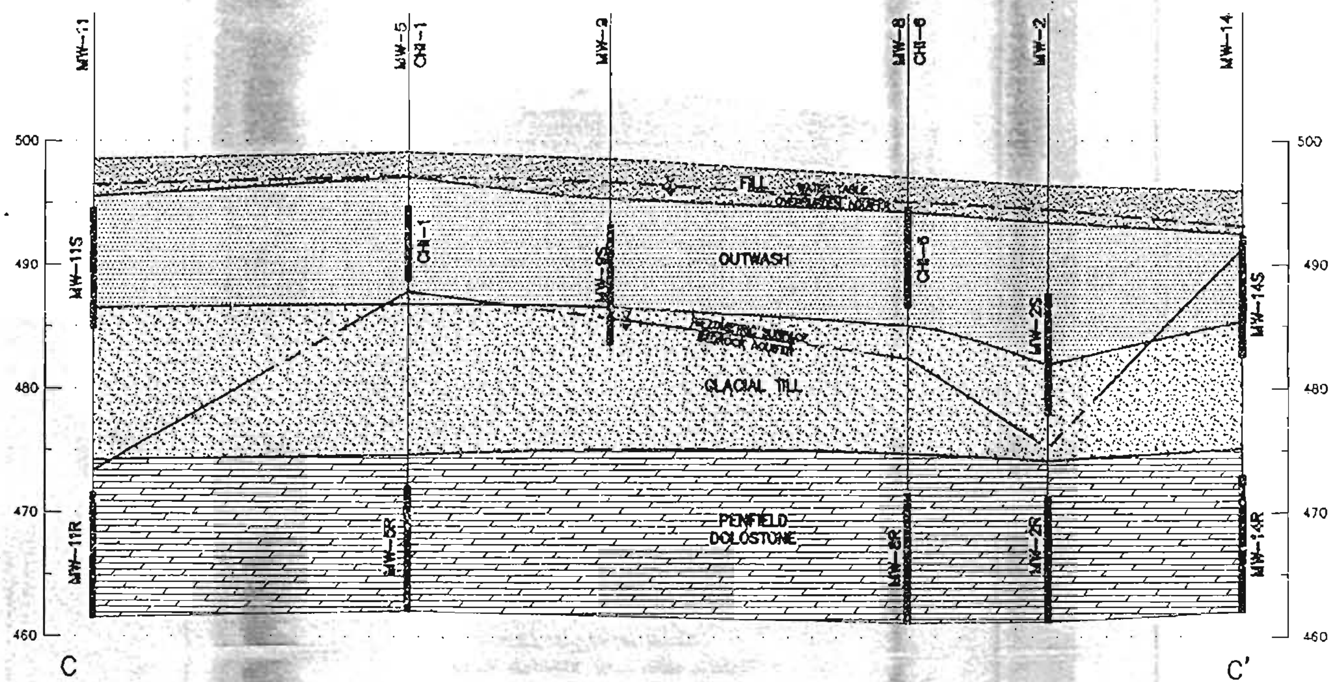
GROUNDWATER ELEVATION DATA FROM 3/25/97

SCALE
HORZ. 1 inch = 50 ft.
VERT. 1 inch = 10 ft.

GALSON
GALSON ENGINEERS

FIGURE 4-5B
CROSS-SECTION B-B'
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)

FIGURE NO.
4-5B



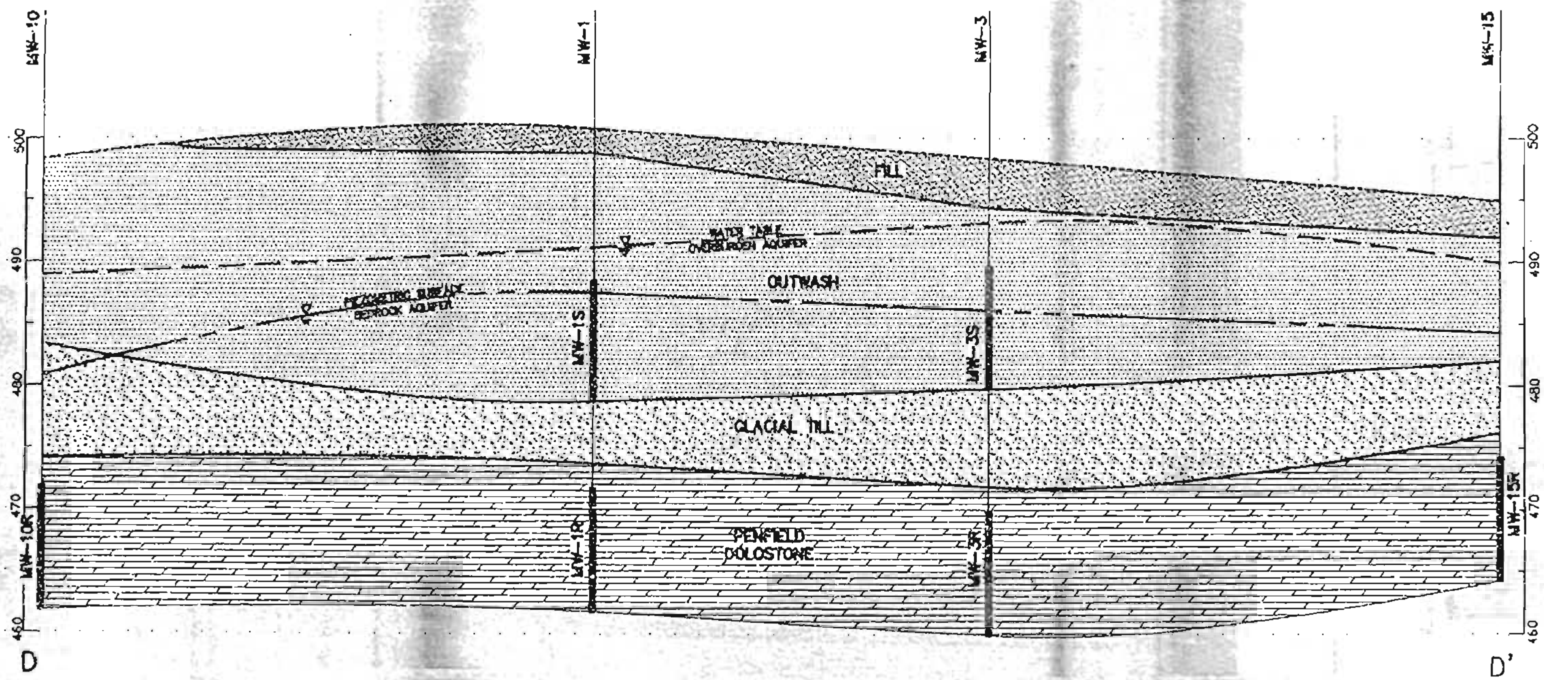
CROSS-SECTION C–C'
GROUNDWATER ELEVATION DATA FROM 3/25/97

SCALE
HORZ. 1 inch = 50 ft.
VERT. 1 inch = 10 ft.

GALSON ENGINEERS

FIGURE 4-5C
CROSS-SECTION C-C'
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)

FIGURE NO.
4-5C



CROSS-SECTION D-D'

GROUNDWATER ELEVATION DATA FROM 3/25/97

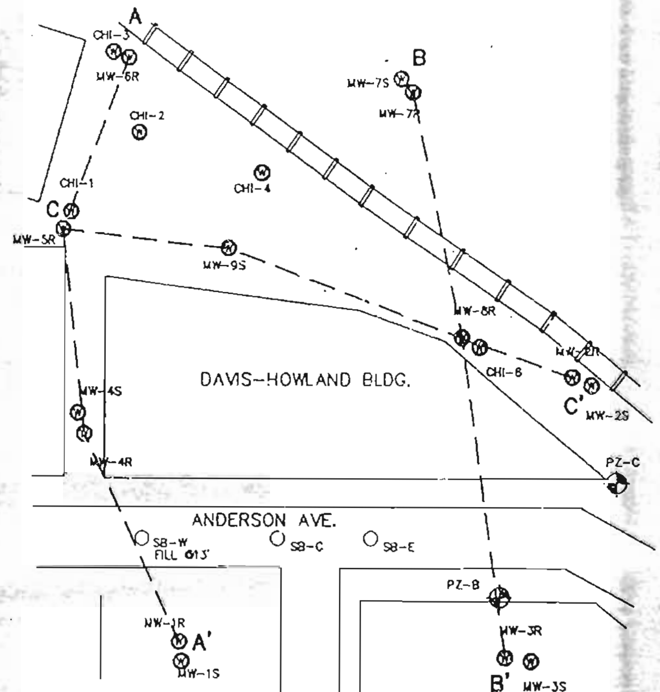
SCALE
HORZ. 1 inch = 50 ft.
VERT 1 inch = 10 ft.

GALSON ENGINEERS

FIGURE 4-5D
CROSS-SECTION D-D'
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)

4-5D

From R.I, 10/96



CROSS-SECTION PLAN LAYOUT

GRAPHIC SCALE

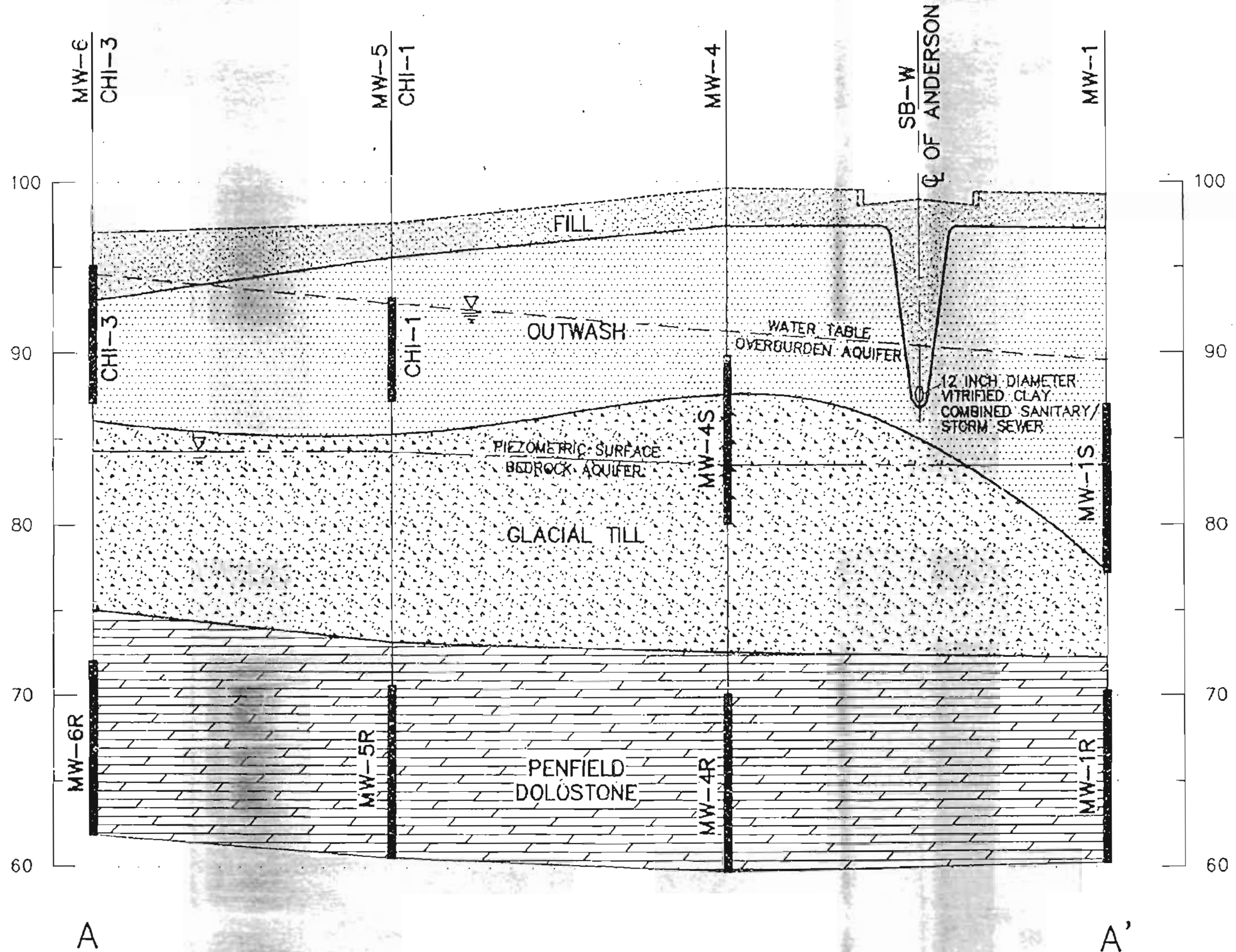
0 30 60

(IN FEET)
1 inch = 60 ft.

GALSON / LOZIER

FIGURE 4-8
CROSS-SECTION PLAN LAYOUT
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE NO. 8-28-088)

FIGURE NO.
4-8



CROSS-SECTION A-A'

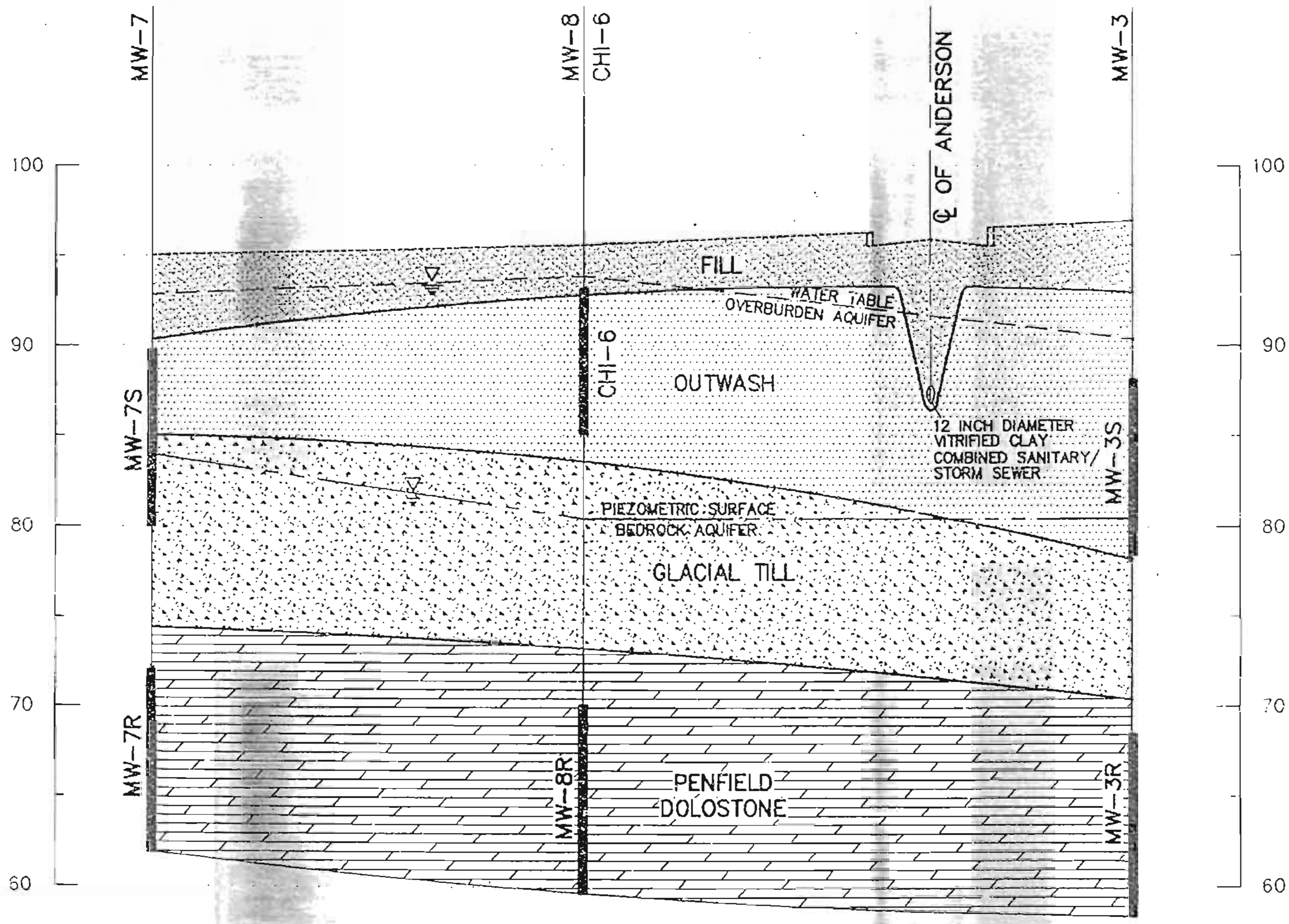
GROUNDWATER ELEVATION DATA FROM 1/25/96

SCALE
HORZ. 1 inch = 30 ft.
VERT. 1 inch = 6 ft.

GALSON / LOZIER

FIGURE 4-9
CROSS-SECTION A-A'
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE NO. 8-28-088)

4-9



CROSS-SECTION B-B'

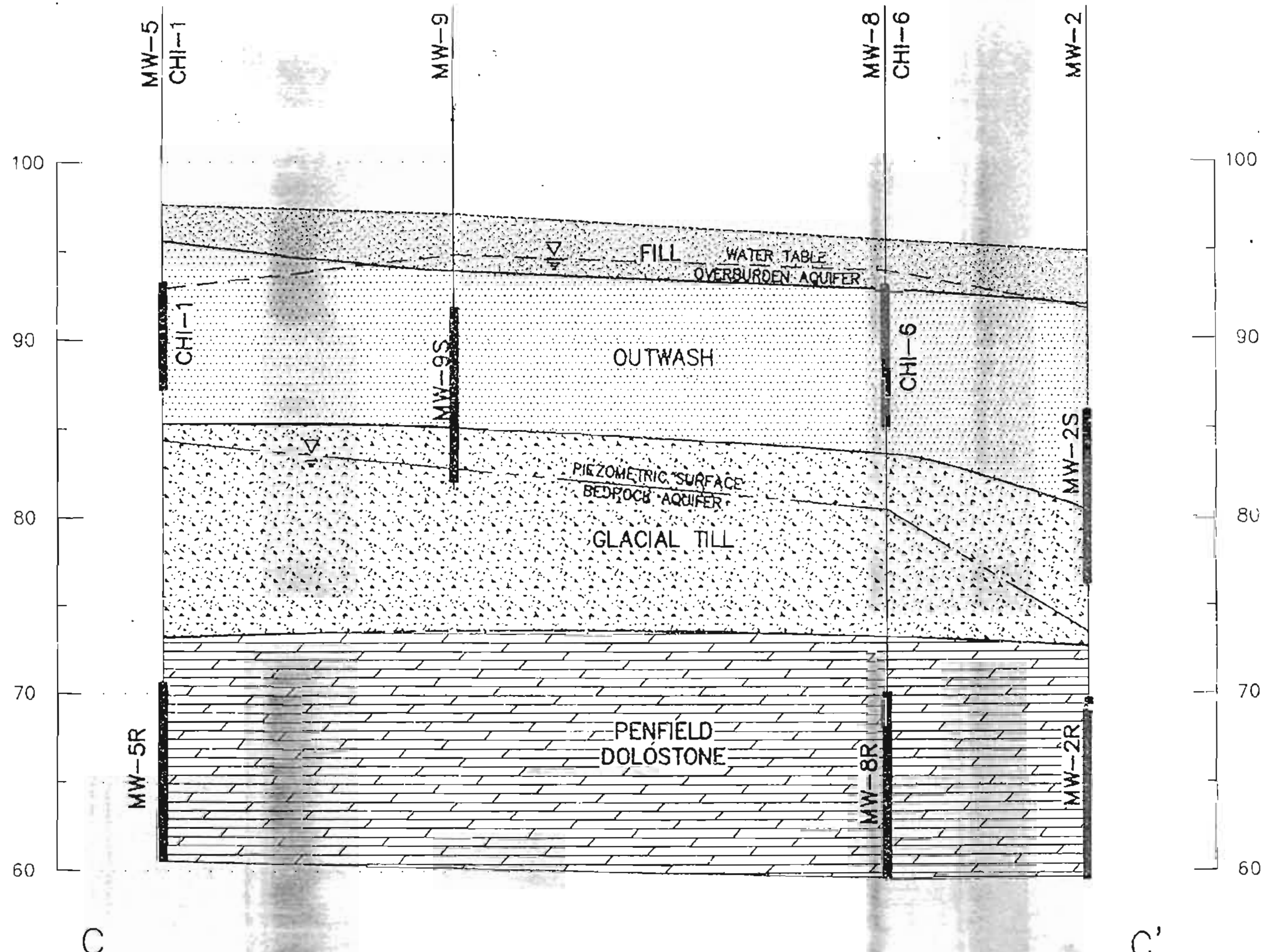
GROUNDWATER ELEVATION DATA FROM 1/25/96

SCALE
HORZ. 1 inch = 30 ft.
VERT. 1 inch = 6 ft.

GALSON / LOZIER

FIGURE 4-10
CROSS-SECTION B-B'
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE. NO. 8-28-088)

4-10



CROSS-SECTION C-C'

GROUNDWATER ELEVATION DATA FROM 1/25/96

SCALE
HORZ. 1 inch = 30 ft.
VERT. 1 inch = 6 ft.

FIGURE 4-11
CROSS-SECTION C-C'
DAVIS-HOWLAND OIL CORPORATION, ROCHESTER, NY (NYSDEC SITE NO. 8-28-088)

FIGURE NO.
4-11

H Soils Management Plan

Site Soils Management Plan
for the former Davis Howland Oil Company Site
NYSDEC Site No. 8-28-088
Rochester, New York
October 2014

Prepared by: Ashlee Patnode, Ecology and Environment Engineering, P.C.

Reviewed by: Mike Steffan, Ecology and Environment Engineering, P.C.

Accepted for Use:

Revisions:

Dated	Revisions	By

1.0 Introduction

This Soils Management Plan has been prepared for use in conjunction with the Davis Howland Oil Company (DHOC) Site Management Plan (SMP). The purpose of this Soils Management Plan is to provide guidance for the proper handling and final disposition of potentially contaminated soils, subsurface debris, and miscellaneous materials excavated in and around the site. Any proposed maintenance of air sparging and vapor extraction structures, utilities and piping servicing treatment equipment including asphalt pavements; excavation of existing soils, including sub-base materials and sub-floor slab materials; and decommissioning of monitoring wells/piezometers and other subsurface utilities must be evaluated for the potential to expose site contaminants to the environment.

These activities must be performed in accordance with this Soils Management Plan, the Community Protection Plan (CPP), the Generic Health and Safety Plan (GHASP) and the established and approved Institutional Controls and Engineering Controls (IC/EC) presented in the DHOC SMP. A Site-Specific Soils Management Plan used in corrective or remedial activities must be prepared using, as a minimum, the requirements of this Soils Management Plan. All excavations within the DHOC site boundaries (see Figure 1) should follow the procedures outlined in this Soils Management Plan.

When excavation or maintenance activities are planned in the designated areas of the DHOC Site (consisting of areas OU-1 and OU-2) where soils, subsurface debris, or miscellaneous materials may be contaminated, adequate personal protective equipment must be used to prevent exposure to potentially contaminated items.

Remaining contamination at the site includes trace levels of volatile organic compounds (VOCs) in the surface soils. Total semivolatile organic compound (SVOC) contamination in this media ranged from non-detect to 448 parts per million (ppm). In general, the highest levels of contamination were found in the area behind the Site building and along the railroad tracks.

The subsurface soil samples were higher in concentrations of VOCs and lower in SVOCs and metals. Highest VOCs were trichloroethene (6.4 ppm), xylene (5.1 ppm), and toluene (4.6 ppm). SVOCs were not encountered at levels of concern in subsurface soils. Of the metals, significant levels of mercury (0.37 ppm) were detected. The highest levels of VOCs were generally encountered at or near the water table. They are likely to be associated with the groundwater contamination.

A site specific work plan must be prepared that addresses the methods of excavation or maintenance to be performed, precipitation runoff, surface water and groundwater control, handling and storing of the contaminated soils, debris, miscellaneous materials, and dewatering fluids on site, and the proper transportation and disposal of the sediment or excavated material. The testing and analytical requirements must be described in detail as part of the work plan. In addition, a Health and Safety Plan (HASP) and specifications and drawings must be prepared and submitted to the New York State Department of Environmental Conservation (NYSDEC) for their comment and approval prior to performing any maintenance activities or excavations within these potentially contaminated areas.

2.0 Excavated Material

Soils, subsurface debris and miscellaneous materials excavated from below 5 feet below ground surface (BGS) at the DHOC Site are considered to be contaminated. Soils above 5 feet BGS still should be considered to be potentially contaminated and necessary precautions to prevent against exposure to this potential contamination should be taken.

3.0 Excavated Material Handling

This section describes the minimum requirements that must be followed when handling contaminated excavated materials in the designated areas of the DHOC Site. Additional requirements may be added as necessary by NYSDEC. If site disturbance is over 1 acre, NYSDEC Erosion and Sediment Control requirements are mandatory.

a. All maintenance activities and excavations should be completed during non-precipitation events unless these activities must be performed immediately. A water-handling and treatment plan must be developed for inclusion into the Soils Management Plan as a contingency in the event that emergency maintenance or excavation activities must be performed during a precipitation event. Contaminated surface and groundwater can be discharge through the treatment system equalization tank if filtered prior to discharge to the tank. Filtrate materials shall be disposed of along with any site soils if they meet the requirements of the receiving landfill.

b. Prior to performing any maintenance or excavation activity, samples of the affected soils, subsurface debris, and excavated miscellaneous materials (either new or from an existing stockpile) must be submitted to a pre-approved laboratory for analysis (a) to determine the appropriate disposal method, and (b) for waste characterization and profiling for disposal.

The analysis must be performed by a laboratory certificated by the National Voluntary Laboratory Accredited Program (NVLAP). If, in the opinion of NYSDEC, the materials are considered free of contamination, then the materials may be handled by standard construction means and methods and in conformance with NYSDEC disposal requirements.

c. Transport of excavated materials (if deemed necessary) must be performed using approved weather-tight containers. Dump trucks may be used if their beds are lined with 40-mil polyethylene or an approved equivalent.

d. Weather-tight containers, such as roll-offs and drums, should be used to store excavated materials. However, as an option for small quantities of materials, excavated materials may be stored on a 40-mil polyethylene base sheet and covered with a waterproof cover when not being added to or removed.

e. Non-contaminated drainage from the waterproof cover must be directed away from the stockpiled soils suspected of being contaminated and collected in a designed water-tight sump or containers for observation or analysis prior to being manually discharged to an on-site ditch or drainageway or the treatment system equalization tank.

f. Uncontaminated soils and subsurface debris must not come into contact with excavated materials. If the contaminated soils come into contact with the stored excavated materials, these soils must also be considered contaminated.

g. Contaminated materials should be stored on site for as short a period as possible prior to disposal. In no event should the materials be stored for longer than 90 days.

h. Transport of contaminated excavated materials (if deemed necessary) shall be provided by a certified transportation company that can ship either hazardous waste or solid wastes.

i. Disposal of contaminated excavated soils, subsurface debris, and miscellaneous materials shall be at an approved disposal facility. Sampling and analysis for disposal requirements (i.e., TCLP) shall be performed as described in the DHOC SMP. Additional requirements of the disposal company receiving the waste (if deemed necessary) shall also be followed.

4.0 Backfill Materials

All backfill materials shall be obtained from an approved source, free of all contaminants per the NYSDEC Department of Environmental Remediation 10 requirements, and suitable for the intended purpose (NYSDEC 2010). Location of the source materials and analytical results are to be provided to demonstrate acceptability of the materials. Uncontaminated on-site soils should be used as on-site backfill when feasible.

a. Backfill materials used around sewers and other below-grade features shall be placed and compacted such that no voids will result and full support will be provided to the below-grade feature and the pavement structure in the vicinity of the below-grade feature.

b. Backfill material used under floor slabs must be well-graded crushed stone and placed and compacted to support the anticipated loadings within buildings.

c. Backfill used in other areas shall be material appropriate for that area's use.

5.0 Backfill Placement

a. Backfill used beneath pavements shall be placed on a prepared subgrade in 6-inch lifts and compacted to 95% of the maximum dry density per American Society for Testing and Materials 1557 for modified Proctor. The combined thickness of the lifts shall be at least the same as the thickness of the existing fill.

b. Backfill used in unpaved areas must be compacted as necessary and be suitable for the intended use of the area being backfilled.

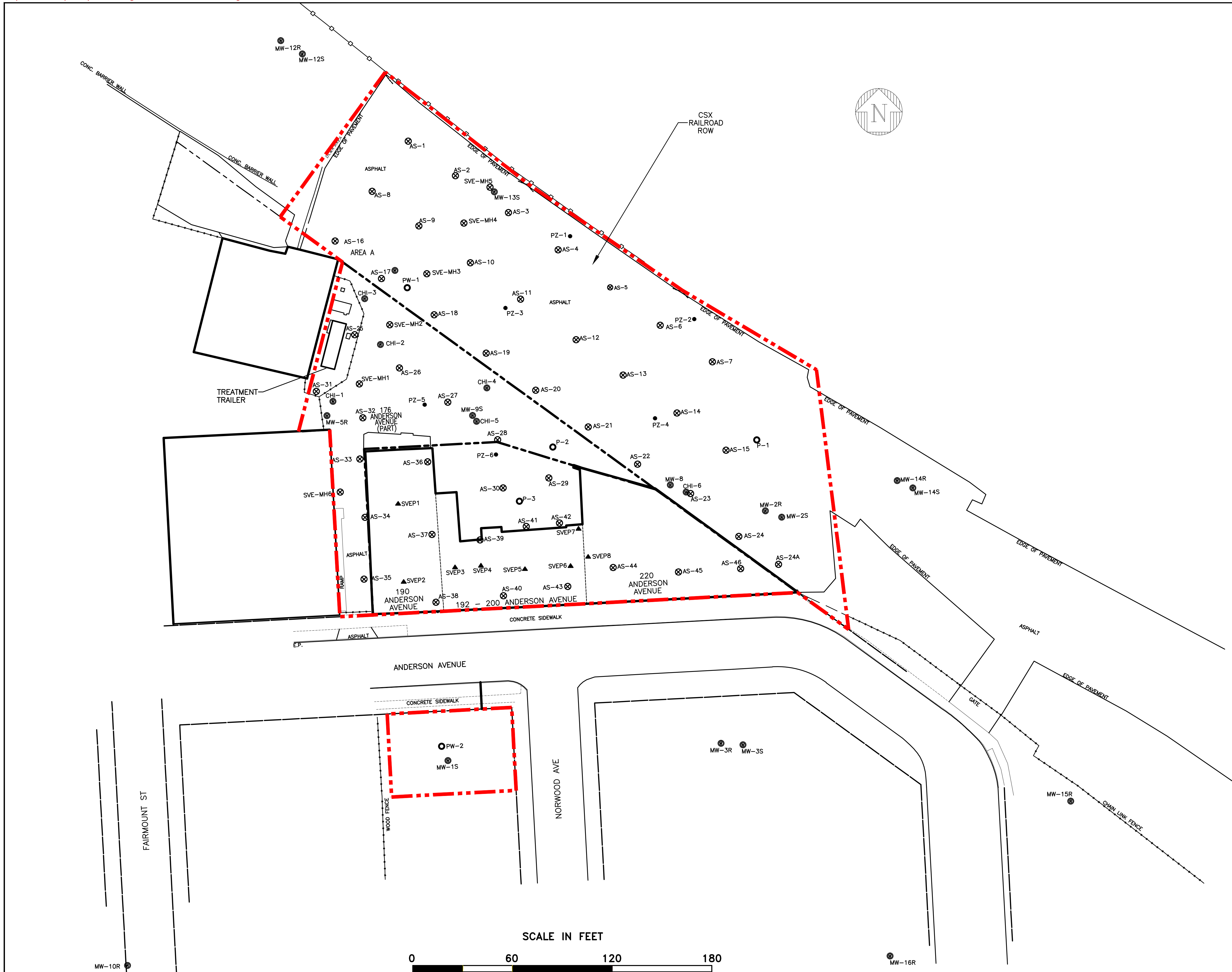
6.0 Investigation-Derived Waste

At least one waste stream type of investigation-derived waste is anticipated to be generated: personal protective equipment. NYSDEC will determine, on a case by case basis, what other wastes will require disposal. Waste streams will be segregated and not mixed. Existing data indicates that there are no direct contact exposure concerns, so decontamination waters will be disposed of by discharging onto the ground in an unpaved area. In the event that evidence of significant contamination is present (e.g., strong odors, sheen, product), the waste will be containerized in steel drums and stored on site pending analysis and potential off-site disposal. All expendable materials generated during the investigation (including, but not limited to, gloves and plastic sheeting) will be bagged and disposed of off-site as non-regulated solid waste.

7.0 References

New York State Department of Environmental Conservation (NYSDEC). 2010. *Final Technical Guidance for Site Investigation and Remediation*, DER-10, 3 May 2010.

F:\Davis NY02\2014\Soils Management Excavation Area.dwg



LEGEND

⊗	MONITORING WELL
•	PIEZOMETER
o	PUMPING WELL
⊗	AIR SPARGE POINT
▲	SOIL VAPOR EXTRACTION POINT
(red dashed outline)	SOILS MANAGEMENT EXCAVATION AREA

ABBREVIATIONS

AS	AIR SPARGE
CH	CLEAN HARBOR
MH	MANHOLE
MW	MONITORING WELL
PART	PARTIAL
P	SHALLOW OVERBURDEN GROUNDWATER PUMPING WELLS
PW	BEDROCK GROUNDWATER PUMPING WELLS
PZ	PIEZOMETER
SVE	SOIL VAPOR EXTRACTION

NOTES

1. PIEZOMETERS, MONITORING WELLS, BUILDINGS AND PROPERTY LINES ARE BASED ON A SURVEY BY POPLI DESIGN GROUP, ARCHITECTURE AND ENGINEERING P.C. DATED DEC 7, 2012.
2. STREET LOCATIONS ARE APPROXIMATE.

ecology and environment engineering p.c.

FIGURE 1

SOILS MANAGEMENT EXCAVATION AREA
FORMER DAVIS HOWLAND OIL CORPORATION SITE
MONROE COUNTY, ROCHESTER, NY

I Generic Health and Safety Plan

POPLi
CONSULTING ENGINEERS
& SURVEYORS

SITE - SPECIFIC HEALTH AND SAFETY PLAN

PROJECT INFORMATION

Project Name:	Davis Howland OM&M	**Popli Project No.:**	TBD
Project Start Date:	Aug-07	**Weather:**	TBD
Completion Date:	Fall 2011		
Project Location:	200 Anderson Ave., Rochester, NY	**Project Task:**	Task 1: Complete a Site Specific Health and Safety Plan

Description of Work: Be **Specific:** Provide operation, maintenance and monitoring for the Davis Howland Oil Company Site treatment system for EEEPC. OM&M work shall include weekly site visits to review general system operations, record discharge readings, and perform general system balancing and maintenance requirements. Samples will be taken monthly during a weekly OM&M visit and taken to a third party laboratory for analysis.

Key Personnel: *Responsibilities:*	Mr. Michael Steffen *EEEPC Project Manager*	Mr. Michael Crawford *POPLI Field Team Leader*	Mr. Michael Crawford *POPLI Site Safety Officer*

Description of Hazards: For this work POPLI expects to encounter routine hazards associated with walking around public buildings / parking lots during daylight hours including broken glass. Hazards associated with building entry will include head impact from stationary objects such as pipes, steel beams, etc. and falling objects stored at elevated positions. Lifting hazards will be encountered during system maintenance and monitoring such as lifting manholes, pumps and other treatment system equipment. High Hot/Cold stress will occur due to extreme outside seasonal temperature and High Hot stress from the treatment system during maintenance. Chemical exposure will be encountered during sampling events. Electrocution can be encountered during treatment system maintenance. There will be no climbing or entry into confined spaces.

TASK HAZARDS						TASK SAFETY MEASURES & Personal Protection Equipment (PPE)			
Eye	Chemical Exposure	Yes	x	No		x	Safety Glasses		
	High Heat/Cold	Yes		No	x		Safety Goggles		
	Dust/Flying Debris	Yes		No	x		Face Shield		
	Impact	Yes		No	x		Shaded Lenses		
	Light/Radiation	Yes		No	x				
Head	Impact	Yes	x	No		x	Hard Hat	x	Orange, White, Blue
	Electrical Shock	Yes		No	x				
	Lack of Visibility	Yes		No	x				
Foot	Chemical Exposure	Yes		No	x	x	Work Boots	x	Steel Toed boots
	High Heat/Cold	Yes	x	No			Ankle Protection		I/75 C/75 (Impact/Compression)
	Impact/Compression	Yes		No	x		Rubber Boots		Cd Type 1 or 2 (Conductive)
	Slips/Trips	Yes	x	No		x	Insulated Boots		PR (Puncture Resistant)
	Puncture	Yes		No	x		Non-slip Soles		Mt/70 or 50 to 30 (Metatarsal)
	Slippery/Wet Surface	Yes	x	No			Chemical Resistant		EH (Electrical Hazard)
	Explosive/Flammable	Yes		No	x				SD Type I or II (Static
	Atmospheres	Yes		No	x				Dissipative)
	Electrical	Yes		No	x				
Hand	Chemical Exposure	Yes	x	No		x	Work Gloves		Rubber Gloves
	High Heat/Cold	Yes	x	No		x	Leather Gloves		Nitrile Gloves
	Cuts/Abrasion	Yes	x	No		x	Latex Gloves		Insulated Gloves
	Puncture	Yes		No	x		Vinyl Gloves		Metal Mesh Gloves
	Electrical Shock	Yes	x	No			Neoprene Gloves		
	Blood borne Pathogen	Yes		No	x		Butyl Gloves		
Body/Torso	Chemical Exposure	Yes		No	x		Tyvek Suits: White		Yellow
	Extreme Heat/Cold	Yes	x	No			UV Protection	x	First Aid Kit
	Abrasion	Yes		No	x	x	Coveralls		Traffic Cones
	Impact	Yes		No	x		Reflective Vest		Signage
	Electrical Arc	Yes		No	x		Insect Repellent		2-Way Radios
	Biological Hazards	Yes		No	x		Tick Removal Kit	x	Flashlight
Fall	Fall Hazard	Yes		No	x		Harness		Fall Protection Lanyard
Noise	Noise Hazard	Yes	x	No		x	Ear Plugs		Ear Muffs
Respiratory	Chemical Exposure	Yes		No	x		Respirator: 1/2 Face		Full Face
	Confined Spaces	Yes		No	x		Cartridge: P		OV C
	Particulate Exposure	Yes		No	x				
	Welding Hazard	Yes		No	x				

POPLi
Consulting Engineers & Surveyors

SITE - SPECIFIC HEALTH AND SAFETY PLAN

SITE CHEMICAL HAZARD EVALUATION or Site Contaminants of Concern[3]

Compound	Exposure limits (TWA) PEL	REL	TLV	Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description
Benzene	1.0 ppm IDLH =	0.1 ppm 500	10 ppm ppm	Yes	skin absorption, Inhalation, skin &/or eye contract, ingestion.	irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia; lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen].	aromatic odor
Chloromethane	--- ppm IDLH =	100 ppm 2,000	50 ppm ppm	Yes	Inhalation, skin &/or eye contact (liquid).	Dizziness, nausea, vomiting; visual disturbance, stagger, slurred speech, convulsions, coma,; liver damage; liquid: frostbite; reproductive, terogenic effects; [potential occupational carcinogen].	faint, sweet odor
1,1-Dichloroethane	100 ppm IDLH =	100 ppm 3,000	100 ppm ppm	Yes	Inhalation, ingestion, skin &/or eye contact.	Irritation skin; central nervous system depression; liver, kidney, lung damage.	chloroform-like odor
1,1-Dichloroethene	--- ppm IDLH =	--- ppm 3,000	5 ppm ppm	Yes	Inhalation, skin absorption, ingestion, skin &/or eye contact.	Irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen].	mild, sweet, chloroform-like odor
Cis & Trans-1,2-dichloroethene	200 ppm IDLH =	200 ppm 1,000	200 ppm ppm	Yes	Inhalation, ingestion, skin &/or eye contact.	Irritation eyes, respiratory system; central nervous system depression.	slightly acrid, chloroform-like odor
Di-n-butyl phthalate	5 mg/m^3 IDLH =	5 mg/m^3 4,000	5 mg/m^3 mg/m^3	No	Inhalation, ingestion, skin &/or eye contact.	Irritation eyes, upper respiratory system, stomach.	slight aromatic odor
1,1,1-Trichloroethane	350 ppm IDLH =	350 ppm 700	350 ppm ppm	Yes	Inhalation, ingestion, skin &/or eye contact.	Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage.	mild chloroform-like odor

Compound	Exposure limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description
	PEL	REL	TLV				
Trichloroethene	25 ppm IDLH =	100 ppm 1,000	50 ppm ppm	Yes	Inhalation, skin absorption, ingestion, skin &/or eye contact.	Irritation eyes, skin; headache, visual disturbance, lassitude weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias; paresthesia; liver damage; [potential occupational carcinogen].	chloroform-like odor
tetrachloroethene	-- ppm IDLH =	100 ppm 150	25 ppm ppm	Yes	Inhalation, skin absorption, ingestion, skin &/or eye contact.	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen].	chloroform-like odor
Toluene	100 ppm IDLH =	200 ppm 500	50 ppm ppm	Yes	Inhalation, skin absorption, ingestion, skin &/or eye contact.	Irritation eyes, nose, lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis, liver, kidney damage.	sweet, pungent, benzene-like odor
Vinyl chloride	-- ppm IDLH =	1 ppm ---	1 ppm ppm	Yes	Inhalation, skin, &/or eye contact (liquid).	lassitude (weakness, exhaustion), abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities, liquid: frostbite; [potential occupational carcinogen].	pleasant odor at high concentrations

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& SURVEYORS

SITE - SPECIFIC
HEALTH AND SAFETY PLAN

SITE CONTROL

Site Control/Site Security [1]: Client personnel (see EEEPC SHASP Section 10.4)

M&PT: [ ] Yes [x] No
If yes, sketch information on separate sheet

Confined Space Entry: [ ] Yes [x] No
If yes, attach permit

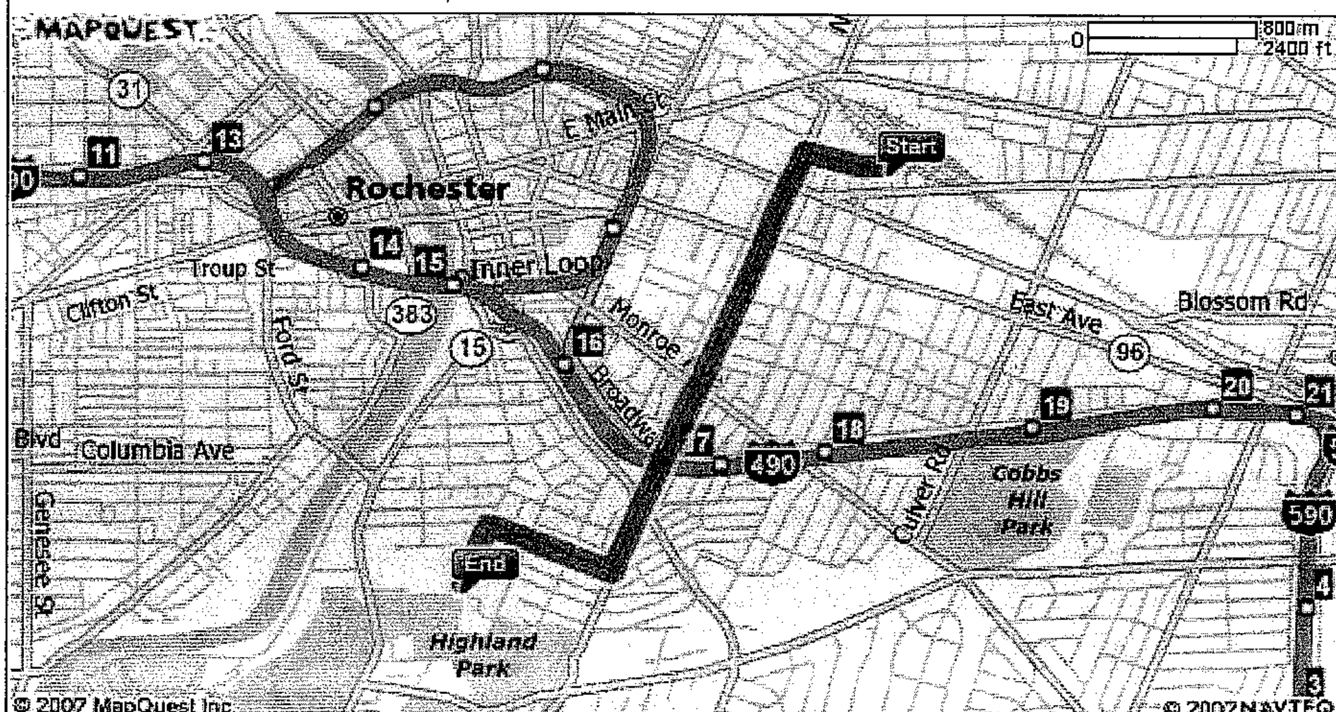
Decontamination: [ ] Yes [x] No
If yes, describe procedures

Site Monitoring [2]: [x] Yes [ ] No
Monitor Site treatment system including air sparge points, vapor extraction wells, observation wells, piezometers, and cat-ox for system efficiency.

CONTINGENCY PLAN

Emergency Contacts *Provide Telephone Numbers*				
	Police:	**911**	Client Contact:	**Mike Steffen**
	Ambulance:	**911**	Client Phone #:	**716-684-8060**
	Fire:	**911**	Popli PM Phone #:	**585-388-2060**
	Hospital:	**(585) 473-2200**	Poison Control:	**1-800-222-1222**

Route to Hospital: Leave the site going west on Anderson Ave. toward Norwood St. Go 0.2 miles and turn left onto North Goodman St. Go 1.6 miles and turn right onto Linden St. Go 0.4 miles and turn left onto South Ave. Go 0.2 miles until 1000 South Ave., Highland Hospital of Rochester. Total estimated time: 8 minutes, total estimated distance: 2.59 miles.



Communication: [x] Cell Phone [ ] Nearest Pay Phone [ ] Pager

Comments:

PLAN SIGN-OFF

Name: Michael Steffen (Project Manager)	Name: Michael Crawford (team leader)	Name:

POPLI
CONSULTING ENGINEERS
& SURVEYORS

SITE - SPECIFIC HEALTH AND SAFETY PLAN

X:	X:	X:
Date:	Date:	Date:
Name:	Name:	Name:
X:	X:	X:
Date:	Date:	Date:
SAFETY TRAINING/MEDICAL MONITORING		
Type:	Type: Hazwoper 40 hr Training	Type:
Date:	Date: 13-Jan-06	Date:
Type:	Type: Hazwoper 8 hr Refresher Course	Type:
Date:	Date: 8-Aug-07	Date:

[1] Who is providing site control/site security, if any, for this task? Examples of Site Control/Site Security include police, client representative (s), Popli or client supervisors

[2] Chemical Hazard Evaluation Sheets are attached for reference.

Industrial Medical Associates, P.C.

☐ 961 Canal St., Syracuse, NY 13210 (315) 478-1977 Fax: (315) 475-2909
☐ 5655 E Taft Rd, North Syracuse, NY 13212 (315) 458-1335 Fax: (315) 458-1738
☐ North Utica Shopping Center, Utica, NY 13502 (315) 724-0306 Fax: (315) 724-0371

February 5, 2007

Mr. Michael Crawford
55 Holloway Road
Rochester, NY 14610

Re: O'Brien & Gere Medical Surveillance Exam – Haz/Exit

Dear Mr. Crawford:

The results of your Medical Surveillance Exam, performed 1/23/07 have been received and reviewed by Dr. Ivan Wolf. The findings were normal with exception of the following:

General Exam Impression	- Chronic bilateral hearing loss, normal with aids
Hearing Test results	- Bilateral hearing loss

Respirator medical suitability is as follows:
No restriction on respirator usage.

If you have any question/concerns regarding the above results, please feel free to contact the office @ 315-478-1977.

Sincerely,

Ivan L. Wolf, MD

Ivan L. Wolf, M.D.
Industrial Medical Associates

INDUSTRIAL MEDICAL ASSOCIATES PC
961 CANAL STREET
SYRACUSE, NEW YORK 13210

Individual Hearing Evaluation Letter

02/02/2007
Page: 1

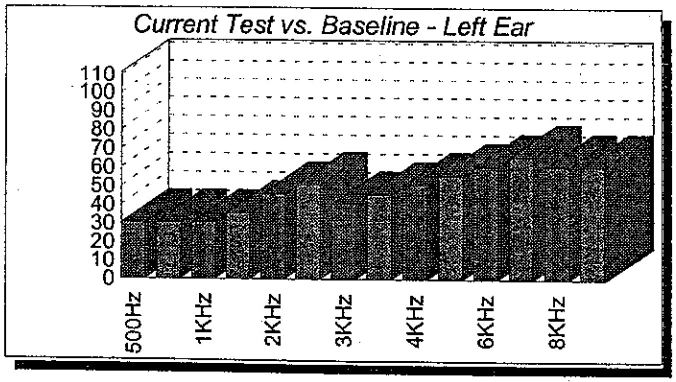
Name	**CRAWFORD, MICHAEL**	SSN/ID	**133-72-0697**
DOB	**01/25/1977**	Test Date	**01/23/2007**
Company	**OBRIEN & GERE**		

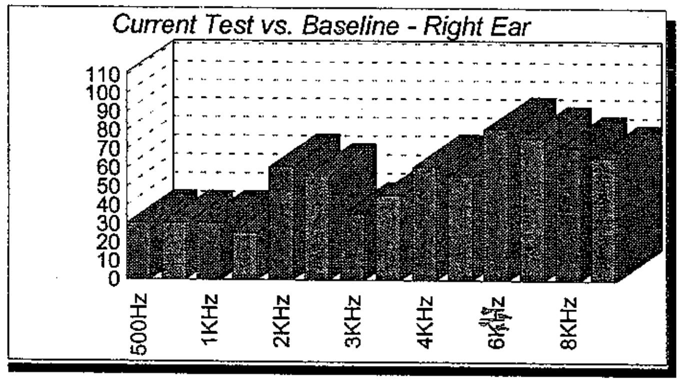
Your recent hearing test indicates the following.

You have a moderately severe loss in hearing. This occurs when the average level in hearing is greater than 55dB in either ear. If you have not already seen a hearing specialist regarding this matter, you should do so.

Your hearing test indicates a significant improvement in your hearing in the frequencies of 2000Hz, 3000Hz and 4000Hz.

Your hearing test indicates a possible medical problem. If you have not already seen a hearing specialist regarding this matter, it is recommended that you do so.





Current Test   Baseline Test

Always wear the appropriate hearing protection when exposed to excessive noise. This will help protect against any future loss of hearing. If you have any questions regarding this matter please speak to your supervisor.

Results of Hearing Test	500Hz	1KHz	2KHz	3KHz	4KHz	6KHz	8KHz
Left Ear	30	30	45	40	50	60	60
Right Ear	30	30	60	35	60	80	70

Physician's Signature

Date

THIS CERTIFIES THAT

<u>MIKE CRAWFORD</u>

HAS COMPLETED

"HAZWOPER 8 HR" REFRESHER

TRAINING AS REQ'D. IN

29CFR1910.120 & 1926.65

EXPIRATION DATE: 08/08/2008

FRANCES YOUNEY, OSHA 500 & 501 INSTRUCTOR

C.Y CONCEPTS (585) 349-1820

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

NPG Home | Introduction | Synonyms & Trade Names | Chemical Names | CAS Numbers | RTECS Numbers | Appendices | Search

1,1-Dichloroethane

CAS 75-34-3

$CHCl_2CH_3$

RTECS KI0175000

Synonyms & Trade Names
Asymmetrical dichloroethane; Ethylidene chloride; 1,1-Ethylidene dichloride

DOT ID & Guide
2362 130

Exposure Limits

NIOSH REL: TWA 100 ppm (400 mg/m^3) See Appendix C (Chloroethanes)

OSHA PEL: TWA 100 ppm (400 mg/m^3)

IDLH 3000 ppm See: 75343

Conversion 1 ppm = 4.05 mg/m^3

Physical Description
Colorless, oily liquid with a chloroform-like odor.

MW: 99.0	BP: 135°F	FRZ: -143°F	Sol: 0.6%
VP: 182 mmHg	IP: 11.06 eV		Sp.Gr: 1.18
Fl.P: 2°F	UEL: 11.4%	LEL: 5.4%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers, strong caustics

Measurement Methods
NIOSH 1003; OSHA 7
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap flush promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations NIOSH/OSHA
Up to 1000 ppm:
(APF = 10) Any supplied-air respirator
Up to 2500 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
Up to 3000 ppm:
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms Irritation skin; central nervous system depression; liver, kidney, lung damage

Target Organs Skin, liver, kidneys, lungs, central nervous system

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NIOSH Pocket Guide to Chemical Hazards

Vinylidene chloride

CAS 75-35-4

CH_2=CCl_2

RTECS KV9275000

Synonyms & Trade Names
1,1-DCE; 1,1-Dichloroethene; 1,1-Dichloroethylene; VDC; Vinylidene chloride monomer; Vinylidene dichloride

DOT ID & Guide
1303 130P (inhibited)

Exposure Limits
NIOSH REL: Ca See Appendix A
OSHA PEL†: none

IDLH Ca [N.D.] See: IDLH INDEX

Conversion

Physical Description
Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor.

MW: 96.9	BP: 89°F	FRZ: -189°F	Sol: 0.04%
VP: 500 mmHg	IP: 10.00 eV		Sp.Gr: 1.21
Fl.P: -2°F	UEL: 15.5%	LEL: 6.5%	

Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F.

Incompatibilities & Reactivities
Aluminum, sunlight, air, copper, heat [Note: Polymerization may occur if exposed to oxidizers, chlorosulfonic acid, nitric acid, or oleum. Inhibitors such as the monomethyl ether of hydroquinone are added to prevent polymerization.]

Measurement Methods
NIOSH 1015; OSHA 19
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation
Provide: Eyewash, Quick drench

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap flush immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys

Cancer Site [in animals: liver & kidney tumors]

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

Vinyl chloride

CAS 75-01-4

CH_2=CHCl

RTECS KU9625000

Synonyms & Trade Names
Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM)

DOT ID & Guide
1086 116P (inhibited)

Exposure Limits
NIOSH REL: Ca See Appendix A

OSHA PEL: [1910.1017] TWA 1 ppm C 5 ppm [15-minute]

IDLH Ca [N.D.] See: IDLH INDEX

Conversion 1 ppm = 2.56 mg/m^3

Physical Description
Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. [Note: Shipped as a liquefied compressed gas.]

MW: 62.5	BP: 7°F	FRZ: -256°F	Sol(77°F): 0.1%
VP: 3.3 atm	IP: 9.99 eV	RGasD: 2.21	
Fl.P: NA (Gas)	UEL: 33.0%	LEL: 3.6%	

Flammable Gas

Incompatibilities & Reactivities
Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]

Measurement Methods
NIOSH 1007; OSHA 4, 75
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Frostbite
Eyes: Frostbite
Wash skin: No recommendation
Remove: When wet (flammable)
Change: No recommendation
Provide: Frostbite wash

First Aid (See procedures)
Eye: Frostbite
Skin: Frostbite
Breathing: Respiratory support

Respirator Recommendations (See Appendix E) NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, skin, and/or eye contact (liquid)

Symptoms Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]

Target Organs Liver, central nervous system, blood, respiratory system, lymphatic system

Cancer Site [liver cancer]

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

1,2-Dichloroethylene

CAS 540-59-0

ClCH=CHCl

RTECS KV9360000

Synonyms & Trade Names
Acetylene dichloride, cis-Acetylene dichloride, trans-Acetylene dichloride, sym-Dichloroethylene

DOT ID & Guide
1150 130P

Exposure Limits
NIOSH REL: TWA 200 ppm (790 mg/m^3)
OSHA PEL: TWA 200 ppm (790 mg/m^3)

IDLH 1000 ppm See: 540590

Conversion 1 ppm = 3.97 mg/m^3

Physical Description
Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor.

MW: 97.0	BP: 118-140°F	FRZ: -57 to -115°F	Sol: 0.4%
VP: 180-265 mmHg	IP: 9.65 eV		Sp.Gr(77°F): 1.27
Fl.P: 36-39°F	UEL: 12.8%	LEL: 5.6%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers, strong alkalis, potassium hydroxide, copper [Note: Usually contains inhibitors to prevent polymerization.]

Measurement Methods
NIOSH 1003; OSHA 7
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations NIOSH/OSHA
Up to 2000 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode£
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)£
(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms Irritation eyes, respiratory system; central nervous system depression

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

Benzene

CAS 71-43-2

C_6H_6

RTECS CY1400000

Synonyms & Trade Names
Benzol, Phenyl hydride

DOT ID & Guide
1114 130

Exposure Limits

NIOSH REL: Ca TWA 0.1 ppm ST 1 ppm See Appendix A

OSHA PEL: [1910.1028] TWA 1 ppm ST 5 ppm See Appendix F

IDLH Ca [500 ppm] See: 71432 **Conversion** 1 ppm = 3.19 mg/m^3

Physical Description
Colorless to light-yellow liquid with an aromatic odor. [Note: A solid below 42°F.]

MW: 78.1	BP: 176°F	FRZ: 42°F	Sol: 0.07%
VP: 75 mmHg	IP: 9.24 eV		Sp.Gr: 0.88
Fl.P: 12°F	UEL: 7.8%	LEL: 1.2%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers, many fluorides & perchlorates, nitric acid

Measurement Methods
NIOSH 1500, 1501, 3700, 3800; OSHA 12, 1005
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation
Provide: Eyewash, Quick drench

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations (See Appendix E) NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, blood, central nervous system, bone marrow

Cancer Site [leukemia]

See also: INTRODUCTION See ICSC CARD: 0015 See MEDICAL TESTS: 0022

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

Methyl chloride

CAS 74-87-3

CH_3Cl

RTECS PA6300000

Synonyms & Trade Names
Chloromethane, Monochloromethane

DOT ID & Guide
1063 115

Exposure Limits

NIOSH REL: Ca See Appendix A

OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3 hours)

IDLH Ca [2000 ppm] See: 74873

Conversion 1 ppm = 2.07 mg/m^3

Physical Description
Colorless gas with a faint, sweet odor which is not noticeable at dangerous concentrations. [Note: Shipped as a liquefied compressed gas.]

MW: 50.5	BP: -12°F	FRZ: -144°F	Sol: 0.5%
VP: 5.0 atm	IP: 11.28 eV	RGasD: 1.78	
Fl.P: NA (Gas)	UEL: 17.4%	LEL: 8.1%	

Flammable Gas

Incompatibilities & Reactivities
Chemically-active metals such as potassium, powdered aluminum, zinc & magnesium; water [Note: Reacts with water (hydrolyzes) to form hydrochloric acid.]

Measurement Methods
NIOSH 1001
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Frostbite
Eyes: Frostbite
Wash skin: No recommendation
Remove: When wet (flammable)
Change: No recommendation
Provide: Frostbite wash

First Aid (See procedures)
Eye: Frostbite
Skin: Frostbite
Breathing: Respiratory support

Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, skin and/or eye contact (liquid)

Symptoms Dizziness, nausea, vomiting; visual disturbance, stagger, slurred speech, convulsions, coma; liver, kidney damage; liquid: frostbite; reproductive, teratogenic effects; [potential occupational carcinogen]

Target Organs central nervous system, liver, kidneys, reproductive system

Cancer Site [in animals: lung, kidney & forestomach tumors]

See also: INTRODUCTION See ICSC CARD: 0419 See MEDICAL TESTS: 0140

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

Toluene

CAS 108-88-3

$C_6H_5CH_3$

RTECS XS5250000

Synonyms & Trade Names
Methyl benzene, Methyl benzol, Phenyl methane, Toluol

DOT ID & Guide
1294 130

Exposure Limits
NIOSH REL: TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)
OSHA PEL†: TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)

IDLH 500 ppm See: 108883

Conversion 1 ppm = 3.77 mg/m^3

Physical Description
Colorless liquid with a sweet, pungent, benzene-like odor.

MW: 92.1	BP: 232°F	FRZ: -139°F	Sol(74°F): 0.07%
VP: 21 mmHg	IP: 8.82 eV		Sp.Gr: 0.87
Fl.P: 40°F	UEL: 7.1%	LEL: 1.1%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers

Measurement Methods
NIOSH 1500, 1501, 3800, 4000; OSHA 111
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations NIOSH
Up to 500 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage

Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

Dibutyl phthalate

CAS 84-74-2

$C_6H_4(COOC_4H_9)_2$

RTECS TI0875000

Synonyms & Trade Names
DBP; Dibutyl-1,2-benzene-dicarboxylate; Di-n-butyl phthalate

DOT ID & Guide

Exposure Limits

NIOSH REL: TWA 5 mg/m^3

OSHA PEL: TWA 5 mg/m^3

IDLH 4000 mg/m^3 See: 84742 **Conversion** 1 ppm = 11.57 mg/m^3

Physical Description
Colorless to faint-yellow, oily liquid with a slight, aromatic odor.

MW: 278.3	BP: 644°F	FRZ: -31°F	Sol(77°F): 0.001%
VP: 0.00007 mmHg	IP: ?		Sp.Gr: 1.05
Fl.P: 315°F	UEL: ?	LEL(456°F): 0.5%	

Class IIIB Combustible Liquid: Fl.P. at or above 200°F.

Incompatibilities & Reactivities
Nitrates; strong oxidizers, alkalis & acids; liquid chlorine

Measurement Methods
NIOSH 5020; OSHA 104
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: No recommendation
Eyes: Prevent eye contact
Wash skin: No recommendation
Remove: No recommendation
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Wash regularly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations NIOSH/OSHA

Up to 50 mg/m^3:
(APF = 10) Any air-purifying full-facepiece respirator equipped with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100, P100. Click here for information on selection of N, R, or P filters.

Up to 125 mg/m^3:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode£
(APF = 25) Any powered air-purifying respirator with a high-efficiency particulate filter.£

Up to 250 mg/m^3:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters.
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Up to 4000 mg/m^3:
(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R,

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

Methyl chloroform

CAS 71-55-6

CH_3CCl_3

RTECS KJ2975000

Synonyms & Trade Names
Chlorothene; 1,1,1-Trichloroethane; 1,1,1-Trichloroethane (stabilized)

DOT ID & Guide
2831 160

Exposure Limits

NIOSH REL: C 350 ppm (1900 mg/m^3) [15-minute] See Appendix C (Chloroethanes)

OSHA PEL†: TWA 350 ppm (1900 mg/m^3)

IDLH 700 ppm See: 71556

Conversion 1 ppm = 5.46 mg/m^3

Physical Description
Colorless liquid with a mild, chloroform-like odor.

MW: 133.4	BP: 165°F	FRZ: -23°F	Sol: 0.4%
VP: 100 mmHg	IP: 11.00 eV		Sp.Gr: 1.34
Fl.P: ?	UEL: 12.5%	LEL: 7.5%	

Combustible Liquid, but burns with difficulty.

Incompatibilities & Reactivities
Strong caustics; strong oxidizers; chemically-active metals such as zinc, aluminum, magnesium powders, sodium & potassium; water [Note: Reacts slowly with water to form hydrochloric acid.]

Measurement Methods
NIOSH 1003
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations NIOSH/OSHA
Up to 700 ppm:
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage

Target Organs Eyes, skin, central nervous system, cardiovascular system, liver

See also: INTRODUCTION See ICSC CARD: 0079 See MEDICAL TESTS: 0141

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

Tetrachloroethylene

CAS 127-18-4

$Cl_2C=CCl_2$

RTECS KX3850000

Synonyms & Trade Names
Perchlorethylene, Perchloroethylene, Perk, Tetrachlorethylene

DOT ID & Guide
1897 160

Exposure Limits
NIOSH REL: Ca Minimize workplace exposure concentrations. See Appendix A

OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3-hours)

IDLH Ca [150 ppm] See: 127184

Conversion 1 ppm = 6.78 mg/m^3

Physical Description
Colorless liquid with a mild, chloroform-like odor.

MW: 165.8	BP: 250°F	FRZ: -2°F	Sol: 0.02%
VP: 14 mmHg	IP: 9.32 eV		Sp.Gr: 1.62
Fl.P: NA	UEL: NA	LEL: NA	

Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene.

Incompatibilities & Reactivities
Strong oxidizers; chemically-active metals such as lithium, beryllium & barium; caustic soda; sodium hydroxide; potash

Measurement Methods
NIOSH 1003; OSHA 1001
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, liver, kidneys, central nervous system

Cancer Site [in animals: liver tumors]

See also: INTRODUCTION See ICSC CARD: 0076 See MEDICAL TESTS: 0179

NIOSH Publication No. 2005-149: September 2005

NIOSH Pocket Guide to Chemical Hazards

Trichloroethylene

CAS 79-01-6

$ClCH=CCl_2$

RTECS KX4550000

Synonyms & Trade Names
Ethylene trichloride, TCE, Trichloroethene, Trilene

DOT ID & Guide
1710 160

Exposure Limits
NIOSH REL: Ca See Appendix A See Appendix C
OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)

IDLH Ca [1000 ppm] See: 79016

Conversion 1 ppm = 5.37 mg/m^3

Physical Description
Colorless liquid (unless dyed blue) with a chloroform-like odor.

MW: 131.4	BP: 189°F	FRZ: -99°F	Sol(77°F): 0.1%
VP: 58 mmHg	IP: 9.45 eV		Sp.Gr: 1.46
Fl.P: ?	UEL(77°F): 10.5%	LEL(77°F): 8%	

Combustible Liquid, but burns with difficulty.

Incompatibilities & Reactivities
Strong caustics & alkalis; chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium)

Measurement Methods
NIOSH 1022, 3800; OSHA 1001
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system

Cancer Site [in animals: liver & kidney cancer]

See also: INTRODUCTION See ICSC CARD: 0081 See MEDICAL TESTS: 0236

J Community Protection Plan

Community Protection Plan
for the former Davis Howland Oil Company Site
NYSDEC Site No. 828088
Depew, New York
October 2014

Prepared by: Ashlee Patnode, Ecology and Environment Engineering, P.C.

Reviewed by:

Accepted for Use:

Revisions:

Dated	Revisions	By

1.0 Introduction

This Community Protection Plan (CPP) has been prepared for use in conjunction with the Davis Howland Oil Company Site Management Plan (SMP). The purpose of the CPP is to provide guidance on the minimum precautions necessary for community protection in the event that contaminated soils, sediments, and materials in and around the DHOC site are disturbed or contaminants are found in sediments during monitoring events. Any proposed maintenance of drainage structures, including asphalt pavements; excavation of existing soils, including sub-base materials and sub-floor slab materials; and installation and/or decommissioning of monitoring wells/piezometers and other subsurface utilities must be evaluated for the potential to expose contaminants to the community in the surrounding area. The Soils Management Plan (Appendix H of the Davis Howland Oil Company SMP) describes the areas on site where contamination remains.

These activities must be performed in accordance with this CPP, the Soils Management Plan, the generic Site-Specific Health and Safety Plan (sHASP) and the established and approved Institutional Controls and Engineering Controls (IC/EC) presented in the DHOC SMP. A Site-Specific CPP must be prepared using, as a minimum, the requirements of this CPP. The site-specific CPP must address the methods of community protection. The testing and analytical requirements must be described in detail as part of the plan. In addition, a Site-Specific Health and Safety Plan (sHASP), specifications and drawings must be prepared and submitted to the New York State Department of Environmental Conservation (NYSDEC) prior to performing any maintenance activities or excavations within the site.

2.0 Precautions Necessary to Protect Human Health

This section describes the minimum community protection requirements that must be followed when intrusive work occurs on the DHOC Site. Additional requirements may be added as necessary for the Site-Specific CPP.

a. **Air Monitoring** is required for community safety for odor and dust when intrusive work occurs on site. The Community Air Monitoring Plan (CAMP) shall be followed.

b. **Dust Control** should be accomplished by wetting soil with water.

c. **Dewatering Excavation.** Water must be sampled and characterized before it can be discharged to storm sewers. If water is found to be contaminated or stained it should be placed in storage containers for proper transportation and disposal (i.e., 55-gallon drums or larger containers).

3.0 Community Air Monitoring Plan

Real-time air monitoring for dust particulates will be conducted at the perimeter of the exclusion zone during all intrusive activities. 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. Dust particulates will be monitored at the downwind perimeter of the exclusion zone on a continuous basis. Continuous air monitoring will be conducted as follows:

- If particulate levels at the downwind station exceed particulate levels at the upwind station by more than 150 micrograms per cubic meter ($\mu g/m^3$), work activities will be halted and appropriate dust suppression measures will be employed. All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review, if requested.

3.1 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter of 10 microns or less (PM_{10}) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will include an audible alarm to indicate exceedances of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. Particulate matter action levels and the required responses are as follows:

- If the downwind PM_{10} particulate is 100 $\mu g/m^3$ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that either of the downwind stations report PM_{10} particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM_{10} particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other

controls are successful in reducing the downwind PM_{10} particulate concentration to within 150 $\mu g/m^3$ above the upwind level and preventing visible dust migration.

4.0 Community Fact Sheet

A fact sheet will be prepared and made available to the public in the event that there is a breakdown in the corrective action process. The necessity of a fact sheet will be determined by NYSDEC and NYSDOH.

Examples of such an event could include, but are not limited to, the following events:

- Groundwater samples found to exceed the standards, criteria, and guidance values[1] (SCGs);
- Contaminant issues on-site or off-site after event sampling.

K Well Inspection Form

Well Inspection Checklist

Site Name & Location: Davis Howland Oil Company, Rochester, NY

Well Number	Inspection Date	Time	Water Level (feet TOIC)	Total Depth (feet TOIC)	Well Paint (G/F/P)	Well Label (G/F/P)	Completion (s/u or curb)	Concrete Pad (G/F/P)	Casing Lock (G/F/P)	Protective Cover (G/F/P)	Inner Well Cap (G/F/P)	Obstructions in Well (Y/N)	Water in Annulus (Y/N)	Equipment in Well	Comments/Other Observations
MW-1S															
MW-2S															
MW-9S															
MW-12S															
MW-13S															
MW-14S															
PZ-1															
PZ-2															
PZ-3															
PZ-4															
MW-2R															
MW-5R															
MW-8R															
MW-10R															
MW-12R															
MW-14R															
MW-15R															
MW-16R															
PW-1			--	--											

curb = curb box/flush-mount
F = Fair
G = Good

N = No
P = Poor
s/u = stick-up

TOIC = Top of inner casing
Y = Yes

Name & Affiliation of Inspector(s): ______________________

____

L

General Monitoring and Long-term Well Sampling Procedures

Work Plan

General Monitoring and Long-term Well Sampling Procedures
Davis Howland Oil Company Site, NYSDEC Site #8-28-088
City of Rochester, Monroe County, New York

1.0 Introduction

1.1 Site Location and Description

The site encompasses adjacent parcels described as 190 through 220 Anderson Avenue and the portion of 176 Anderson Avenue immediately north and west of 190 through 220 Anderson Avenue. The site is approximately 1 acre. It is situated in an area that combines residential, commercial, and industrial facilities. Figure 1-1 is a general location map, Figure 1-2 shows the locations of the remedial area and local buildings, and Figure 1-3 is the location of the monitoring wells and historical analytical information from past work. No significant surface water is located in the immediate area of the site. The site is bounded on the south by Anderson Avenue, on the west by light industrial/commercial/retail buildings, and on the north and east by CSX transportation tracks and a right-of-way.

1.2 Site History

The site was used from 1942 to 1972 to produce industrial chemicals, oils, greases, and other lubricants, and from 1972 to 1994 the site was used by DHOC. In 1994, DHOC closed and all manufacturing and product processing operations ceased.

During the course of operations at the DHOC site, there were numerous incidents when materials leaked or were spilled onto the ground. Between 1974 and the early 1990s, there were many reports to NYSDEC of releases of materials at the site, ranging from waste oil and mineral oil to hydrochloric and sulfuric acids. However, there was no single occurrence that can account for the majority of contamination that is now found at the site. NYSDEC inspected the site in June 1991 and found several hundred drums of oils, solvents, and other materials, some of which were leaking, as well as several areas of stained soil.

A soil investigation was performed in 1991 by NYSDEC, which included soil sampling, waste inventory and characterization, and overpacking and containerizing several hundred leaking drums. Analytical results showed that the surficial soils were contaminated with miscellaneous petroleum products and solvents.

In October 1991, DHOC conducted its own remedial soil investigation with a consultant, Dunn Geosciences Corporation (DGC), Amherst, New York. The investigation included test pits and soil gas probing in order to determine the distribution of contaminated soils behind (north) the Davis-Howland buildings on Anderson Avenue. The DGC's remedial investigation (RI) report of November 26, 1991 noted the following contaminants were found on the site:

- Visually stained soils 6 to 7 feet below grade surface (bgs) north of the building;

- Chlorinated and non-chlorinated solvents 6 to 7 feet bgs that exceeded the NYSDEC Class GA groundwater standards; and

- Lead levels exceeding the groundwater standard at depths of 3 to 3.5 feet bgs.

As recommended by DGC's November 1991 RI report, all containerized liquid drummed wastes and the uppermost 1 to 2 feet of visually contaminated surface soils needed to be removed before remediation of deeper soils was attempted.

From April to June 1992, Clean Harbors of Kingston Inc. (CHI), Kingston, New York, removed drummed waste and cleaned up surficial soils. NYSDEC's inspection during the CHI cleanup indicated that visually contaminated soils remained after the surface soils excavation work and further removal would have been impractical at that time. NYSDEC decided that additional soil contamination would be addressed in later investigations. CHI submitted a draft report (June 1992) summarizing the three-month soil and drummed waste remediation. The report was deemed inadequate by NYSDEC because no field monitoring or soil sampling had been conducted to confirm that the surficial soil removal was adequate.

In conjunction with the drum and soil removal work (April to June 1992), CHI performed additional site investigations by sampling soils and installing and sampling six shallow groundwater monitoring wells. In September 1992, DHOC submitted the CHI groundwater report to NYSDEC. The analytical results indicated that the groundwater was contaminated with chlorinated and non-chlorinated solvents and metals.

In December 1994, NYSDEC sampled the site's groundwater monitoring wells to assist in the development of the Remedial Investigation/Feasibility Study (RI/F)S Work Plan. The results were consistent with the CHI Groundwater Report of September 1992.

Based on the sampling results, in April 1995 NYSDEC concluded the following:

- All monitoring well analytical results from the site exceeded the NYSDEC Class GA groundwater standards.

- Additional deep bedrock and shallow monitoring wells were needed to characterize the site.

- The designated groundwater chemicals of concern (COCs) included volatiles, semi-volatiles (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and metals.

In April 1995, based on the review of previous technical studies, the site was listed on the New York State Registry of Inactive Hazardous Waste Sites (Site No. 8-28-088), indicating that it posed a significant threat to human health and the environment.

The first of a two-phase RI/FS work assignment was completed in October 1996 by Lawler, Matusky Skelly Engineers, LLP, and Galson/Lozier Engineers (LMS/GL). The investigation and study focused on OU-1, which encompasses the shallow groundwater, surface soil, and subsurface soil on the site. Eight shallow and fifteen bedrock monitoring wells were installed for the Phase 1 investigation.

A second phase RI/FS was completed in October 1997 by Lawler, Matusky Skelly Engineers and Galson/Lozier Engineers. The investigation and study focused on further defining the nature and extent of soil and deep groundwater impacts on the site. Additional soil samples were collected at the surface and near-surface to confirm the results from Phase 1 of the first RI. In addition, bedrock monitoring wells were installed and sampled. Finally, air sparging and soil vapor extraction pilot tests were performed to evaluate the remedial technologies for use at the site.

An ROD was signed in March 1997 for the selected remedial alternative for OU-1. An additional ROD was signed in March 1998 for OU-2, which consists of the bedrock groundwater on the site.

Upon selection of the remedial technology to be used at the site under the ROD, an additional Pre-Remedial Design Investigation was performed in September and October 1998, also by LMS/GL. The pre-remedial design was the initial basis for the designing the remedial process, equipment selection, and sizing the through-put remedial operations to reach the goals outlined by the ROD.

In 1999, contract documents for remedial construction at the site were prepared by ENSR Engineering New York, Rochester, New York, and were issued at 65% completion to NYSDEC in September 2000. Because ENSR's NYSDEC standby contract was not renewed, EEEPC was assigned the project under its standby contract in October 2000. The contract drawings were reviewed by EEEPC in November 2000 and changes were requested to bring the documents to 100% completion. NYSDEC advertised the notice for bidders for remedial construction at the site in December 2000. Public bidding was opened in January 2001, with bids received in February 2001. Upon acceptance of the lowest qualified bid in March 2001, the Intent to Award the project was issued to The Tyree Corporation Limited (Tyree), Latham, New York. Project shop drawings were submitted by Tyree and reviewed for conformance with the Contract Documents by EEEPC. Notice to Proceed was issued by NYSDEC on June 7, 2001.

Construction of the remedial treatment system began on June 7, 2001, all outstanding incomplete work items were finalized on August 8, 2003, and the project proceeded to final closeout.

The construction project, as stipulated in Section VI of the Contract Documents, was divided into three portions of work to be performed by the contractor:

Part A. Remedial Construction.
Mobilization, site preparation, selective demolition, utility installation, blasted bedrock trench installation, groundwater extraction/recovery well installation, treatment equipment procurement and shop fabrication, cleanup, preparation of O&M plans, and demobilization of temporary services and facilities comprised the first part of the project. EEEPC provided construction oversight and monitored the remedial treatment systems and infrastructure. The following major actions also were performed by Tyree as part of the remediation:

- Installed 46 positive-pressure air sparging (AS) points and discharge lines and valve control manholes;

- Installed 8 interior soil vapor extraction (SVE) points and 1,300 feet of horizontal SVE collection lines;

- Installed 3 groundwater extraction wells with discharge lines and 6 observation piezometers;

- Decommissioned 8 monitoring wells;

- Installed 2 blasted-bedrock trench recovery wells;

- Excavated and disposed off-site an underground storage tank (UST);

- Excavated and disposed off-site contaminated soils in Areas A, B, and C

- Installed asphalt cover over the north and west end of the site;

- Fabricated and installed a trailer-mounted remediation system consisting of an air-sparging system, an SVE system, a low-profile air stripper, and a catalytic oxidation unit;

- Tied-in a new treated-discharge line to the existing County of Monroe combined sanitary sewer.

Part B. Start-up Operations.
Start-up activities included installing the treatment equipment, initiating startup of the treatment system, treatment system discharge sampling and analysis, and preparation of the final draft of the O&M plan. As part of the startup, Tyree also tested the remediation system for 30 days.

Part C. Substantial Completion/Continuous Operations.
This part of the project encompassed operating the remedial treatment system, monitoring and maintaining the treatment systems, and preparing and submitting the final O&M plan. The contractor operated, monitored, and maintained the remediation system for 155 days following successful completion of the start-up period. Tyree was responsible for operation and maintenance of the system for five months (until March 2003).

In November 2006, EEEPC submitted the Final Closure and Certification Report for the remedial construction oversight and monitoring performed at the Davis-Howland Oil Corporation site. The closure report provided information on:

- Remedial construction activities;

- Sampling and analysis;

- Contractor operations and maintenance of remedial equipment; and

- Issues and changes encountered with the remedial construction.

The report provided information on numerous construction issues, including maintenance activities and construction delays encountered by Tyree.

1.3 Purpose of this Work Plan

Ecology & Environment Engineering, P. C. (EEEPC) was contracted by NYSDEC to previously sample new and existing wells, and perform minor well maintenance. This work plan details the procedures to be used to complete these tasks.

2.0 Monitoring Well Sampling

A maximum of 20 monitoring wells listed in Table 1 will be sampled and analyzed for volatile organic compounds (VOCs) by Methods:

- Purgable Halocarbon – U.S. Environmental Protection Agency (EPA) Method 601;
- Total petroleum hydrocarbons (TPHs) – NYSDOH 310-13
- Acid Extractables and Base Nuetrals - EPA Method 625;
- Purgable Aromatics – EPA Method 602;
- pH – EPA Method 150.1.

Groundwater sampling will be performed using the equipment and procedures described below.

Equipment and Supplies

- Water level indicator;
- Disposable polyethylene bailers and new polypropylene or nylon line;
- pH/temperature/conductivity meter;
- Turbidity meter; and
- Cooler with ice.

Monitoring Well Groundwater Sampling Procedures

- All wells will be purged prior to sampling. Prior to purging, record static water levels and total well depths to within ±0.01 foot in each well. Use polyethylene bailers on new polypropylene or nylon line at each well.
- Purge wells of three to five times the volume of water standing in the well. Purged water will be handled as described in Section 8. Temperature, pH, specific conductance, and turbidity will be measured and recorded, at a minimum, initially, and after each well volume, and just prior to sampling. Purging will be performed until pH, specific conductance, and

temperature have stabilized and turbidity is 50 NTUs or less. If specific conductance, and temperature have stabilized, but a turbidity reading of 50 NTUs cannot be obtained, purging will not continue for no more than a total of two hours. If the well becomes dry during purging, sampling will occur when sufficient recharge has occurred and in no more than 24-hours from the time of purging.

- Fill VOC vials, leaving no headspace. Label sample bottles as specified in Section 4. Upon collection, immediately place the samples in a cooler maintained with ice at 4°C. Prepare chain-of-custody documents, package, and deliver or ship coolers via overnight delivery in accordance with the procedures specified in Section 4.

3.0 Field Quality Control Samples

Field QC samples help determine if project data quality objectives are being met. Analyzed in the laboratory as ordinary field samples, their purpose is to assess sampling and transport procedures as possible sources of sample contamination, and document overall sampling and analytical precision. Trip blanks for VOC analysis will be collected on each day wells are sampled for VOCs. One duplicate sample will be collected per 20 samples per sample round for all parameters. Additional volume will be collected for MS/MSD analyses at a rate of one MS/MSD set per 20 samples during each sample round. Rinsate blank samples will only be collected on days that non-dedicated sampling equipment is used. Rinsate blanks will be collected at the rate of one per 10 field samples collected with non-dedicated equipment (or one per day in the event that more than 10 samples are collected in a single day).

All groundwater samples will be analyzed at the work assignment subcontracted lab within a standard turnaround time of 21 days.

4.0 Sample Containers, Labeling, Packaging and Shipping, and Custody

The volumes and containers for the aqueous samples are presented in Table 2. Sample preservation and holding time requirements are also presented in this table. Pre-washed sample containers will be provided by the work assignment subcontracted lab and prepared in accordance with United States Environmental Protection Agency (EPA) bottle washing procedures. Samples will be stored on ice pending delivery to the work assignment subcontracted lab

Sample Labeling

All samples will be assigned a unique sample identifier. Labels for each sample container will contain the sample identifier, date of sample collection, analytical parameters, and type of preservation used. Any change in the label information prepared prior to the sample collection will be initialed by the sampler.

Sample Packaging and Shipping

Sample containers will be placed inside sealed plastic bags as a precaution against cross-contamination caused by leakage or breakage. The bags will be placed in coolers in such a manner as to eliminate the chance of breakage during shipment. Ice in plastic bags will be placed in the coolers to keep the samples at 4°C throughout shipment.

Sample shipment will be performed in strict accordance with all applicable United States Department of Transportation (DOT) regulations. The samples will be shipped or delivered to the work assignment subcontracted lab.

Sample Custody
A sample is considered to be in custody under the following situations:

- The sample is directly in your possession;
- The sample is clearly in your view;
- The sample is placed in a locked location; or
- The sample is in a designated secure area.

In order to demonstrate that the samples and coolers have not been tampered with during shipment, adhesive custody seals will be used. The custody seals will be placed either around the cap of each sample container or across the cooler lids in such a manner that they will be visibly disturbed upon opening of the sample container or cooler. The seals will be signed or initialed and dated by field personnel when affixed to the container and cooler.

Documentation of sample chain-of-custody is necessary to demonstrate that the integrity of the samples has not been compromised between collection and delivery to the laboratory. Each sample cooler will be accompanied by a chain-of-custody record to document the transfer of custody from the field to the laboratory. All information requested in the chain-of-custody record will be completed. A standard turn around time will be used for sample analysis. One copy of the chain-of-custody form will be retained by the samplers and placed in the project records file. The original will be sealed in a plastic bag and placed inside the cooler. Upon receipt at the laboratory, the chain-of-custody documents will be completed. It is the responsibility of work assignment subcontracted lab to document the condition of custody seals and sample integrity upon receipt.

5.0 Well Inspection and Maintenance

During the sampling of the existing wells, a brief inspection of the wells' condition will be made. The well inspection checklist is provided as Table 2. As needed, minor well repairs will be conducted, including well labeling, and replacing missing well flush-mount cover bolts. The need for more extensive repairs will be noted.

6.0 Health and Safety

Health and safety procedures will be as described in the project Health and Safety Plan and its amendment for these drilling and groundwater sampling tasks. When opening any well, the headspace will be screened with a photo ionization detector (PID) or flame ionization detector (FID). All work is expected to be completed in Level D personal protection.

7.0 Decontamination Procedures

7.1 Sampling Equipment Decontamination

All decontamination will be performed in accordance with NYSDEC-approved procedures. Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. Any non-dedicated miscellaneous development or sampling equipment will be decontaminated using the procedure above or by the following procedure:

- Initially remove all foreign matter;
- Scrub with brushes in trisodium phosphate (TSP) solution;
- Rinse with deionized water; and
- Allow to air dry.

Fluids generated during decontamination will be handled according to procedures outlined in Section 8.

8.0 Investigation-Derived Waste

At least three types of IDW will be generated: Development and purging groundwater, soil and residual sediment, and PPE. Waste streams will be segregated and not mixed.

Investigation-derived water will be filtered or left undisturbed to allow for the solids to settle out of suspension. The water with the fines removed will be pumped into the on-site groundwater treatment system. The remaining solids that are filtered or settled out will be placed in a dumpster with the soils generated during well installation.

All expendable materials generated during the investigation (including, but not limited to, Tyvek clothing, gloves, and plastic sheeting from the decontamination pad) will be double bagged and placed in an industrial dumpster.

9.0 Report

A brief report summarizing all field activities, and providing a summary of the analytical results will be provided.

10.0 Schedule

Dependent of site specific schedule as assigned by the EEEPC Project Managerand what is required in the Work Assignment.

Table 1

Groundwater Monitoring Well Inspection Form, Former Davis-Howland Oil Company Site, Rochester, New York, NYSDEC Site #8-28-088

Well Point Number	Inspection Date	Total Depth (feet) [a, b]	Water Level (feet) [a, b]	Well Paint (G/F/P)	Well Label (G/F/P)	Casing Lock (G/F/P)	Protective Cover (G/F/P)	Inner Well Cap (G/F/P)	Obstructions in Well (Y/N) [a]	Water in Annulus (Y/N)	Concrete Pad (G/F/P)	Comments
CHI-06												
MW-1S												
MW-1R												
MW-2R												
MW-2S												
MW-3R												
MW-3S												
MW-5R												
MW-8R												
MW-9S												
MW-10R												
MW-12R												
MW-12S												
MW-13S												
MW-14R												
MW-14S												
MW-15R												
MW-16R												
CHI-01												

Notes:

[a] Applies to wells only.
[b] Measured from top of inner casing.

Key:
F = Fair.
G = Good.
N = No.
P = Poor.
Y = Yes.

Table 2

Well Inspection Checklist, Davis Howland Oil Company Site, Rochester, NY

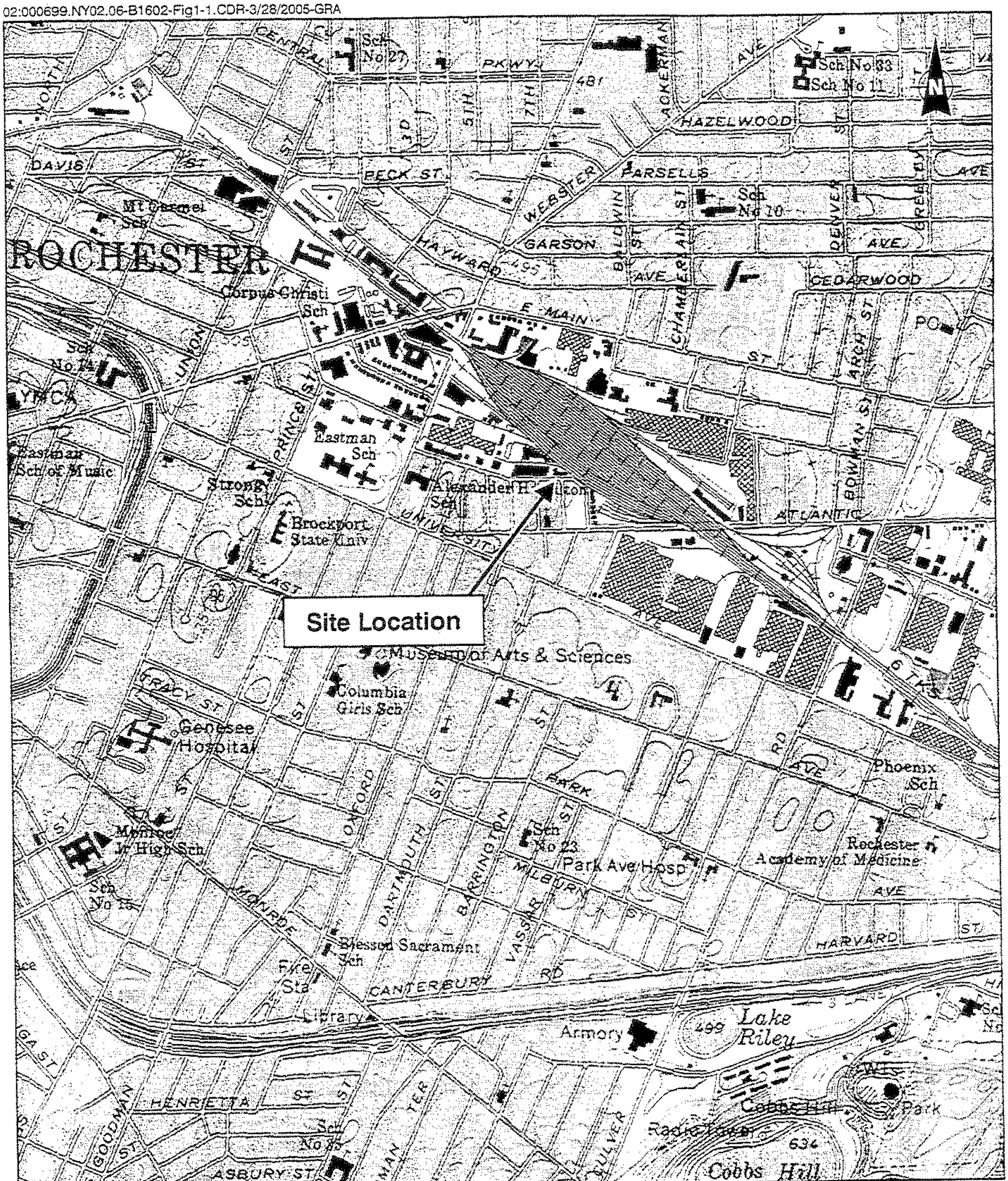
Well/SV Point Number	Inspection Date	Total Depth (feet) [a, b]	Well Paint (G/F/P)	Well Label (G/F/P)	Casing Lock (G/F/P)	Protective Cover (G/F/P)	Inner Well Cap (G/F/P)	Obstructions in Well (Y/N) [a]	Water in Annulus (Y/N)	Concrete Pad (G/F/P)	Comments
CHI-06											
MW-1S											
MW-1R											
MW-2R											
MW-2S											
MW-3R											
MW-3S											
MW-5R											
MW-8R											
MW-9S											
MW-10R											
MW-12R											
MW-12S											
MW-13S											
MW-14R											
MW-14S											
MW-15R											
MW-16R											
CHI-01											

Key:

B- Bailer
R- Needs replacing
G- Good
H- PDB Harness
N- No

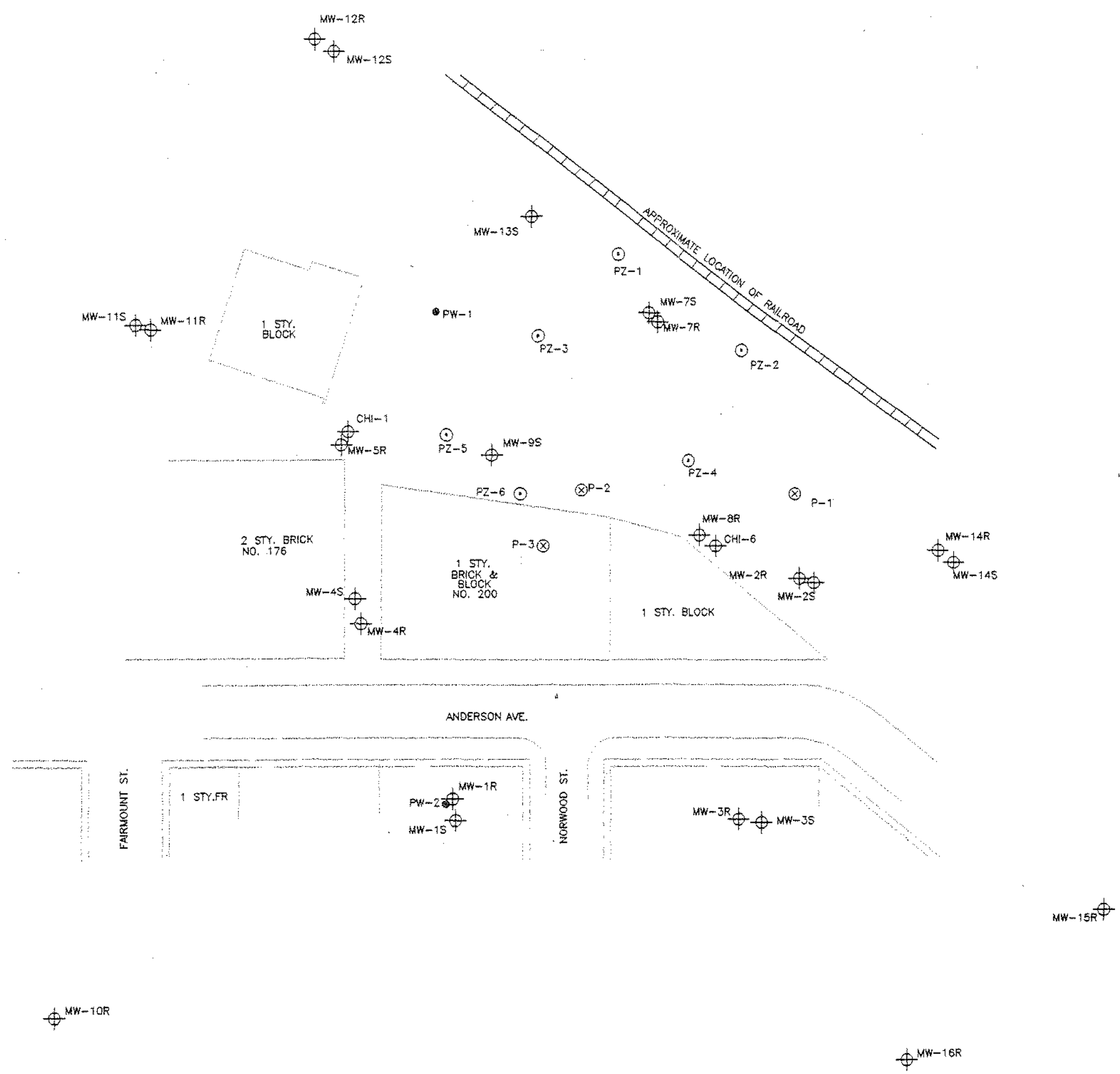
TOIC – Top of inner casing
U – Bladder Pump
Y - Yes

02:000699.NY02.06-B1602-Fig1-1.CDR-3/28/2005-GRA



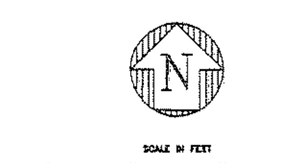
MAP SOURCE: USGS Topographic 7.5 Minute Series, Rochester East Quadrangle, Monroe County, New York

Figure 1-1 **Former Davis-Howland Oil Corporation Site Location Map**



LEGEND

MW-12R	EXISTING MONITORING WELL WITH GROUNDWATER ELEVATION, JUNE 2004
P-1	GROUNDWATER PUMPING WELLS
PW-1	DEEP PUMPING WELLS
PZ-4	PIEZOMETERS
	DIRECTION OF GROUNDWATER FLOW



DWG NO.	DATE	DESCRIPTION	NO.	DATE	DWN	APP'D	DESCRIPTION
-	-	-	A	2/04	-		ISSUED TO NYSDEC FOR REVIEW
REFERENCE DRAWINGS			REVISIONS				

ecology and environment engineering, p.c.

DESIGNED BY: MGS	CHECKED BY: AM
DRAWN BY: JGL	APPROVED BY: MGS

DAVIS-HOWLAND OIL CORPORATION SITE

MONROE COUNTY — ROCHESTER, NY

FIGURE 1-2

DAVIS-HOWLAND OIL CORPORATION SITE LOCATION MAP

SCALE	DATE ISSUED	C.A.D. FILE NO.	DRAWING NO.	REV.
1"=40'	7/04	Davis-Howland.dwg	-	A

M Monitoring Well Logs and Decommissioning Summaries

CLEAN HARBORS OF KINGSTON, INC., ALBANY DIVISION
P.O. BOX 1812
ALBANY, NEW YORK

PROJECT NAME	DAVIS HOWLAND OIL COMPANY	PAGE	1
CLIENT	DAVIS HOWLAND OIL COMPANY	BORING NO.	CHI-6
BORING LOCATION		CHI JOB NO.	SY5102
DRILLING CONTRACTOR	ROCHESTER DRILLING	WELL ELEVATION	
DRILLING METHOD	HSA; CASING/AUGER SIZE 4.3	DRILL FOREMAN	
		CHI GEOLOGIST	D. PRIEST
		START DATE	4\14\92
		END DATE	4\14\92

Sampler: unless noted sampler consists of a 2" split spoon driven using a 140 pound hammer falling 30 inches
Casing: unless noted casing driven using 300 pound hammer falling 24 "

DEPTH	SAMPLE TYPE & NO.	RANGE FROM / TO	BLOWS PER 6 " ON SPLIT SPOON				pen (in)	rec (in)	headspace (OVA) reading	strata change depth		NOTES	WELL DIAGRAM
	SS-1	0 - 2	4	15	12	12	24		120 PPM		Brown, fine to coarse SAND, Silt, some rock fragments		
	SS-2	2 - 4	8	9	10	26	24		800 PPM		Black Medium to coarse SAND and Gravel, some Silt, Cinders		
	SS-3	4 - 6	16	12	17	23	24		400 PPM		Black to gray, fine to medium SAND and Silt. Some coarse Sand and Gravel.		
	SS-4	6 - 8	6	16	24	34	24		210 PPM		SAME		
	SS-5	8 - 10	8	14	17	18	24		70 PPM		SAME		
											E.O.B 10 FEET WELL INSTALLED AT 10 FEET 8 FEET OF .010 WELL SCREEN 2 FEET PVC WELL RISER		

Granular soils blows/ft	density	Cohesive soils blows/ft	
0-4	v. loose	<2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
>50	v. dense	15 - 30	v. stiff
		>30	hard

NOTES

GROUNDWATER READINGS

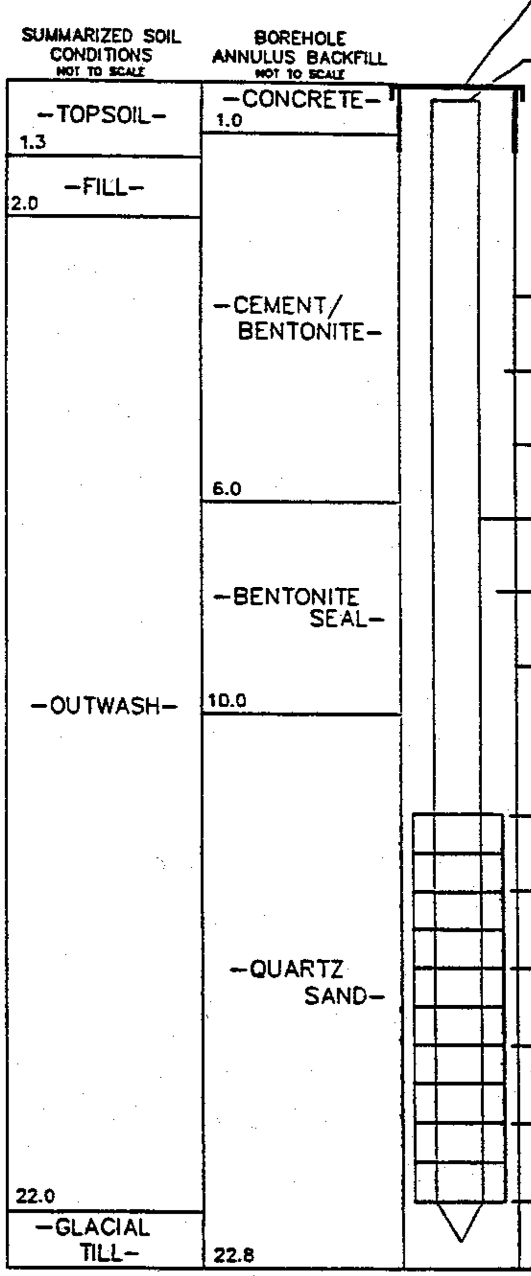
DATE	TIME	CASING AT	STABILIZATION

CHI BORING NUMBER

OVERBURDEN GROUNDWATER MONITORING WELL LOG

2240WLOG.DWG

BORING NO.	MW-1S
PROJECT:	DAVIS – HOWLAND SITE (NYS DEC SUPERFUND SITE NO. D002676-9)
LOCATION:	200 ANDERSON AVENUE, ROCHESTER, NEW YORK
CLIENT:	LMS AND NYS DEC WESTERN REMEDIATION
CONTRACTOR:	AMERICAN AUGER & DITCHING COMPANY, INC.
DRILLER:	J. PETRIE
INSTALLATION DATE:	SEPTEMBER 14–15, 1995
FILE NO.	2240-003
SHEET NO.	1 OF 1
LOCATION:	SEE PLAN
GROUND ELEVATION:	98.87
DATUM:	(SEE SURVEY)
GALSON REP:	C. STILES



PROTECTIVE CASING/STICKUP ABOVE GROUND SURFACE	0.1
WELL CASING BELOW GROUND SURFACE	0.2
THICKNESS OF SURFACE SEAL	1.0 ft.
TYPE OF SURFACE SEAL	CONCRETE
TYPE OF PROTECTIVE CASING	STEEL/ALUMINUM CURB BOX
INSIDE DIAMETER OF PROTECTIVE CASING	8 in.
DEPTH OF BOTTOM OF PROTECTIVE CASING	1.0 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND WELL CASING	CEMENT/BENTONITE GROUT
DIAMETER OF BOREHOLE	10.5 in. ±
TYPE OF WELL CASING COUPLING	FLUSH THREADED
DEPTH OF TOP OF WELLSCREEN	12.3 ft.
TYPE OF WELLSCREEN	4" PRE-PACKED SCH. 40 PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	4.0 in./2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	QUARTZ SAND
DEPTH OF BOTTOM OF WELLSCREEN	22.0 ft.
DEPTH OF BOTTOM OF BOREHOLE	22.8 ft.

REMARKS:

SEE TEST BORING REPORT MW-1R FOR COMPLETE SOIL DESCRIPTIONS AT THIS LOCATION.

GALSON / LOZIER ENGINEERS
ROCHESTER, NY

OVERBURDEN GROUNDWATER MONITORING WELL LOG

2240WLOG.DWG

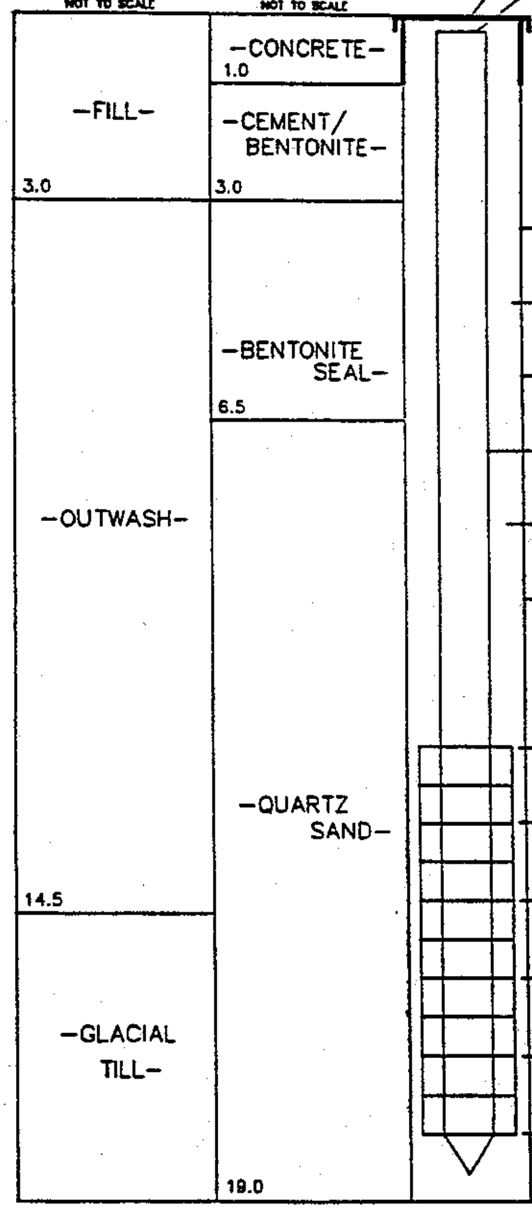
BORING NO. MW-2S

PROJECT: DAVIS – HOWLAND SITE (NYS DEC SUPERFUND SITE NO. D002676-9)
LOCATION: 200 ANDERSON AVENUE, ROCHESTER, NEW YORK
CLIENT: LMS AND NYS DEC WESTERN REMEDIATION
CONTRACTOR: AMERICAN AUGER & DITCHING COMPANY, INC.
DRILLER: J. PETRIE
INSTALLATION DATE: SEPTEMBER 19, 1995

FILE NO. 2240-003
SHEET NO. 1 OF 1
LOCATION: SEE PLAN
GROUND ELEVATION: 94.69
DATUM: (SEE SURVEY)
GALSON REP: C. STILES

SUMMARIZED SOIL CONDITIONS NOT TO SCALE

BOREHOLE ANNULUS BACKFILL NOT TO SCALE



PROTECTIVE CASING/STICKUP ABOVE GROUND SURFACE	0.1
WELL CASING BELOW GROUND SURFACE	0.2
THICKNESS OF SURFACE SEAL	1.0 ft.
TYPE OF SURFACE SEAL	CONCRETE
TYPE OF PROTECTIVE CASING	STEEL/ALUMINUM CURB BOX
INSIDE DIAMETER OF PROTECTIVE CASING	8 in.
DEPTH OF BOTTOM OF PROTECTIVE CASING	1.0 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND WELL CASING	CEMENT/BENTONITE GROUT
DIAMETER OF BOREHOLE	10.5 in. ±
TYPE OF WELL CASING COUPLING	FLUSH THREADED
DEPTH OF TOP OF WELLSCREEN	8.8 ft.
TYPE OF WELLSCREEN	4" PRE-PACKED SCH. 40 PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	4.0 in./2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	QUARTZ SAND
DEPTH OF BOTTOM OF WELLSCREEN	18.5 ft.
DEPTH OF BOTTOM OF BOREHOLE	19.0 ft.

REMARKS:

SEE TEST BORING REPORT MW-2R & MW-2S FOR COMPLETE SOIL DESCRIPTIONS AT THIS LOCATION.

GALSON / LOZIER
ENGINEERS
ROCHESTER, NY

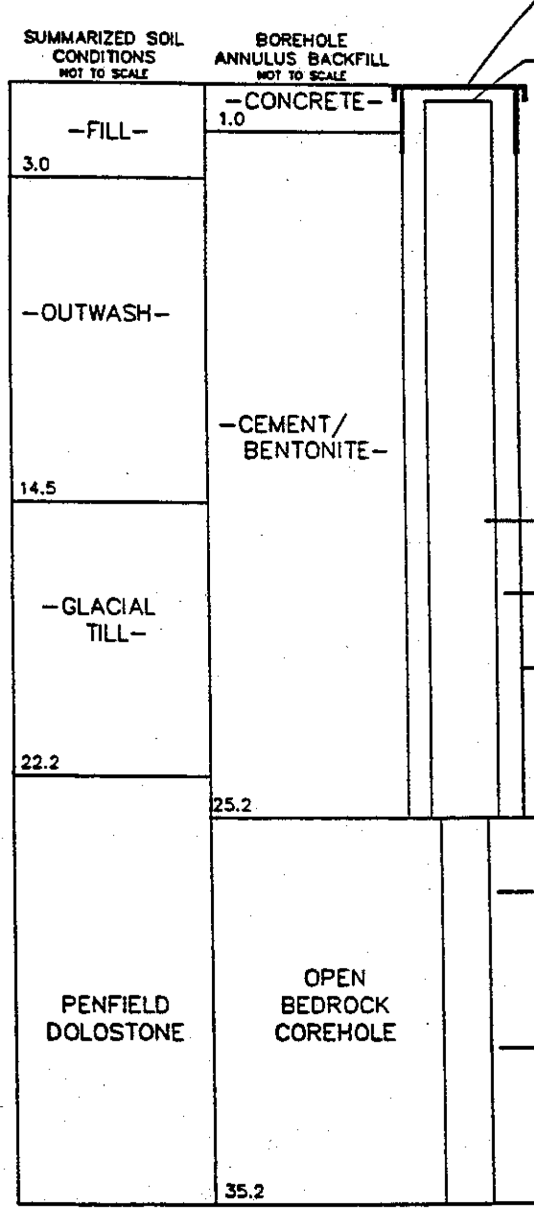
BEDROCK GROUNDWATER MONITORING WELL LOG

2240WLOG.DWG

BORING NO. MW-2R

PROJECT: DAVIS – HOWLAND SITE (NYS DEC SUPERFUND SITE NO. D002676-9)
LOCATION: 200 ANDERSON AVENUE, ROCHESTER, NEW YORK
CLIENT: LMS AND NYS DEC WESTERN REMEDIATION
CONTRACTOR: AMERICAN AUGER & DITCHING COMPANY, INC.
DRILLER: J. PETRIE
INSTALLATION DATE: SEPTEMBER 15–28, 1995

FILE NO. 2240-003
SHEET NO. 1 OF 1
LOCATION: SEE PLAN
GROUND ELEVATION: 94.89
DATUM: (SEE SURVEY)
GALSON REP: C. STILES



PROTECTIVE CASING/STICKUP ABOVE GROUND SURFACE	0.1 ft.
WELL CASING BELOW GROUND SURFACE	0.3 ft.
THICKNESS OF SURFACE SEAL	1.0 ft.
TYPE OF SURFACE SEAL	CONCRETE
TYPE OF PROTECTIVE CASING	STEEL/ALUMINUM CURB BOX
INSIDE DIAMETER OF PROTECTIVE CASING	8 in.
DEPTH OF BOTTOM OF PROTECTIVE CASING	1.0 ft.
INSIDE DIAMETER OF RISER PIPE	4.0 in.
TYPE OF BACKFILL AROUND WELL CASING	CEMENT/BENTONITE GROUT
DIAMETER OF BOREHOLE	10.5 in. ±
TYPE OF WELL CASING COUPLING	FLUSH THREADED
DEPTH OF TOP OF OPEN CORE HOLE	25.2 ft.
TYPE OF WELLSCREEN	HQ CORE HOLE
DIAMETER OF CORE HOLE	3 5/8 in.
DEPTH OF BOTTOM OF CORE HOLE	35.2 ft.

REMARKS:

SEE TEST BORING REPORT MW-2R & MW-2S FOR COMPLETE SOIL & ROCK DESCRIPTIONS AT THIS LOCATION.

GALSON / LOZIER
ENGINEERS
ROCHESTER, NY

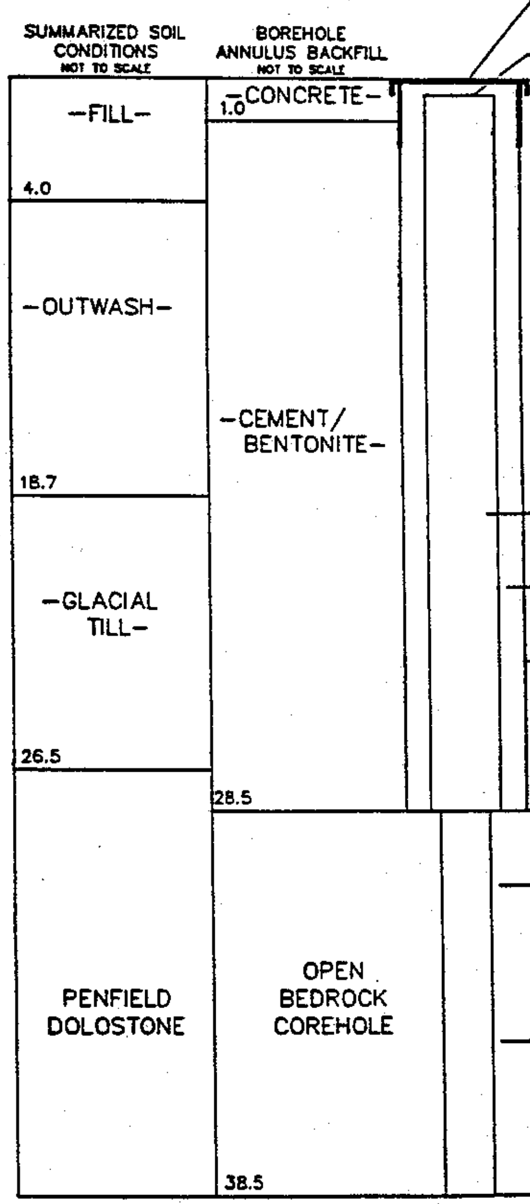
BEDROCK GROUNDWATER MONITORING WELL LOG

2240WLOG.DWG

BORING NO. MW-3R

PROJECT: DAVIS – HOWLAND SITE (NYS DEC SUPERFUND SITE NO. D002676-9)
LOCATION: 200 ANDERSON AVENUE, ROCHESTER, NEW YORK
CLIENT: LMS AND NYS DEC WESTERN REMEDIATION
CONTRACTOR: AMERICAN AUGER & DITCHING COMPANY, INC.
DRILLER: J. PETRIE
INSTALLATION DATE: SEPTEMBER 19-28, 1995

FILE NO. 2240-003
SHEET NO. 1 OF 1
LOCATION: SEE PLAN
GROUND ELEVATION: 96.89
DATUM: (SEE SURVEY)
GALSON REP: C. STILES



PROTECTIVE CASING/STICKUP ABOVE GROUND SURFACE	0.1 ft.
WELL CASING BELOW GROUND SURFACE	0.3 ft.
THICKNESS OF SURFACE SEAL	1.0 ft.
TYPE OF SURFACE SEAL	CONCRETE
TYPE OF PROTECTIVE CASING	STEEL/ALUMINUM CURB BOX
INSIDE DIAMETER OF PROTECTIVE CASING	8 in.
DEPTH OF BOTTOM OF PROTECTIVE CASING	1.0 ft.
INSIDE DIAMETER OF RISER PIPE	4.0 in.
TYPE OF BACKFILL AROUND WELL CASING	CEMENT/BENTONITE GROUT
DIAMETER OF BOREHOLE	10.5 in. ±
TYPE OF WELL CASING COUPLING	FLUSH THREADED
DEPTH OF TOP OF OPEN CORE HOLE	28.5 ft.
TYPE OF WELLSCREEN	HQ CORE HOLE
DIAMETER OF CORE HOLE	3 5/8 in.
DEPTH OF BOTTOM OF CORE HOLE	38.5 ft.

REMARKS:

SEE TEST BORING REPORT MW-3R FOR COMPLETE SOIL & ROCK DESCRIPTIONS AT THIS LOCATION.

GALSON / LOZIER ENGINEERS
ROCHESTER, NY

OVERBURDEN GROUNDWATER MONITORING WELL LOG

2240WLOG.DWG

BORING NO. MW-3S

PROJECT: DAVIS – HOWLAND SITE (NYS DEC SUPERFUND SITE NO. D002676-9)

LOCATION: 200 ANDERSON AVENUE, ROCHESTER, NEW YORK

CLIENT: LMS AND NYS DEC WESTERN REMEDIATION

CONTRACTOR: AMERICAN AUGER & DITCHING COMPANY, INC.

DRILLER: J. PETRIE

INSTALLATION DATE: SEPTEMBER 21, 1995

FILE NO. 2240-003

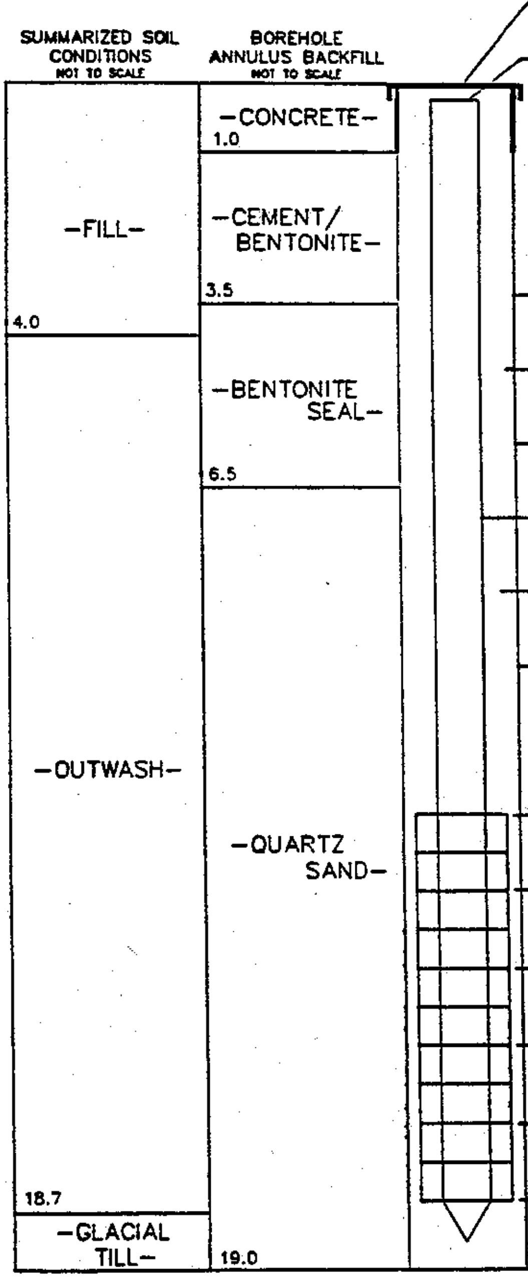
SHEET NO. 1 OF 1

LOCATION: SEE PLAN

GROUND ELEVATION: 96.73

DATUM: (SEE SURVEY)

GALSON REP: C. STILES



PROTECTIVE CASING/STICKUP ABOVE GROUND SURFACE	0.0
WELL CASING BELOW GROUND SURFACE	0.3
THICKNESS OF SURFACE SEAL	1.0 ft.
TYPE OF SURFACE SEAL	CONCRETE
TYPE OF PROTECTIVE CASING	STEEL/ALUMINUM CURB BOX
INSIDE DIAMETER OF PROTECTIVE CASING	8 in.
DEPTH OF BOTTOM OF PROTECTIVE CASING	1.0 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND WELL CASING	CEMENT/BENTONITE GROUT
DIAMETER OF BOREHOLE	10.5 in. ±
TYPE OF WELL CASING COUPLING	FLUSH THREADED
DEPTH OF TOP OF WELLSCREEN	8.8 ft.
TYPE OF WELLSCREEN	4" PRE-PACKED SCH. 40 PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	4.0 in./2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	QUARTZ SAND
DEPTH OF BOTTOM OF WELLSCREEN	18.5 ft.
DEPTH OF BOTTOM OF BOREHOLE	19.0 ft.

REMARKS:

SEE TEST BORING REPORT MW-3R FOR COMPLETE SOIL DESCRIPTIONS AT THIS LOCATION.

GALSON / LOZIER
ENGINEERS
ROCHESTER, NY

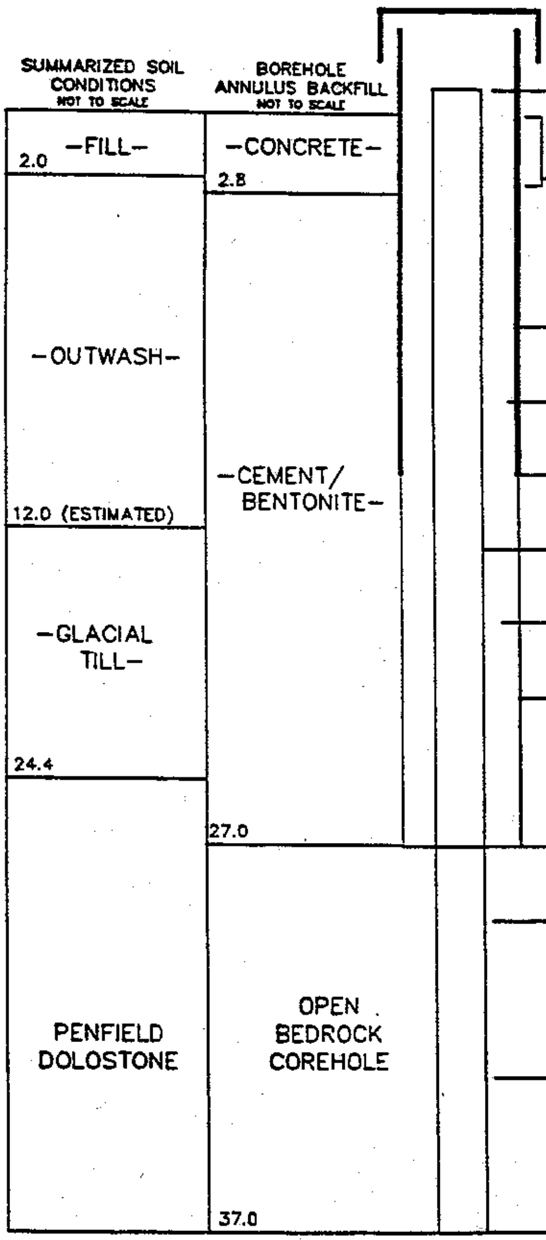
BEDROCK GROUNDWATER MONITORING WELL LOG

2240WLOG.DWG

BORING NO. MW-5R

PROJECT: DAVIS – HOWLAND SITE (NYS DEC SUPERFUND SITE NO. D002676-9)
LOCATION: 200 ANDERSON AVENUE, ROCHESTER, NEW YORK
CLIENT: LMS AND NYS DEC WESTERN REMEDIATION
CONTRACTOR: AMERICAN AUGER & DITCHING COMPANY, INC.
DRILLER: R. BAYE
INSTALLATION DATE: OCTOBER 3-6, 1995

FILE NO. 2240-003
SHEET NO. 1 OF 1
LOCATION: SEE PLAN
GROUND ELEVATION: 97.57
DATUM: (SEE SURVEY)
GALSON REP: C. STILES



PROTECTIVE CASING/STICKUP ABOVE GROUND SURFACE	2.2 ft.
WELL CASING STICKUP ABOVE GROUND SURFACE	2.2 ft.
THICKNESS OF SURFACE SEAL	2.8 ft.
TYPE OF SURFACE SEAL	CONCRETE
TYPE OF PROTECTIVE CASING	STEEL
INSIDE DIAMETER OF PROTECTIVE CASING	6 in.
DEPTH OF BOTTOM OF PROTECTIVE CASING	2.8 ft.
INSIDE DIAMETER OF RISER PIPE	4.0 in.
TYPE OF BACKFILL AROUND WELL CASING	CEMENT/BENTONITE GROUT
DIAMETER OF BOREHOLE	10.5 in. ±
TYPE OF RISER CASING COUPLING	FLUSH THREADED
DEPTH OF TOP OF OPEN CORE HOLE	27.0 ft.
TYPE OF WELLSCREEN	HQ CORE HOLE
DIAMETER OF CORE HOLE	3 5/8 in.
DEPTH OF BOTTOM OF CORE HOLE	37.0 ft.

REMARKS:

SEE TEST BORING REPORT MW-5R FOR COMPLETE SOIL & ROCK DESCRIPTIONS AT THIS LOCATION.

GALSON / LOZIER
ENGINEERS
ROCHESTER, NY

BEDROCK GROUNDWATER MONITORING WELL LOG

2240WLOG.DWG

BORING NO. MW-8R

PROJECT: DAVIS – HOWLAND SITE (NYS DEC SUPERFUND SITE NO. D002676-9)

LOCATION: 200 ANDERSON AVENUE, ROCHESTER, NEW YORK

CLIENT: LMS AND NYS DEC WESTERN REMEDIATION

CONTRACTOR: AMERICAN AUGER & DITCHING COMPANY, INC.

DRILLER: R. BAYE

INSTALLATION DATE: OCTOBER 5-9, 1995

FILE NO. 2240-003

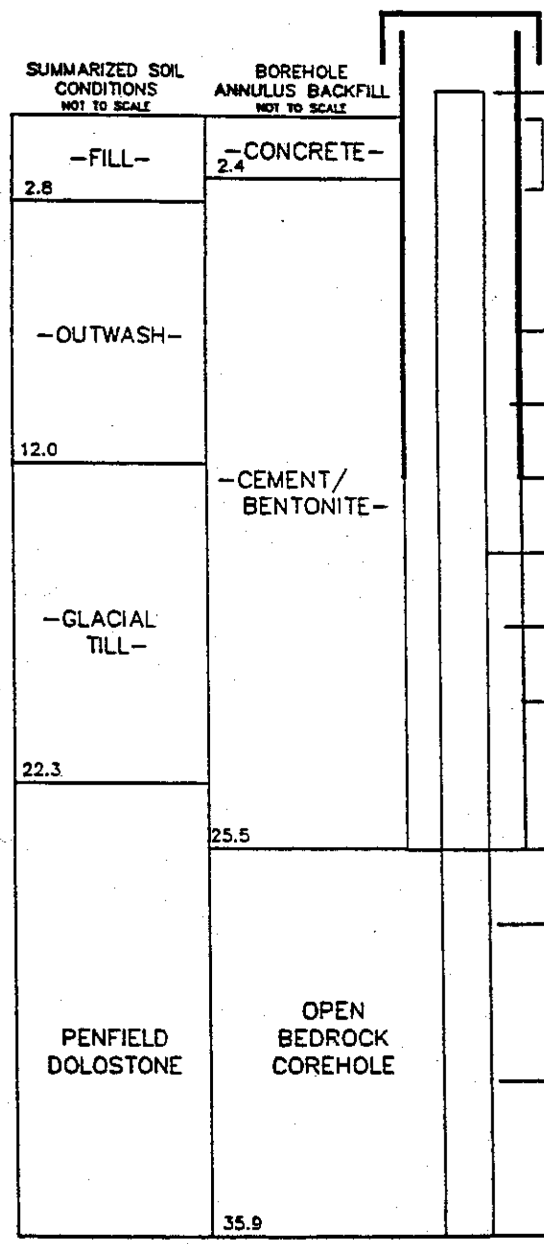
SHEET NO. 1 OF 1

LOCATION: SEE PLAN

GROUND ELEVATION: 95.56

DATUM: (SEE SURVEY)

GALSON REP: C. STILES



PROTECTIVE CASING/STICKUP ABOVE GROUND SURFACE	2.6 ft.
WELL CASING STICKUP ABOVE GROUND SURFACE	2.5 ft.
THICKNESS OF SURFACE SEAL	2.4 ft.
TYPE OF SURFACE SEAL	CONCRETE
TYPE OF PROTECTIVE CASING	STEEL
INSIDE DIAMETER OF PROTECTIVE CASING	6 in.
DEPTH OF BOTTOM OF PROTECTIVE CASING	2.4 ft.
INSIDE DIAMETER OF RISER PIPE	4.0 in.
TYPE OF BACKFILL AROUND WELL CASING	CEMENT/BENTONITE GROUT
DIAMETER OF BOREHOLE	10.5 in. ±
TYPE OF RISER CASING COUPLING	FLUSH THREADED
DEPTH OF TOP OF OPEN CORE HOLE	25.5 ft.
TYPE OF WELLSCREEN	HQ CORE HOLE
DIAMETER OF CORE HOLE	3 5/8 in.
DEPTH OF BOTTOM OF CORE HOLE	35.9 ft.

REMARKS:

SEE TEST BORING REPORT MW-8R FOR COMPLETE SOIL & ROCK DESCRIPTIONS AT THIS LOCATION.

GALSON / LOZIER ENGINEERS

ROCHESTER, NY

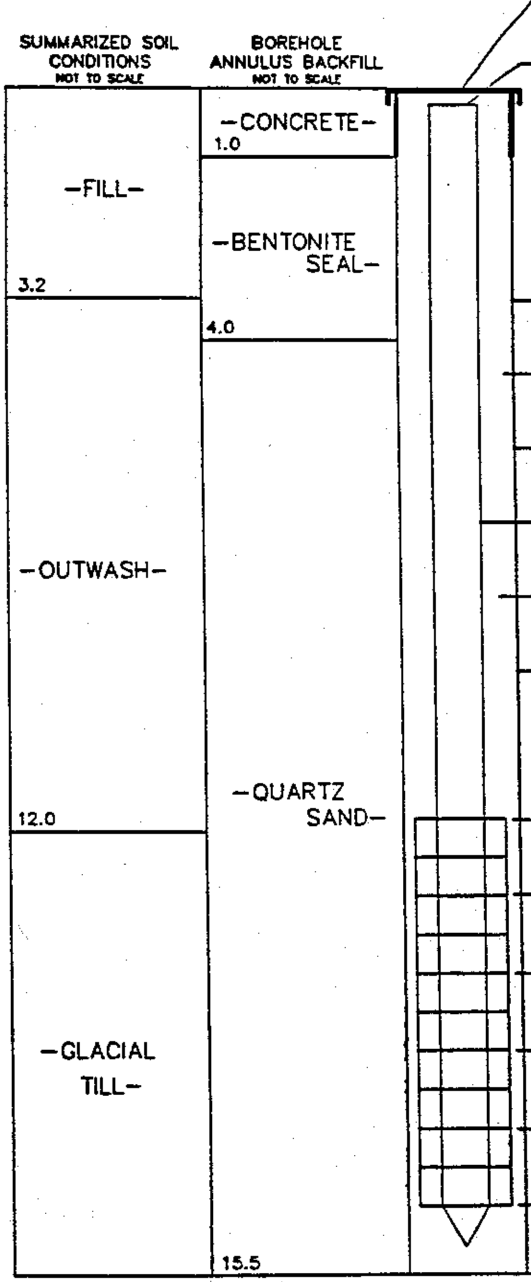
OVERBURDEN GROUNDWATER MONITORING WELL LOG

2240WLOG.DWG

BORING NO. MW-9S

PROJECT: DAVIS – HOWLAND SITE (NYS DEC SUPERFUND SITE NO. D002676-9)
LOCATION: 200 ANDERSON AVENUE, ROCHESTER, NEW YORK
CLIENT: LMS AND NYS DEC WESTERN REMEDIATION
CONTRACTOR: AMERICAN AUGER & DITCHING COMPANY, INC.
DRILLER: R. BAYE
INSTALLATION DATE: OCTOBER 5-6, 1995

FILE NO. 2240-003
SHEET NO. 1 OF 1
LOCATION: SEE PLAN
GROUND ELEVATION: 97.03
DATUM: (SEE SURVEY)
GALSON REP: C. STILES



PROTECTIVE CASING/STICKUP ABOVE GROUND SURFACE	0.0
WELL CASING BELOW GROUND SURFACE	0.6
THICKNESS OF SURFACE SEAL	1.0 ft.
TYPE OF SURFACE SEAL	CONCRETE
TYPE OF PROTECTIVE CASING	STEEL/ALUMINUM CURB BOX
INSIDE DIAMETER OF PROTECTIVE CASING	8 in.
DEPTH OF BOTTOM OF PROTECTIVE CASING	1.0 ft.
INSIDE DIAMETER OF RISER PIPE	2.0 in.
TYPE OF BACKFILL AROUND WELL CASING	CEMENT/BENTONITE GROUT
DIAMETER OF BOREHOLE	10.5 in. ±
TYPE OF WELL CASING COUPLING	FLUSH THREADED
DEPTH OF TOP OF WELLSCREEN	5.3 ft.
TYPE OF WELLSCREEN	4" PRE-PACKED SCH. 40 PVC
SCREEN SLOT SIZE	.010 in.
DIAMETER OF WELLSCREEN	4.0 in./2.0 in.
TYPE OF BACKFILL AROUND WELLSCREEN	QUARTZ SAND
DEPTH OF BOTTOM OF WELLSCREEN	15.0 ft.
DEPTH OF BOTTOM OF BOREHOLE	15.5 ft.

REMARKS:

SEE TEST BORING REPORT MW-9S FOR COMPLETE SOIL DESCRIPTIONS AT THIS LOCATION.

GALSON / LOZIER ENGINEERS
ROCHESTER, NY

GALSON CONSULTING

360 Linden Oaks, Rochester, NY 14625

GROUNDWATER MONITORING WELL LOG

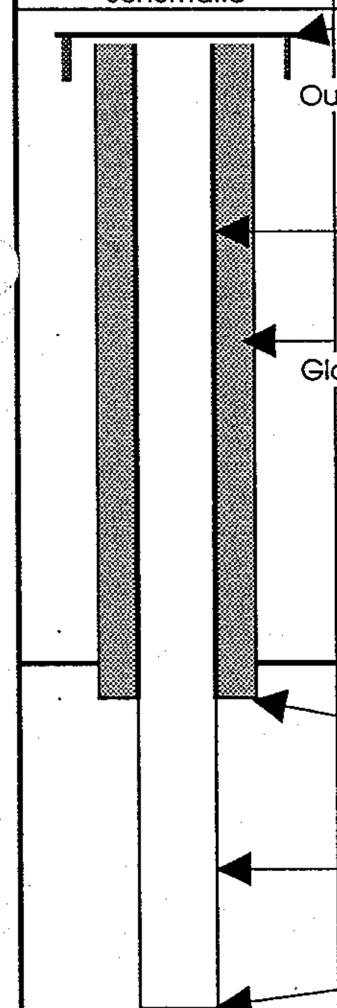
MW-10R

Client:	NYS DEC	Site Location:	Anderson Ave./Rochester NY
Project/Job No.	2240-003 / TSK4 / WST	Date(s):	11-Dec-96 to 19-Dec-96
Project Name:	Davis-Howland Oil Corp. RI	Project Manager:	Theresa Beddoe

Well No.	MW-10R	Contractor/Driller	American Auger & Ditching Co.
Boring No.	MW-10R	Drilling Method:	H.S.A. & Water Rotary
Type of Riser Pipe:	4" ID Sched 80 PVC		
Type of Screen:	Open borehole (3-7/8" Bit)	I.D. of Casing:	8" Dia. Flush Mount
Screen Lenth:	10 ft. open borehole	I.D.of Riser Pipe:	4.0 inch ID
Size of Screen Slot:	N.A.	I.D. of Screen:	3-7/8 in. open borehole
Filter Pack:	N.A.	Seal:	N.A.
Depth to Groundwater at Completi	18.20 ft.	Elev. of Reference Point: *	
Depth of Riser Below Ground Level:	~2 in.	* Measured From Top of Casing	

Fill Material Derived Topsoil

Well Construction Schematic



Comments	Depth (feet)	Soil Description
Flush Mount Well Protector	0.0	**Fill Material Derived Topsoil** Dark brown cmf(+) SAND, little(-) mf subrounded Gravel, trace (+) Silt, brick fragments. coal dust, roots and organic detritus (estimated thickness = 2.0 ft.)
4 in. ID Sched. 80 PVC Riser	5.0	**Outwash** Light to dark brown f SAND, trace Silt, trace mf(+) subangular Gravel, trace(-) cm Sand, moist to damp..
Cement / Bentonite Grout	10.0	Brown f SAND, little(-) Silt, wood fragments, damp to wet.
	15.0	**Glacial Till** Brown SILT, trace (+) mf subangualar to sub-rounded Gravel, moist to damp.
	18.5	Auger refusal.
Bedrock @ 24.1 feet.	24.1	**Top of Bedrock** Penfield Dolostone
Bottom of Casing @ 26.5 feet.	26.5	Bottom of 4 inch PVC Casing
3-7/8 inch Water Rotary Drill Hole.		
Bottom of Hole = 36.5 feet.	36.5	Bottom of bedrock borehole

Completed By: Craig A. Stiles

Comments (If Applicable, Include Weather Conditions):

- Bedrock @ 24.1 feet.
- Casing grouted to 26.5 feet.
- Open 3-7/8 in. dia. corehole from 26.5 to 36.5 ft.
- Well Volume = 0.63 gal./ft. of water in well.

Well No.: MW-10R

GALSON CONSULTING

360 Linden Oaks, Rochester, NY 14625

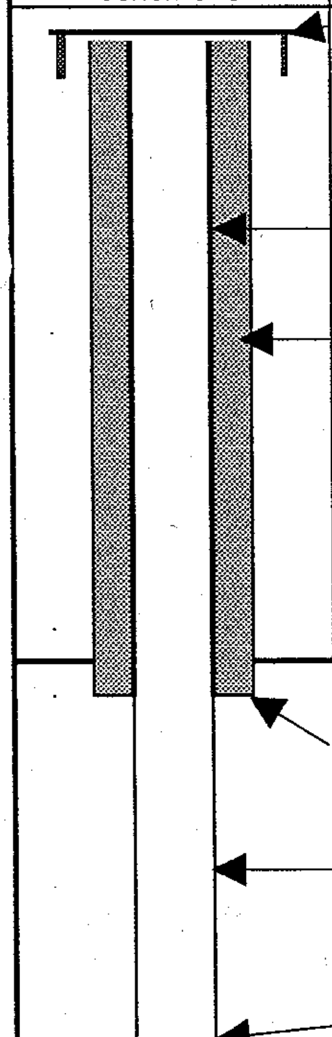
GROUNDWATER MONITORING WELL LOG

MW-12R

Client:	NYS DEC	Site Location:	Anderson Ave./Rochester NY
Project/Job No.	2240-003 / TSK4 / WST	Date(s):	18-Dec-96 to 3-Jan-97
Project Name:	Davis-Howland Oil Corp. RI	Project Manager:	Theresa A. Beddoe

Well No.	MW-12R	Contractor/Driller	American Auger & Ditching Co.
Boring No.	MW-12R	Drilling Method:	H.S.A. & Water Rotary
Type of Riser Pipe:	4" ID Sched 80 PVC		
Type of Scr Total De	Open borehole (3-7/8" Bit)	I.D. of Casing:	8" Dia. Flush Mount
Screen Lent Drilling/I	11.0 ft. open borehole	I.D.of Riser Pipe:	4.0 inch ID
Size of Screen Slot:	N.A.	I.D. of Screen:	3-7/8 in. open borehole
Filter Pack:	N.A.	Seal:	N.A.
Depth to Groundwater at Completio	5.90 ft.	Elev. of Reference Point: *	
Depth of Riser Below Ground Level:	~2 in.		* Measured From Top of Casing

Well Construction Schematic



Comments	Depth (feet)	Soil Description
Flush Mount Well Protector	0.0	**Fill Material**
		Dark gray to black cmf SAND and mf$^{(+)}$ Gravel, trace Silt, coal fragments, coal dust, wood fragments (est. depth = 4.5 feet).
4 in. ID Sched. 80 PVC Riser		**OUTWASH**
	5.0	Brown f SAND, trace mf subrounded to sub-angular Gravel, trace(-) Silt, damp to wet, no odors.
Cement / Bentonite Grout		
	10.0	As above - saturated.
	10.2	Red sandstone and gray limestone cobble fragments.
		GLACIAL TILL
	11.0	(estimated depth based upon drill cuttings)
Bedrock @ 22.2 feet.	15.0	Brown SILT, little mf subrounded to subangular Gravel, trace cmf Sand, damp.
Bottom of Casing @ 22.2 feet.		
	20.2	**Top of Bedrock.** Penfield Dolostone
3-7/8 inch Water Rotary Drill Hole.	22.2	Bottom of 4 inch PVC casing
Bottom of Hole = 33.2 feet.	33.2	Bottom of bedrock borehole

Completed By: Craig A. Stiles

Comments (If Applicable, Include Weather Conditions):

- Top-of-Bedrock @ 20.1 feet.
- Casing grouted to 22.2 feet.
- Open 3-7/8 in. dia. corehole from 22.2 to 33.2 ft.
- Well Volume = 0.63 gal./ft. of water in well.

Well No.: MW-12R

GALSON CONSULTING

360 Linden Oaks, Rochester, NY 14625

GROUNDWATER MONITORING WELL LOG

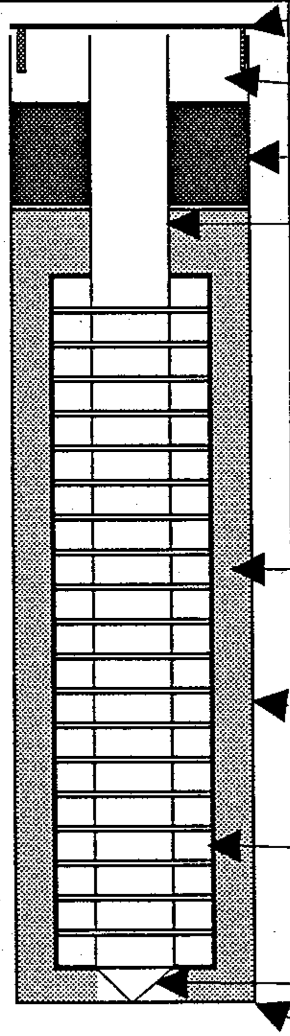
MW-12S

Client: NYS DEC
Project/Job No. 2240-003 / TSK4 / WST
Project Name: Davis-Howland Oil Corp. RI

Site Location: Anderson Ave./Rochester NY
Date(s): 18-Dec-96 to 18-Dec-96
Project Manager: Theresa A. Beddoe

Well No. MW-12S
Boring No. MW-12S
Type of Riser Pipe: 2" ID Sched 80 PVC
Type of Scr Total De| 4" Prepacked screen
Screen Lent Drilling/I 9.7 ft. Prepacked Screen
Size of Screen Slot: 0.010 inch slot
Filter Pack: Quartz sand (3.5 to 15.0 ft.)
Depth to Groundwater at Completio 5.05 ft.
Depth of Riser Below Ground Level: ~4 in.

Contractor/Driller American Auger & Ditching Co.
Drilling Method: Hollow Stem Auger
I.D. of Casing: 8" Dia. Flush Mount
I.D.of Riser Pipe: 2.0 inch ID
I.D. of Screen: 2.0 inch inside of 4.0 inch
Seal: Bentonite (1.0 to 3.0 ft.)
Elev. of Reference Point: *
* Measured From Top of Casing

Well Construction Schematic	Comments	Depth (feet)	Soil Description
	Flush Mount Well Protector	0.0	**Fill Material**
	Cement / Bentonite Grout		Dark gray to black cmf SAND and mf(+) Gravel, trace Silt, coal fragments, coal dust, wood fragments (est. depth = 4.5 feet).
	Bentonite Seal (1.0 to 3.0 ft)		
	2 in. ID Sched. 80 PVC Riser		**Outwash**
		5.0	Brown f SAND, trace mf subrounded to sub-angular Gravel, trace(-) Silt, damp to wet, no odors.
		10.0	As above - saturated.
	Silica Sand Filter Pack (3.0 to 15.0 ft.)	10.2	Red sandstone and gray limestone cobble fragments.
			Glacial Till
	~10.5 inch Borehole (drilled w/ 6-1/4 inch ID H.S.A.)	11.0	(estimated depth based upon drill cuttings)
	4 inch Prepacked Well Screen (5.0 to 14.7 ft.)		**Glacial Till**
		15.0	Brown SILT, little mf subrounded to subangular Gravel, trace cmf Sand, damp.
	Endcap		
	Bottom of Hole = 15.0 feet.		

Completed By: Craig A. Stiles

Comments (If Applicable, Include Weather Conditions):

-Well Volume = 1.08 gal./ft. of water in well.

Well No.: MW-12S

GALSON CONSULTING

360 Linden Oaks, Rochester, NY 14625

GROUNDWATER MONITORING WELL LOG

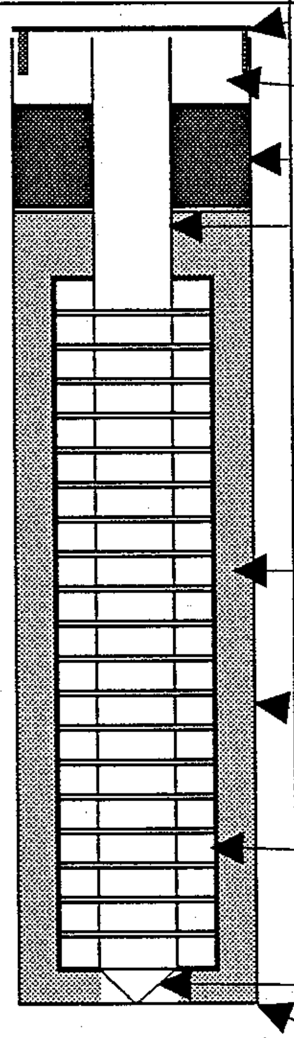
MW-13S

MW-13S

Client:	NYS DEC	Site Location:	Anderson Ave./Rochester NY
Project/Job No.	2240-003 / TSK4 / WST	Date(s):	12-Dec-96 to 12-Dec-96
Project Name:	Davis-Howland Oil Corp. RI	Project Manager:	Theresa A. Beddoe

Well No.	MW-13S	Contractor/Driller	American Auger & Ditching Co.
Boring No.	MW-13S	Drilling Method:	Hollow Stem Auger
B Type of Riser Pipe:	2" ID Sched 80 PVC		
Type of Screen:	4" Prepacked screen	I.D. of Casing:	8" Dia. Flush Mount
Screen Lenth:	9.7 ft. Prepacked Screen	I.D.of Riser Pipe:	2.0 inch ID
Size of Screen Slot:	0.010 inch slot	I.D. of Screen:	2.0 inch inside of 4.0 inch
Filter Pack:	Quartz sand (2.5 to 13.5 ft.)	Seal:	Bentonite (1.0 to 2.5 ft.)
Depth to Groundwater at Completio	1.95 ft.	Elev. of Reference Point: *	
Depth of Riser Below Ground Level:	~4 in.		* Measured From Top of Casing

Well Construction Schematic



Comments	Depth (feet)	Soil Description
Flush Mount Well Protector		**Fill Material**
Cement / Bentonite Grout	0.0	Dark gray to black cmf SAND and mf$^{(+)}$ Gravel, trace Silt, coal fragments, coal dust, wood fragments, slight to moderate petroleum odor (est. depth = 4.5 feet).
Bentonite Seal (1.0 to 2.5 ft)		
2 in. ID Sched. 80 PVC Riser		
		Outwash
	5.0	Dark grayish -brown f SAND, little mf subround to subangular Gravel (including coal fragments), trace(-) Silt, saturated, slight odor.
Silica Sand Filter Pack (2.5 to 13.5 ft.)		
	10.0	Dark gray mf$^{(+)}$ SAND, little(-) mf subrounded to subangular Gravel, trace(+) Clayey Silt, saturated, moderate contaminant odor
~10.5 inch Borehole (drilled w/ 6-1/4 inch ID H.S.A.)		**Glacial Till**
	10.8	Grayish-brown Clayey SILT to SILT, little mf subrounded Gravel, trace cmf Sand, damp to wet, very slight odor.
4 inch Prepacked Well Screen (3.5 to 13.2 ft.)		
Endcap		
Bottom of Hole = 13.5 feet.		

Completed By: Craig A. Stiles

Comments (If Applicable, Include Weather Conditions):

- Screened interval from 3.5 to 13.2 feet below grade.
-Well Volume = 1.08 gal./ft. of water in well.

Well No.: MW-13S

GALSON CONSULTING

360 Linden Oaks, Rochester, NY 14625

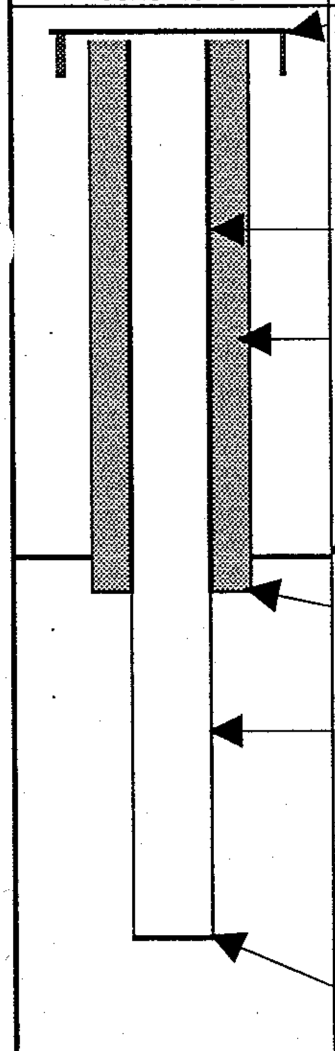
GROUNDWATER MONITORING WELL LOG

MW-14R

Client:	NYS DEC	Site Location:	Anderson Ave./Rochester NY
Project/Job No.	2240-003 / TSK4 / WST	Date(s):	11-Dec-96 to 19-Dec-96
Project Name:	Davis-Howland Oil Corp. RI	Project Manager:	Theresa A. Beddoe

Well No.	MW-14R	Contractor/Driller	American Auger & Ditching Co.
Boring No.	MW-14R	Drilling Method:	Hollow Stem Auger
Type of Riser Pipe:	4" ID Sched 80 PVC		
Type of Screen:	Open borehole (3-7/8" Bit)	I.D. of Casing:	8" Dia. Flush Mount
Screen Lenth:	11.0 ft. open borehole	I.D.of Riser Pipe:	4.0 inch ID
Size of Screen Slot:	N.A.	I.D. of Screen:	3-7/8 in. open borehole
Filter Pack:	N.A.	Seal:	N.A.
Depth to Groundwater at Completio	5.05 ft.	Elev. of Reference Point: *	
Depth of Riser Below Ground Level:	~4 in.	* Measured From Top of Casing	

Well Construction Schematic



Comments	Depth (feet)	Soil Description
Flush Mount Well Protector		**Fill Material**
	0.0	Dark gray to black cmf SAND and mf Gravel, trace Silt, coal fragments, coal dust, (est. depth = 4.5 feet).
		Outwash
	5.0	Brown f SAND, little(-) Silt, trace mf subrounded Gravel, trace(-) cm Sand, wet, no staining or odors.
4 in. ID Sched. 80 PVC Riser		
Cement / Bentonite Grout	10.0	As above - saturated.
		Glacial Till
	10.6	Brown Clayey SILT, some(+) f Sand, little(+) mf subrounded Gravel, damp to wet, dense.
Bedrock @ 20.8 feet.	15.0	Auger refusal @ 15 feet.
Bottom of Casing @ 23.0 feet.		
	20.8	**Top of Bedrock** Penfield Dolostone
3-7/8 inch Water Rotary Drill Hole.	23.0	Bottom of 4 inch PVC casing
Bottom of Hole = 34.0 feet.	34.0	Bottom of bedrock borehole

Completed By: Craig A. Stiles

Comments (If Applicable, Include Weather Conditions):

- Bedrock @ 20.8 feet.
- Casing grouted to 23.0 feet.
- Open 3-7/8 in. dia. corehole from 23.0 to 34.0 ft.
- Well Volume = 0.63 gal./ft. of water in well.

Well No.: MW-14R

GALSON CONSULTING

360 Linden Oaks, Rochester, NY 14625

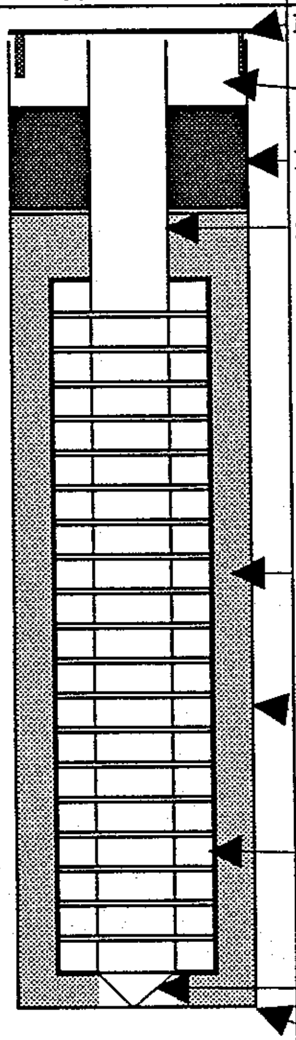
GROUNDWATER MONITORING WELL LOG

MW-14S

Client:	NYS DEC	Site Location:	Anderson Ave./Rochester NY
Project/Job No.	2240-003 / TSK4 / WST	Date(s):	11-Dec-96 to 19-Dec-96
Project Name:	Davis-Howland Oil Corp. RI	Project Manager:	Theresa A. Beddoe

Well No.	MW-14S	Contractor/Driller	American Auger & Ditching Co.
Boring No.	MW-14S	Drilling Method:	Hollow Stem Auger
Type of Riser Pipe:	2" ID Sched 80 PVC		
Type of Screen:	4" Prepacked screen	I.D. of Casing:	8" Dia. Flush Mount
Screen Lenth:	9.7 ft. Prepacked Screen	I.D.of Riser Pipe:	2.0 inch ID
Size of Screen Slot:	0.010 inch slot	I.D. of Screen:	2.0 inch inside of 4.0 inch
Filter Pack:	Quartz sand (2.5 to 13.7 ft.)	Seal:	Bentonite (1.0 to 2.5 ft.)
Depth to Groundwater at Completio	5.05 ft.	Elev. of Reference Point: *	
Depth of Riser Below Ground Level:	~4 in.	* Measured From Top of Casing	

Well Construction Schematic



Comments	Depth (feet)	Soil Description
Flush Mount Well Protector		**Fill Material**
Cement / Bentonite Grout	0.0	Dark gray to black cmf SAND and mf Gravel, trace Silt, coal fragments, coal dust, (est. depth = 4.5 feet).
Bentonite Seal (1.0 to 2.5 ft)		
2 in. ID Sched. 80 PVC Riser		
		Outwash
	5.0	Brown f SAND, little(-) Silt, trace mf subrounded Gravel, trace(-) cm Sand, wet, no staining or odors.
Silica Sand Filter Pack (2.5 to 14.0 ft.)		
~10.5 inch Borehole (drilled w/ 6-1/4 inch ID H.S.A.)	10.0	As above - saturated.
		Glacial Till
4 inch Prepacked Well Screen (3.7 to 13.4 feet)	10.6	Brown Clayey SILT, some(+) f Sand, little(+) mf subrounded Gravel, damp to wet, dense.
Endcap		
Bottom of Hole = 13.7 feet.		

Completed By: Craig A. Stiles

Comments (If Applicable, Include Weather Conditions):

- Screened interval from 3.7 to 13.4 feet below grade.
- Well Volume = 1.08 gal./ft. of water in well.

Well No.: MW-14S

GALSON CONSULTING

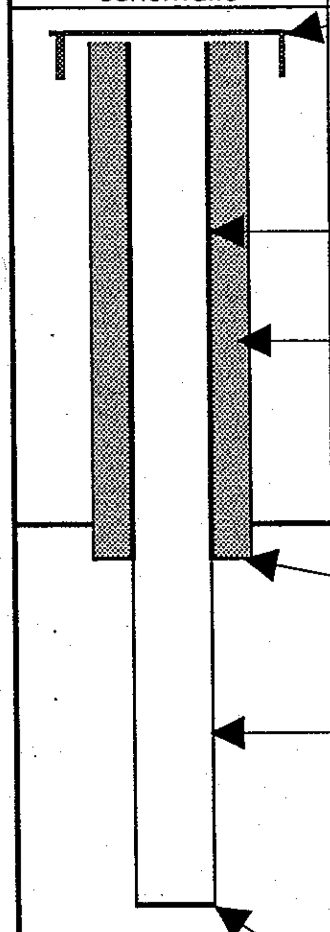
360 Linden Oaks, Rochester, NY 14625

GROUNDWATER MONITORING WELL LOG

MW-15R

Client:	NYS DEC	Site Location:	Anderson Ave./Rochester NY
Project/Job No.	2240-003 / TSK4 / WST	Date(s):	11-Dec-96 to 19-Dec-96
Project Name:	Davis-Howland Oil Corp. RI	Project Manager:	Theresa A. Beddoe

Well No.	MW-15R	Contractor/Driller	American Auger & Ditching Co.
Boring No.	MW-15R	Drilling Method:	H.S.A. & Water Rotary
Type of Riser Pipe:	4" ID Sched 80 PVC		
Type of Screen:	Open borehole (3-7/8" Bit)	I.D. of Casing:	8" Dia. Flush Mount
Screen Lenth:	10.0 ft. open borehole	I.D.of Riser Pipe:	4.0 inch ID
Size of Screen Slot:	N.A.	I.D. of Screen:	3-7/8 in. open borehole
Filter Pack:	N.A.	Seal:	N.A.
Depth to Groundwater at Completio	13.58 feet	Elev. of Reference Point: *	
Depth of Riser Below Ground Level:	~4 in.		* Measured From Top of Casing

Well Construction Schematic	Comments	Depth (feet)	Soil Description
	Flush Mount Well Protector		**Fill Material**
		0.0	Dark brown mf(+) SAND, little(+) cmf sunangular Gravel, trace Silt, coal dust and fragments, dry (est. depth = 3.0 ft.)
			Outwash
	4 in. ID Sched. 80 PVC Riser	5.0	Brown cmf SAND, trace(-) f subrounded Gravel, dry.
		5.5	Brown Clayey SILT, some(-) cmh subrounded to subangular Gravel, little cmf Sand, moist to damp.
	Cement / Bentonite Grout	5.9	Brown mf(+) SAND, little(-) cmf subrounded Gravel, trace(-) Silt, damp to wet.
	Bedrock @ 18.7 feet.	10.0	Brown mf(+) SAND, little(-) cmf subrounded Gravel, trace Silt, saturated.
	Bottom of Casing @ 20.7 feet.		**Glacial Till**
		13.0	(Estimated depth based upon drill cuttings)
	3-7/8 inch Water Rotary Drill Hole.	18.7	**Top of Bedrock** Penfield Dolostone
		20.7	Bottom of 4 inch PVC casing
	Bottom of Hole = 30.7 feet.	30.7	Bottom of bedrock borehole

Completed By: Craig A. Stiles

Comments (If Applicable, Include Weather Conditions):

- Bedrock @ 18.7 feet.
- Casing grouted to 20.7 feet.
- Open 3-7/8 in. dia. corehole from 20.7 to 30.7 ft.
- Well Volume = 0.63 gal./ft. of water in well.

Albany New York Rochester Syracuse Philadelphia Oakland

GALSON CONSULTING

360 Linden Oaks, Rochester, NY 14625

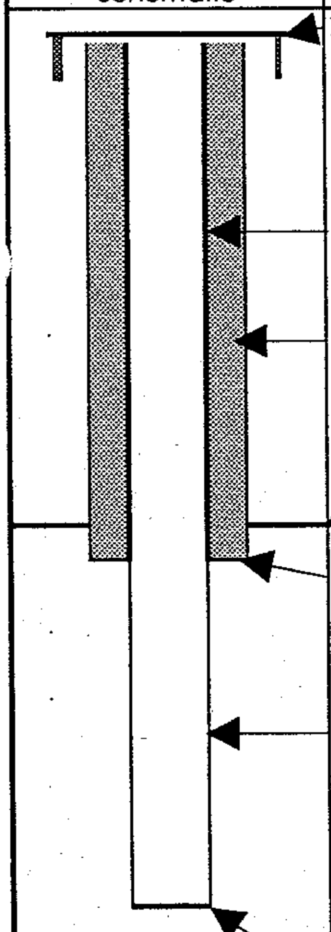
GROUNDWATER MONITORING WELL LOG

MW-16R

Client:	NYS DEC	Site Location:	Anderson Ave./Rochester NY
Project/Job No.	2240-003 / TSK4 / WST	Date(s):	11-Dec-96 to 19-Dec-96
Project Name:	Davis-Howland Oil Corp. RI	Project Manager:	Theresa A. Beddoe

Well No.	MW-16R	Contractor/Driller	American Auger & Ditching Co.
Boring No.	MW-16R	Drilling Method:	H.S.A. & Water Rotary
Type of Riser Pipe:	4" ID Sched 80 PVC		
Type of Screen:	Open borehole (3-7/8" Bit)	I.D. of Casing:	8" Dia. Flush Mount
Screen Lenth:	9.8 ft. open borehole	I.D.of Riser Pipe:	4.0 inch ID
Size of Screen Slot:	N.A.	I.D. of Screen:	3-7/8 in. open borehole
Filter Pack:	N.A.	Seal:	N.A.
Depth to Groundwater at Completio	15.34 ft.	Elev. of Reference Point: *	
Depth of Riser Below Ground Level:	~4 in.	* Measured From Top of Casing	

Well Construction Schematic



Comments	Depth (feet)	Soil Description
Flush Mount Well Protector	0.0	**Asphalt**
	0.4	**Fill Material**
		Dark grayish brown cm$^{(+)}$f subround to angular Gravel, little(+) c$^{(+)}$mf Sand, little(-) f subangular Cobbles, dry (est. depth = 4.0 ft.)
4 in. ID Sched. 80 PVC Riser		**Outwash**
	5.0	Brown f SAND, trace(-) Silt, trace(-) f angular to subangular Gravel, trace(-) cm Sand, wet to saturated @ 5.6 feet.
Cement / Bentonite Grout		
	10.0	Brown f SAND, little Clayey Silt, trace mf subrounded to subangular Gravel, damp to wet.
Bedrock @ 19.9 feet.		**Glacial Till**
	15.0	Brown Clayey SILT, little(+) mf subangualar to subrounded Gravel, damp.
Bottom of Casing @ 22.7 feet.		
		Auger refusal @ 18.0 feet.
3-7/8 inch Water Rotary Drill Hole.	19.9	**Top of Bedrock**
		Penfield Dolostone
	22.7	Bottom of 4 inch PVC Casing
	32.5	Bottom of Borehole @ 32.5 Feet.
Bottom of Hole = 32.5 feet.		

Completed By: Craig A. Stiles

Comments (If Applicable, Include Weather Conditions):

- Bedrock @ 19.9 feet.
- Casing grouted to 22.7 feet.
- Open 3-7/8 in. dia. corehole from 22.7 to 32.5 ft.
- Well Volume = 0.63 gal./ft. of water in well.

Well No.: MW-16R

N

County of Monroe Sewer Discharge Permit and Related Correspondence

CK# 01000 1488

COUNTY OF MONROE
SEWER USE PERMIT RENEWAL

Firm Name: NYSDEC Division of Environmental Remediation
200 Anderson (Davis Howland)Avenue

Permit Number: IWC-864
Fee: $ 75.00
Expires: May 31, 2022

Mailing Addr: 625 Broadway, 12th Floor
Albany, NY 12233-7013

W/C Expire: ~~N/A~~ 8/1/2020
District No: 8575

Business Type: Pretreatment

Has there been any revision to the plant sewer system or any change in industrial wastes discharged to the public sewer in the past twelve months

Yes: __ No: X If yes, please explain in a separate letter.

Average monthly consumption for the past twelve (12) months:

Water Account No.(s) N/A (cu ft/gal) N/A

In consideration of the granting of this renewal permit the undersigned agrees to comply with all the requirements in the Initial Permit as listed under II.

Name of person to be contacted for inspection & sampling purposes:

Jill Gulczewski

Type or Print: Ecology and Environment Phone No: 716-684-8060

YOUR PERMIT MUST BE SIGNED AS FOLLOWS:

1. For a corporation: by a responsible corporate officer. A corporate officer means:
   (a) A president, secretary, treasurer or vice - president of the corporation in charge of a principal business function, or any other person who performs similar policy - or decision - making functions for the corporation: or
   (b) The manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second - quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

2. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

3. By a duly authorized representative of the individual designated in items (1) or (2) above if:

   (a) The authorization is made in writing by the individual described in items (1) or (2);
   (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the Industrial Discharge originates such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company; (A duly authorized representative may thus be either a named individual or any individual occupying named position); and
   (c) The written authorization is submitted to this Department.

Print or Type: Jenelle Gaylord Phone No: 518-402-9813

Signature: [signature] Date: 9/27/19

Title: NYSDEC Project Manager

Renewal Approved by: [signature] Issued this 24 day of OCT 2019

Michael J. Garland, P.E.
Director of Environmental Services-PureWaters
Monroe County

COUNTY OF MONROE
SEWER USE PERMIT ENCLOSURE

NYSDEC Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7013

PERMIT NUMBER: 864
DISTRICT NUMBER: 8575

TYPE OF BUSINESS: Groundwater Remediation
LOCATION: Davis Howland Oil Co. Site – 200 Anderson Ave.
Rochester, NY

SAMPLE POINT: IWC-864.2 – Monitoring Well Purge Water

REQUIRED MONITORING & EFFLUENT LIMITS

SAMPLE POINT: IWC-864.2 – Monitoring Well Purge Water

SELF-MONITORING FREQUENCY: **Each and Every Batch Discharge**

SAMPLING PROTOCOL: Sampling and analysis shall be performed in accordance with the techniques prescribed in 40CFR part 136 and amendments thereto. In the absence of 40 CFR Part 136 testing methodology, a New York State Department of Health, approved method is acceptable. A grab sample, collected from the above noted sample point shall be analyzed for the following:

Parameter	Sewer Use Limit	Action Level
Purgeable Aromatics		2.13 mg/L*
Purgeable Halocarbons		2.13 mg/L*
Acetone	(monitor only)	

DISCHARGE LIMITATIONS: The summation of purgeable aromatics and purgeable halocarbons greater than 10 μg/L shall not exceed 2.13 mg/L.

SPECIAL CONDITION:

Quarterly flow summaries shall be submitted for billing purposes. It is imperative these summaries are submitted in a timely manner. If there is no discharge for a given quarter, then a letter must be submitted stating so.

TERMS AND CONDITIONS

GENERAL REQUIRMENTS:

A. The permittee agrees to accept and abide by all provisions of the Sewer Use Law of Monroe County (MCSUL) and of all pertinent rules or regulations now in force or shall be adopted in the future.

B. In addition to the parameters/limits outlined, the total facility discharge shall meet all other concentration values listed within the MCSUL and as described in Article III, Section 3.3(d) of the Law.

C. Included in Article II, Section 2.1 of the MCSUL, is the definition of "Normal Sewage". "Normal Sewage" may be discharged to the sewer system in excess of the concentrations outlined in the definition, however, the facility will be subject to the imposition of a sewer surcharge and possible self-monitoring requirements as a result. Surcharging procedures are outlined in Article X of the MCSUL.

D. Regulatory sampling for analytes not specified under "required monitoring" shall be conducted by Monroe County at a minimum frequency of once every three (3) years.

E. This permit is not assignable or transferable. The permit is issued to a specific user and location.

F. Per Article IX, section 9.9 of the MCSUL, a violation by the permittee of the permit conditions may be cause for revocation or suspension of the permit after a Hearing by the Administrative Board, or if the violation is found to be within the emergency powers of the Director under Section 9.6. The revocation is immediate upon receipt of notice to the Industrial User. If the revocation or suspension is issued under Section 9.6, a Hearing shall be held as soon as possible.

G. As provided under Article VI, Section 6.1 of the MCSUL, the Director and/or his duly authorized representatives shall gain entry on to private lands by permission or duly issued warrant for the purpose of inspection, observation, measurement sampling and testing in accordance with the provisions of this law and its implementing Rules and Regulations. The Director or his representatives shall not have authority to inquire into any processes used in any industrial operation beyond that information having a direct bearing on the kind and source of discharge to the sewers or the on-site facilities for waste treatment. While performing the necessary work on private lands, referred to above, the Director or his duly authorized representative shall observe all safety rules applicable to the premises as established by the owner and/or occupant.

H. All required monitoring shall be analyzed by a New York State Department of Health certified laboratory. All sampling and analysis must be performed in accordance with Title 40 Code of Federal Regulations Part 136.

I. The pH range for this permit is 5.0 – 12.0 su. This range is specifically permitted by the Director as allowed under Article III, Section 3.3(b) of the MCSUL. pH must be analyzed within 15 minutes of the time of collection as specified in 40 CFR, part 136.

J. Discharges of wax, fats, oil or grease shall not exceed 100 mg/L as imposed by the Director under Article III, Section 3.3 of the MCSUL.

SURCHARGE CONCENTRATIONS:

Concentration and/or characteristics of normal sewage:
"Normal Sewage" shall mean sewage, industrial wastes or other wastes, which when analyzed, show concentration values with the following characteristics based on daily maximum limits:

a. B. O. D.	300 mg/L
b. Total Suspended Solids	300 mg/L
c. Total Phosphorus, as P	10 mg/L

Annual average concentrations above normal sewage are subject to surcharge as defined in Article X, section 10.7 of the MCSUL.

DISCHARGE LIMITATIONS (SEWER USE LIMITS)

Permissible concentrations of toxic substances and/or substances the Department wishes to control:
The concentration in sewage of any of the following toxic substances and/or substances the Department wishes to control shall not exceed the concentration limits specified when discharged into the County Sewer System; metal pollutants are expressed as total metals in mg/L (ppm): the following pollutant limits are based on daily maximum values:

a. Antimony (Sb)	1.0 mg/L
b. Arsenic (As)	0.5 mg/L
c. Barium (Ba)	2.0 mg/L
d. Beryllium (Be)	5.0 mg/L
e. Cadmium (Cd)	1.0 mg/L
f. Chromium (Cr)	3.0 mg/L
g. Copper (Cu)	3.0 mg/L
h. Cyanide (CN)	1.0 mg/L
i. Iron (Fe)	5.0 mg/L
j. Lead (Pb)	1.0 mg/L
k. Manganese (Mn)	5.0 mg/L
l. Mercury (Hg)	0.05 mg/L
m. Nickel (Ni)	3.0 mg/L
n. Selenium (Se)	2.0 mg/L
o. Silver (Ag)	2.0 mg/L
p. Thallium (Tl)	1.0 mg/L
q. Zinc (Zn)	5.0 mg/L

REPORTING REQUIREMENTS:

A. Per the requirements of 40 CFR, Part 403.12, Significant Industrial Users must submit Periodic Reports on Continued Compliance to the Control Authority on a biannual (2/yr) basis. Deadline dates of submission for these reports will be August 15 and February 15, respectively.

B. Discharge monitoring reports shall be submitted to the Control Authority upon receipt from the permittee's testing laboratory. Reports submitted from industrial users identified as Significant Industrial Users (SIU) must be accompanied by a certification statement as required by 40 CFR part 403 and the MCSUL, Article VI, section 6.12.

C. Any Industrial User subject to the reporting requirements of the General Pretreatment Regulations shall maintain records of all information resulting from any monitoring activities required by 40 CFR, part 403.12 for a minimum of three (3) years. These records shall be available for inspection and copying by the Control Authority. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the Industrial User or the operation of the POTW Pretreatment Program or when requested by the Director or the Regional Administrator.

D. Pursuant to Article VI, Section 6.10 (4) of the MCSUL and the reporting requirements of the Code of Federal Regulations 40 CFR part 403.12, if a permitted user elects to perform monitoring at compliance monitoring locations more often than required and uses approved laboratory procedures, the results of all such additional monitoring and any additional flow measurements shall be reported to the Director on a timely basis and shall be included in reports as outlined in the MCSUL section 6.10(1)-(4).

NOTIFICATION REQUIREMENTS:

A. Pursuant to Article VI, Section 6.10(5), the permittee shall notify the Department within 24 hours of becoming aware that discharge monitoring is in violation of any permit limit. This notification shall be directed to the Industrial Waste Section at 585-753-7600 Option 4. The User shall also repeat sampling and analysis for the analyte in non-compliance and submit the results of the repeat analysis to Monroe County within 30 days after becoming aware of the violation.

B. Notify the Director in writing when considering a revision to the plant sewer system or any change in industrial waste discharges to the public sewers. The later encompasses either an increase or decrease in average daily volume or strength of waste or new wastes.

C. Notify the Director immediately of any accident, negligence, breakdown of pretreatment equipment or other occurrence that occasions discharge to the public sewer of any waste or process waters not covered by this permit.

SLUG CONTROL

An Industrial User shall be required to report any/all slug discharges to the Monroe County sewer system by calling 585-753-7600 option 4. For the purpose of this permit enclosure, a slug discharge shall be identified as any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge. Following a review process, the Control Authority (Monroe County) shall determine the applicability of a facility slug control plan. If the Control Authority decides that a Slug Discharge Control Plan (SDCP) is needed, the plan shall contain, at a minimum, the following elements:

1. Description of discharge practices, including non-routine batch discharges.
2. Description of stored chemicals.
3. Procedures for immediately notifying the Control Authority of slug discharges, including any discharge that would violate a prohibition under 40 CFR 403.5 (b), with procedures for follow up written notification within five (5) days.
4. If necessary, procedures to prevent adverse impact from accidental spills, including, but not limited to, inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site run-off, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents) and/or measures and equipment for emergency purposes.

SNC DEFINITION:

In accordance with 40 CFR 403.8 (f) (vii), an Industrial User is in significant noncompliance (SNC) if its violations meet one or more of the following criteria:

A. Chronic violations of wastewater discharge limits – defined as those which 66% or more of all the measurements taken during a six-month period exceed (by any magnitude) the daily maximum limit or the average limit for the same pollutant parameter (ref. Article IX, section 9.19 – MCSUL). This criteria does NOT apply to the following Monroe County surchargeable parameters: Biochemical Oxygen Demand, Total Suspended Solids, Chlorine Demand and Total Phosphorus.

B. Technical review criteria (TRC) violations – defined as those in which 33% or more of all the measurements for each pollutant parameter taken during a six month period equal or exceed the product of the daily maximum limit or the average limit times the applicable TRC (ref. Article IX, section 9.19 – MCSUL). This criteria does NOT apply to the following Monroe County surchargeable parameters: Biochemical Oxygen Demand, Total Suspended Solids, Chlorine Demand and Total Phosphorus.

C. Any other violation of a pretreatment effluent limit (daily maximum or longer-term average) that the Control Authority determines has caused, alone or in combination with other discharges, interference or pass-through (including endangering the health or POTW personnel or the general public).

D. Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or the environment or has resulted in the POTW's exercise of its emergency authority under paragraph (t)(1)(vi)(8) of 40 CFR part 403 to prevent such a discharge.

E. Failure to meet, within 90 days after the scheduled date, a compliance schedule milestone contained in a local control mechanism or enforcement order, for starting construction, completing construction or attaining final compliance.

F. Failure to provide, within 30 days after the due date, required reports such as BMRs, 90 day compliance reports, periodic reports on continued compliance.

G. Failure to accurately report noncompliance.

H. Any other violation or group of violations that the Control Authority determines will adversely affect the operation and implementation of the local Pretreatment Program.

PENALTIES

Should the facility be considered in Significant Non-Compliance (SNC), based on the above mentioned criteria, the minimum enforcement response by Monroe County will be the publication of the company name in the Gannett Rochester newspaper. The company will be published as an Industrial User in Significant Non-Compliance (SNC). Fines and criminal penalties may follow this publication (ref. Article IX – MCSUL).

Nothing in this permit shall be construed to relieve the permittees from civil/criminal penalties for noncompliance under Article IX, Section 9.7(a)(5) MCSUL. Article IX provides that any person who violates a permit condition is subject to a civil penalty not to exceed $25,000 for any one case and an additional penalty not to exceed $25,000 for each day of continued violation.

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 09/19/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Willis Towers Watson Northeast, Inc. fka Willis of New York, Inc.
c/o 26 Century Blvd
P.O. Box 305191
Nashville, TN 372305191 USA

CONTACT NAME:
PHONE (A/C, No, Ext): 1-877-945-7378
FAX (A/C, No): 1-888-467-2378
E-MAIL ADDRESS: certificates@willis.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Great Divide Insurance Company	25224
INSURER B: Federal Insurance Company	20281
INSURER C:	
INSURER D:	
INSURER E:	
INSURER F:	

INSURED
Ecology and Environment Engineering and Geology, P.C.
368 Pleasant View Drive
Lancaster, NY 14086

COVERAGES CERTIFICATE NUMBER: W12738705 REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY; CLAIMS-MADE; X OCCUR; X Blanket Contractual Liability; GEN'L AGGREGATE LIMIT APPLIES PER: POLICY; X PRO-JECT; X LOC; OTHER:			GLP2005977-17	08/01/2019	08/01/2020	EACH OCCURRENCE	$ 3,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 1,000,000
							MED EXP (Any one person)	$ 30,000
							PERSONAL & ADV INJURY	$ 3,000,000
							GENERAL AGGREGATE	$ 3,000,000
							PRODUCTS - COMP/OP AGG	$ 3,000,000
								$
A	AUTOMOBILE LIABILITY; X ANY AUTO; OWNED AUTOS ONLY; SCHEDULED AUTOS; HIRED AUTOS ONLY; NON-OWNED AUTOS ONLY			BAP2005983-17	08/01/2019	08/01/2020	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
							BODILY INJURY (Per person)	$
							BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
B	UMBRELLA LIAB; X OCCUR; X EXCESS LIAB; CLAIMS-MADE; DED; RETENTION $			7987-27-63	08/01/2019	08/01/2020	EACH OCCURRENCE	$ 15,000,000
							AGGREGATE	$ 15,000,000
							Prod/Compl Ops.	$ 15,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY; ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N: No; If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		WCA2005979-17	08/01/2019	08/01/2020	X PER STATUTE; OTH-ER	
							E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
A	Consultants Poll & Prof Liab (Pollution - Occurrence) (Professional - Claims-made)			CCP2005976-17	08/01/2019	08/01/2020	Aggregate Limit	$11,000,000
							Each Poll. Condition	$11,000,000
							Each Prof. Claim	$11,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Re: Former Davis Howland Oil Corporation Site, Site 8-28-088, NYSDEC Contract D007617, WA#12

Excess Liability policy is following form and supports all listed coverages except Pollution and Professional Liability.

CERTIFICATE HOLDER

County of Monroe: Department of Environmental Services
145 Paul Road, Bldg. 1
Rochester, NY 14624

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

SR ID: 18544376 BATCH: 1375087

O Quality Assurance Project Plan

Generic Quality Assurance Project Plan (GQAPP) for the Davis Howland Oil Company Site NYSDEC Site No. 9-15-157

October 2014

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 Broadway
Albany, New York 12233

Program QA Officer Date

Table of Contents

Table of Contents (Cont.)

List of Tables

Table **Page**

List of Figures

List of Abbreviations and Acronyms

AAS	atomic absorption spectroscopy
ASP	Analytical Services Protocol
ASTM	American Society for Testing and Materials
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CLP	Contract Laboratory Program
CM	construction management
COC	chain-of-custody
CPR	cardiopulmonary resuscitation
DOT	United States Department of Transportation
DUSR	Data Usability Summary Report
ECL	Environmental Conservation Law
EDD	electronic data deliverable
ELAP	Environmental Laboratory Accreditation Program
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FSP	field sampling plan
GC/MS	gas chromatography/mass spectrometry
IATA	International Air Transport Association
ICP	inductively coupled plasma
ICS	interference check sample

List of Acronyms (Cont.)

IDW	investigation-derived waste
IIWA	immediate investigation work assignment
IRM	interim remedial measure
LCS	laboratory control sample
MDL	method detection limit
MEDD	multimedia electronic data deliverable
mL/min	milliliters per minute
MS/MSD	matrix spike/matrix spike duplicate
MSB	matrix spike blank
NELAP	National Environmental Laboratory Accreditation Program
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OVA	organic vapor analyzer
PARCC	precision, accuracy, representativeness, completeness, and comparability
PE	performance evaluation
PID	photoionization detector
PPE	personal protection equipment
PSA	preliminary site assessment
QA/QC	quality assurance/quality control
QAM	Quality Assurance Manual
QAPP	Quality Assurance Project Plan
QMP	Quality Management Plan
RA	remedial action
RD	remedial design
RI	Remedial Investigation

List of Acronyms (Cont.)

RPD	relative percent difference
SARA	Superfund Amendments and Reauthorization Act of 1986
SDG	sample delivery group
SI	site inspection
SOP	Standard Operating Procedure
SOW	scope of work
SVOC	semi-volatile organic compound
TCLP	toxicity characteristic leaching procedure
TRPH	total recoverable petroleum hydrocarbon
VOA	volatile organic analysis
VOC	volatile organic compound
VTSR	verified time of sample receipt

Distribution List

Party	Affiliation and Title	Revision	Date Sent
QAPP Original Distribution			
	QA Director		
	Project Manager(s)		
	NYSDEC Contracts		
	NYSDEC QA Officer		

Revision List

Revision	Modifications	Distributed

Laboratory Distribution and Approval

All site specific contract or subcontract laboratories working on project must perform analytical services and work in compliance with this QAPP.

Party	Affiliation and Title	Revision	Date Sent
QAPP Original Distribution			

This page must be completed and returned to NYSDEC with each revision of the QAPP.

Laboratory certifies that it will conduct analytical services in compliance with QAPP unless modified by any project-specific requirements listed in the site-specific QAPP or approved laboratories exceptions or clarifications.

Executed this   day of   , 20

Contractor or Subcontractor Laboratory

Signature

Name

Title

1 Project Management

This generic Quality Assurance Project Plan (GQAPP) has been prepared in support of projects performed for the New York State Department of Environmental Conservation (NYSDEC).

The GQAPP is applicable to the DHOC project and needs to be implemented by site monitoring personnel and is subject to regulatory oversight by NYSDEC or that must be conducted in accordance with NYSDEC regulations.

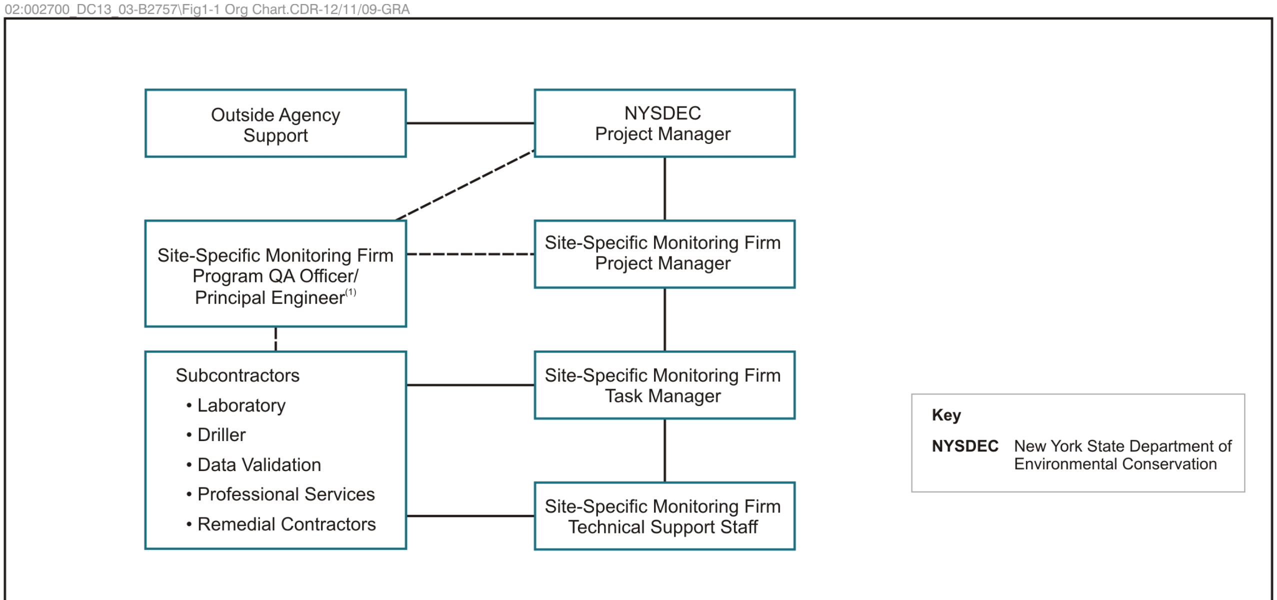
This GQAPP has been prepared in accordance with "United States Environmental Protection Agency (EPA) Requirements for Quality Assurance Project Plans," final, EPA QA/R-5 (March 2001) and incorporates NYSDEC requirements. This GQAPP presents the policies, organization, objectives, functional activities, and specific quality assurance/quality control (QA/QC) procedures that will be employed by site monitoring personnel to ensure that all technical data generated are accurate, representative, and ultimately capable of withstanding judicial scrutiny. These activities will be implemented under the requirements of site monitoring personnel's comprehensive QA program as documented in the corporate Quality Management Plan (QMP).

The GQAPP is formatted to address the four major sections listed in the EPA QAPP guidance document: Project Management, Data Generation and Acquisition, Assessment and Oversight, and Data Validation and Usability.

1.1 Project Organization

The organizational chart for the site specific environmental investigation, design, or construction project work in New York is presented as Figure 1-1. The owner and project team members are primarily responsible for implementation of the QA program on NYSDEC-related projects. All project communications are directed through the site-specific project manager. The site-specific project manager is the primary point of contact for the NYSDEC Project Manager and technical staff. The QA Officer for the site-specific work provides independent review functions to verify that the projects are implemented in accordance with applicable QA documents. The site-specific project manager is responsible for independent oversight of projects involving engineering services for design and construction. The roles and specific QA responsibilities of key project personnel are described below.

02:002700_DC13_03-B2757\Fig1-1 Org Chart.CDR-12/11/09-GRA



(1) *Site-specific monitoring firm performs QA functions on design and construction contracts involving engineering services.*

Figure 1-1 Organizational Chart

Project Manager

The site-specific Project Manager is responsible for QA/QC functions for all task-specific operations on NYSDEC projects, and will coordinate with the owner on issues that impact the overall quality of performance on the site specific work.

The Project Manager will also be responsible for the overall quality of work performed under project activities as it relates to the following specific roles:

- Overseeing day-to-day performance including all technical and administrative operations;
- Interfacing frequently with the NYSDEC Project Manager and technical staff;
- Tracking schedules and budgets and managing of mobilization and contract closeout activities;
- Selecting and monitoring field staff;
- Managing the development of detailed work plans; and
- Reviewing and approving all final reports and other work products.

Corporate or Program QA Officer

The site-specific monitoring firm's Corporate QA Director is responsible for ensuring compliance with the site-specific QA program. The Program QA Officer is responsible for oversight of all QA/QC activities for NYSDEC projects. The QA Officer will remain independent of day-to-day, direct project involvement but will have the responsibility for ensuring that all project and task-specific QA/QC requirements are met. The QA Officer will have direct access to corporate executive staff, as necessary, to resolve any QA/QC problems, disputes, or deficiencies. The QA Officer's specific duties include:

- Reviewing and approving the QAPP;
- Conducting field and laboratory audits in conjunction and keeping written records of the audits;
- Coordinating with the NYSDEC technical staff, Project Manager, Task Managers, and laboratory management to ensure that QA objectives appropriate to the project are set and that laboratory and field personnel are aware of these objectives; and
- Recommending, implementing, and/or reviewing actions taken in the event of QA/QC failures in the laboratory or field.

Project Chemist

The Project Chemist is responsible for data validation and verification, generation of Data Usability Summary Reports (DUSRs), and independent assessment of the hard copy and electronic analytical data. The Project Chemist will report nonconformance with QC criteria (including an assessment of the impact on data quality objectives) to the appropriate managers.

Technical Support Staff

The technical support staff for this program will be drawn from the site-specific pool of resources. The technical support staff will implement project and site tasks, analyze data, and prepare reports/support materials. All support personnel assigned will be experienced professionals who possess the degree of specialization and technical competence necessary to perform the required work effectively and efficiently.

Laboratories

Laboratories providing analytical services will be chosen as appropriate for the project requirements. All laboratories will be certified by the New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) for the methods that they are contracted to perform. Laboratories performing for Superfund sites with full data packages must be certified by NYSDOH for Contract Laboratory Program (CLP) analysis.

The laboratory QA programs are reviewed and approved by the QA Officer or the Project Chemist, and will be submitted to NYSDEC for approval. Copies of the laboratory QA manuals are available on request. The laboratory must provide an experienced Project Manager and a QA Officer that is independent of the day-to-day operations of the laboratory. The specific duties of the laboratory Project Manager and QA Officer for NYSDEC activities include:

- Reviewing the GQAPP to verify that analytical operations will meet project requirements;
- Documenting review and approval of GQAPP on distribution page;
- Reviewing receipt of all sample shipments and notifying the Project Manager and Project Chemist of any discrepancies within one day of receipt;
- Rapidly notifying the site specific Project Manager and Project Chemist regarding laboratory nonconformance with the GQAPP or analytical QA/QC problems affecting project samples; and
- Coordinating with the site specific Project Manager and Project Chemist, and laboratory management to implement corrective actions approved by NYSDEC or others as applicable.

1.2 Problem Definition/Background

All work is to be carried out consistent with NYSDEC and EPA requirements, protocols, and guidance.

1.3 Project Description

The work covered by this QAPP is defined under the site specific Site Management Plan (SMP). If necessary, site-specific QAPP information will be provided as an appendix to the field sampling plan (FSP).

1.4 Quality Objectives and Criteria

Quality objectives are qualitative or quantitative statements derived from the systematic planning process. Quality objectives are used to clarify the goals of the project and define the appropriate type of data to collect to support project decisions. General quality objectives for NYSDEC projects are summarized in Table 1-1.

Table 1-1 General Data Quality Objectives, NYSDEC Projects

Data Collection Activity	Quality Objectives	Standards[a]	Acceptability/ Performance Criteria[b]
Sampling and Analysis	To have samples and analytical results that accurately represents the nature and extent of contamination at the site. Data must be of sufficient quality to meet all regulatory requirements and allow assessment of impacts on human health by comparison to New York State criteria or background values. Data also may be used for long-term monitoring or to meet regulatory permit requirements. In these cases, data must meet the requirements of the permit.	■ NYSDEC Ambient Water Quality Standards ■ NYSDOH Soil Vapor Intrusion Guidance Values ■ NYSDEC Remedial Program Soil Cleanup Objectives	■ Data must be collected under an approved FSP using approved SOPs. Data must meet the acceptance and performance criteria documented in Section 2 of this QAPP. ■ Reporting limits should be below risk-based screening values for 90% of target analytes and 100% of critical analytes of concern. ■ Data must be compared to standards.
Field Screening Analysis	To have samples and analytical results that effectively indicate the nature and extent of contamination at the site. Technical personnel use data to determine the best locations to collect samples for laboratory analysis.	■ None	■ Data must be collected under an approved FSP using approved SOPs. Data must meet the acceptance and performance criteria for the screening method. ■ Reporting limits should be below anticipated concentrations of critical analytes of concern.
Subsurface Logging	To provide a description of the subsurface soils that is consistent and accurate, and to record drilling and sampling procedures and well construction details.	■ Site Specific SOPs (including Geologic Logging and Monitoring Well Installation)	■ Accurate, consistent, signed, and legible documentation as described in SOPs. ■ Unconsolidated materials described according to the Unified Soil Classification System. ■ Rock/soil material described using standard geologic nomenclature.
Surveying	To relate project work locations (including sample, monitoring well, and test pit locations) to existing local benchmarks.	■ Surveying subcontract ■ Differential correction for GPS data	■ Relation of all survey points to existing/known benchmarks. ■ Accurate horizontal coordinates (∀0.5 foot for wells; ∀3 feet for GPS locations). ■ Accurate vertical elevations (∀0.01 foot) for permanent monitoring well locations.
Field Records	To document all field activities and to allow accurate representation field events in the final report. Records must be capable of withstanding legal scrutiny.	■ Section 2 of the QAPP ■ Site Specific SOPs (Field Activities Logbooks)	■ Consistency between field and laboratory data. ■ Clear and legible documentation for sample collection and equipment decontamination for final report.

Table 1-1 General Data Quality Objectives, NYSDEC Projects

Data Collection Activity	Quality Objectives	Standards[a]	Acceptability/ Performance Criteria[b]
Outside Records	To use the most current reference values, reports, or data from outside sources in data assessments and recommendations for the site.	None	■ All versions of data or standards must be the most current values available. ■ Data or standards must be accurately incorporated into the final report.
Data Review and Assessment	To review and verify data are generated according to the QAPP, and assign data qualifiers as necessary to indicate limitations on data usability.	■ NYSDEC DUSR Guidance ■ EPA Region 2 Data Validation SOPs ■ EPA National Functional Guidelines	■ Data must be reviewed by Project Chemist meeting minimum NYSDEC qualifications. ■ Data qualifiers or changes to data must be documented in a DUSR.

Notes:

[a] Major standards.
[b] Major or noteworthy acceptability criteria. All performance criteria must be verified using procedures listed in the QAPP.

Key:

GPS = Global Positioning System.
NYSDEC = New York State Department of Environmental Conservation.
NYSDOH = New York State Department of Health.
QAPP = Quality Assurance Project Plan.
SOP = Standard Operating Procedure.

Acceptance and performance criteria establish the quality and quantity of data needed to meet the project quality objectives. General acceptance or performance criteria for the collection, evaluation, or use of environmental data for NYSDEC projects are outlined in Section 2.4, Analytical Methods. Quality objectives or acceptance and performance criteria applicable to a project are specified in the site-specific QAPP or work plan.

1.4.1 Data Assessment Definitions

Acceptance and performance criteria are often specified in terms of precision, accuracy, representativeness, completeness, and comparability (PARCC) parameters. Numerical acceptance criteria cannot be assigned to all PARCC parameters, but general performance goals are established for most data collection activities. Numerical goals for analytical methods are presented in Section 2.4. Data assessment procedures throughout the QAPP clearly outline the steps to be taken, responsible individuals, and implications if QA objectives are not met. PARCC parameters are briefly defined below.

Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value, usually stated in terms of standard deviation or coefficient of variation. It also may be measured as the relative percent difference (RPD) between two values. Precision includes the interrelated concepts of instrument or method detection limits and multiple field sample variance. Sources of this variance are sample heterogeneity, sampling error, and analytical error.

Accuracy

Accuracy measures the bias of the measurement system. Sources of this error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis. Data interpretation and reporting may also be significant sources of error. Typically, analytical accuracy is assessed through the analysis of spiked samples and may be stated in terms of percent recovery or the average (arithmetic mean) of the percent recovery. Blank samples are also analyzed to assess sampling and analytical bias (i.e., sample contamination). Background measurements similarly assess measurement bias.

Representativeness

Representativeness expresses the degree to which data represent a characteristic of a population, a parameter variation at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with proper design of the measurement program. Sample/measurement locations may be biased (judgmental) or unbiased (random or systematic). For unbiased schemes, sampling must be designed not only to collect samples that represent conditions at a sample location, but also to select sample locations, which represent the total area to be sampled.

Completeness

Completeness is defined as the percentage of measurements performed that are judged to be valid. Although a quantitative goal must be specified, the completeness goal is the same for all data uses—that a sufficient amount of *valid* data be generated. It is important that critical samples are identified and plans are made to ensure that valid data are collected for them.

Comparability

Comparability is a qualitative parameter expressing the confidence with which one dataset may be compared to another. Sample data should be comparable with other measurement data for similar samples and sample conditions. This goal is achieved through the use of standard techniques to collect and analyze samples.

1.5 Special Training/Certification

The site specific monitoring firm is committed to providing vigorous training in health and safety procedures, the proper use of protective equipment, and overall policy objectives. General training requirements for NYSDEC activities are as follows:

- Site monitoring employees that participate in on-site activities must have completed the 40-hour health and safety training program and the cardiopulmonary resuscitation (CPR)/first aid certification course. To continue such participation, each employee must successfully complete a minimum of eight hours of refresher training, annually; and

- All personnel shipping samples must complete the United States Department of Transportation (DOT) hazardous materials transportation training and certification, including training in specific International Air Transport Association (IATA) regulations (air shipments).

1.6 Documentation and Records

The site monitoring firm's QA Officer will approve the site specific QAPP and maintain the most current approved version of the document. The site specific Project Manager is responsible for providing the most current copy of the site specific QAPP and other planning documents to the project team members.

In addition to the QAPP and other planning documents, the primary documentation for the project is field records and analytical data packages. Requirements for field records are documented in site monitoring firm's Standard Operating Procedures (SOPs) for Field Activities Logbooks and Geotechnical Logbooks and are described briefly below. Requirements for analytical data packages for NYSDEC activities are also described below. The remainder of the QAPP describes additional project documentation and record requirements for QA/QC assessments, data validation, data management, and other areas.

1.6.1 Field Documentation

Sample Identification

Samples will be identified using the format described below. Each sample will be labeled, chemically preserved (if required), and sealed immediately after collection. To minimize handling of sample containers, labels will be completed prior to sample collection as practicable. The sample label will be completed using waterproof ink and will be firmly affixed to sample containers and protected with clear tape. The sample label will give the following information:

- Date of collection;
- Unique sample number;
- Analyses requested; and
- Preservation.

Each sample will be referenced by sample number in the logbook and on the chain-of-custody (COC) record.

Individual samples will be identified by a unique alphanumeric code. Normal field samples (non-quality-control) will be numbered according to the following convention:

SSS-MC-###-Q

SSS - Three letter code for site name

MC - Matrix code as designated below
- Sequential sample number
Q - Quality control sample code such as D for duplicate, F for filtered, S for split, etc.

The matrix codes are as follows:

AS - Bulk Asbestos
BA - Indoor Air from Basement or Crawlspace
DW - Drinking Water
EB - Equipment Blank
FA - Indoor Air, First Floor (not basement)

GW - Groundwater
OA - Outdoor Air
SD - Sediment
SB - Subsurface Soil
SF - Surface Soil
SS - Sub-slab Vapor
SV - Soil Vapor
SW - Surface Water
TB - Trip Blank
WS - Waste

Samples collected with an additional volume for matrix spike/matrix spike duplicates (MS/MSD) will be designated on the COC.

Field Logs and Data Forms

Field logs and data forms are necessary to provide sufficient data to enable participants to reconstruct events that occurred during the project and to refresh the memory of field personnel should they be called upon to give testimony during legal proceedings. Field logs also should document any deviations from the work plan, QAPP, or other applicable planning document. Procedures for recording information are specified in the Field Activities Logbook SOP. All field logs will be kept in a bound notebook containing numbered pages unless a specific field form is completed. All entries will be made in waterproof ink and the time of the entry will be recorded. The top of each page of the logbook or field form will contain the site specific project number, project name, and date that the entries on that page were recorded. No pages will be removed for any reason. Corrections will be made according to the procedures given later in this section. The field logs will include both site- and task-specific information.

Recording of information related to site activities is the responsibility of the site specific monitoring staff and will include a complete summary of the day's activities at the site and any communications outside the project team. Site information includes:

- Name of the person making the entry (signature);
- Names of team members, subcontractors, and visitors on site;
- Levels of personal protection equipment (PPE):
  - Level of protection originally used,
  - Changes in protection, if required, and
  - Reasons for changes; and
- Time spent on site.

Task-specific information may be recorded in multiple field logbooks. The task-specific information will include:

- Drilling information, including:
  - Method employed,
  - Diameter of borehole and well casing,
  - Materials used,
  - Depth of borehole, and
  - Well construction (if appropriate);

- Documentation on samples collected, including:
  - Construction of existing wells (if appropriate),
  - Sampling location and sample identification number,
  - Sampling depth for subsurface soil and surface water (if depth-specific surface water samples are collected) samples,
  - Flow rate of water from in-place plumbing (500 milliliters per minute [mL/min]) for samples of existing water supplies,
  - Sampling date, time, and personnel,
  - Sample sequence (order in which samples were collected),
  - Equipment used (including the use of fuel-powered units/motors during surface water sampling),
  - Type of sample (e.g., grab, composite, QC) and matrix,
  - Amount of each subsample or aliquot (if sample is a composite), and
  - Sample preservation and verification of preservation;

- Types of field QC samples, including when and where they were collected. The description of rinsate sample collection should include the equipment rinsed and the actual field samples collected with that equipment prior to collection of the rinsate;

- Information regarding well purging including:
  - Depth to water and total well depth,
  - Calculations used for volume purged,
  - Volume purged,
  - Equipment used,
  - Field measurements,
  - Length of purge time, and
  - Date and time well was purged;

- Drum inventory:
  - Type of drum and description of contents, and
  - Description of material in the drum and which ayers were sampled (if performed);

- Field equipment used, equipment identification numbers, and calibration information;
- On-site measurement data;
- Field observations and remarks;
- Weather conditions;
- Decontamination procedures;
- Unusual circumstances or difficulties; and
- Initials of person recording information.

Corrections to Documentation Notebook

As with any data logbooks, no pages will be removed for any reason. If corrections are necessary, they must be made by drawing a single line through the original entry (so that the original entry can still be read) and writing the corrected entry alongside. The correction must be initialed and dated. Most corrected errors will require a footnote explaining the correction.

Photographs

Photographs will be taken as directed by the site specific Team Leader. Documentation of a photograph is crucial to its validity as a representation of an existing situation. The following information will be noted in the task log concerning photographs:

- Date, time, location, and direction photograph was taken;
- Description of the photograph taken;
- Reasons why the photograph was taken;
- Sequential number of the digital photo; and
- Camera system used.

1.6.2 Laboratory Data Reporting

The data packages for all CLP and similar Superfund analytical services are consistent with NYSDEC Analytical Services Protocol (ASP) Category B (July 2005) and, therefore, must include a full data package with all associated sample and QC results, calibrations, and raw data. The data packages for long-term monitoring events are consistent with NYSDEC ASP Category A, and therefore must consist of a case narrative, COC, summary table of sample identifications and sample tracking information, a summary of analytical results, and a summary of QC results. The laboratory will provide a summary package of results for all data packages. The laboratory will provide a summary of the sample analyzed, methods used, and date and time of analysis. The laboratory will provide an electronic data deliverable that matches all data reported on the hard copy analytical report. Electronic data report requirements are described in Section 2.10.

Within 48 hours of sample receipt, the laboratory will provide a sample receipt file and copy of the completed COC.

The analytical summary report will include the sample aliquot analyzed, final extract volume, and dilution factor. The analytical summary data report also will include the laboratory reporting limit and method detection limit (MDL) for all target compounds. These limits will be corrected for percent moisture and all dilution factors. Any compounds found less than the reporting limit, but greater than the MDL will be reported and qualified with a "J" flag as estimated.

QC reports must provide a summary report or batch identifier clearly linking all QC results to actual field sample results. QC summary reports must include the laboratory control limits and flag any result reported outside control limits. The case narrative must include an explanation of all QC results reported outside control limits. The laboratory must provide copies of any nonconformance or corrective action forms associated with data in the laboratory report.

For Category A, the laboratory should provide copies of chromatograms for any samples for which elevated reporting limits are used because of sample matrix, but no target compounds are found above the reporting limit.

For organic analytes reported in both Category A and Category B deliverables, the laboratory must report results of the most concentrated extract analysis in order to achieve required quantitation limits.

1.6.3 Record Retention

All records related to the project must be stored in secure areas consistent with requirements in site specific QMP. All records related to the analytical effort must be maintained at the laboratory or in the office (for field screening data) in lockable filing cabinets for at least one year, except those stored in the computer (i.e., cost information, scheduling, custody transfers, and management records). All records must be maintained in a secure area for a period of six years after the end of the calendar year in which the final report is issued.

Types of records to be maintained in addition to the final technical reports for NYSDEC include the following:

- Field logbooks, sampling documents, photographs, QA/QC records, and any other supporting documentation for collection of field samples;
- Administrative records including time cards, costing, and scheduling information; and
- Client correspondence, subcontractor records, minutes of meetings, and any related project management records.

Types of records to be maintained by the laboratory in addition to the analytical report for the NYSDEC include the following:

- Complete COC records from sample receipt to destruction. Sample destruction records must contain information on the manner of final disposal;
- Supporting documentation for any nonconformance or corrective action forms supplied in the analytical report or related to the analysis of project samples;
- Computer records on disk with magnetic tape backup of cost information, scheduling, laboratory COC transfers, and laboratory management records;
- All laboratory notebooks including raw data such as readings, calibration details, and QC results; and
- Hard copies of data system printouts (i.e., chromatograms, mass spectra, and inductively coupled plasma [ICP] data files).

2 Data Generation and Acquisition

This section of the QAPP contains descriptions of all aspects of the implementation of field, laboratory and data handling procedures to meet the requirements of NYSDEC activities. The QAPP provides the basis for ensuring that appropriate methods are used and thoroughly documented. These procedures will be adapted, as appropriate, to meet the objectives of each NYSDEC project as described in the appropriate work plan.

2.1 Sampling Process Design

The sampling process design is documented in the work plan or in the FSP for each site. The FSP will include a project schedule and a summary table listing the type of samples collected, the sampling location, the rationale for selecting the location, sample handling procedures, analytical methods, and the number and type of QA/QC samples.

2.2 Sampling Methods

The sampling methods are documented in the work plan or in the FSP. The site specific monitoring firm's sampling SOPs serve as the basis for sampling procedures.

In general, sampling at a site will progress from clean areas to contaminated areas. This minimizes the potential for cross contamination of samples and, subsequently, eliminates data anomalies or misinterpretation of the extent of contamination. The order of sample collection at a specific location normally proceeds as follows:

1. Volatile organic compounds (VOCs) or other volatile parameters;
2. Extractable organics (including total recoverable petroleum hydrocarbons [TRPH]);
3. Oil and grease;
4. Total metals;
5. Dissolved metals;

6. Microbiological samples;

7. Other inorganics; and

8. Physical parameters (including ignitability, corrosivity, and reactivity).

This sequence helps maintain the representativeness of samples and analytical results.

The remainder of this section describes typical procedures for equipment decontamination and the handling of investigation-derived waste (IDW), and sample containers, preservatives, holding times, packing, and shipping. Specific procedures for each site are provided in the work plan or in the FSP.

2.2.1 Equipment Decontamination

Sampling methods and equipment are chosen to minimize decontamination requirements and the possibility of cross-contamination. Equipment or supplies that cannot be effectively decontaminated (e.g., sample tubing or rope) will be disposed of after sampling. Investigation/sampling equipment will be cleaned at the site prior to use, between sampling locations, and prior to transport off-site. Decontamination of field equipment will be noted in the field logbook. If it is necessary to make decontamination procedure changes in the field, the changes will be noted in the logbook. Otherwise, a notation will be made each day that decontamination was conducted as specified in the work plan or in the FSP. Rinsate blanks will be collected to verify the effectiveness of decontamination procedures. If field blanks indicate poor techniques, the QA Officer and Project Manager will ensure techniques are modified and samplers trained appropriately.

All decontamination will be performed in accordance with NYSDEC-approved procedures. Decontamination of large equipment will consist of the following:

- Removal of foreign matter; and

- High-pressure steam cleaning.

Decontamination of heavy equipment will be performed by the subcontractor and will be performed in a decontamination pad as described in the contract.

The following alternative procedures will be used for smaller equipment and may also be employed for downhole tooling such as split spoons and Geoprobe rods or routine sampling equipment:

- Initially remove all foreign matter;

- Scrub with brushes in a laboratory-grade detergent solution (e.g., Alconox);
- Rinse with potable water with a final deionized or distilled water rinse; and
- Allow to air dry.

If sampling for metals is conducted, then an additional rinse with a 10% nitric acid solution will be added between the potable and deionized water rinses.

Sensitive down-hole devices that only contact water (e.g., water level indicator and miniTROLL pressure transducer) may be decontaminated by triple rinsing with deionized or distilled water. A temporary decontamination area will be established in each work area using heavy plastic sheeting as a pad. The decontamination will be performed by the field team.

Fluids generated during decontamination will be handled according to procedures described in Section 2.2.2.

2.2.2 Investigation-Derived Waste (IDW)

Unless otherwise directed by NYSDEC staff, all IDW will be handled in a manner consistent with requirements in the work plan and applicable federal and state regulations. IDW includes disposable equipment and PPE, purge and development waters, drilling fluids, soil cuttings, and decontamination fluids. Waste streams will not be mixed and will be segregated to the maximum extent possible.

Investigation-derived soils and water will be field-screened for organic vapors with an organic vapor analyzer (OVA) or photoionization detector (PID) and visual inspected to initially determine whether these wastes are potentially contaminated. In order to minimize the generation of drummed wastes and the costs associated with storage, testing, transportation, and disposal of drums, IDW will be handled in the following manner:

- **Soil cuttings from boreholes:** as much of the soil cuttings as possible will be used as backfill. Remaining cuttings that are not significantly contaminated (OVA or PID readings of 5 parts per million [ppm] or less and lack of staining, sheen, etc.) will be spread on the ground near the site of generation if the location is in a suitably undeveloped area. If this is not possible or if contamination is suspected, the excess soil cuttings will be drummed;

- **Soil cuttings from monitoring well boreholes:** cuttings that are not significantly contaminated (OVA or PID readings of 5 ppm or less and lack of staining, sheen, etc.) will be spread on the ground near the site of generation if the location is in a suitably undeveloped area. If this is not possible or if contamination is suspected, the excess soil cuttings will be drummed;

- **Development and purge waters from monitoring wells and decontamination water:** water that is not significantly contaminated (OVA or PID readings of 5 ppm or less, lack of sheen, etc.) will be discharged to the surface in the area where it was generated only if the area is suitably undeveloped (e.g., not paved and not on residential property). If the water cannot be discharged to the surface, then it may be discharged to the municipal sanitary sewer system pending receipt of a temporary discharge permit from the local sewer department. Alternatively, significantly contaminated waters or waters that cannot be discharged will be drummed; and

- **Used sampling equipment and PPE:** unless field screening indicates that PPE and other solid wastes are contaminated to the level that they can not be disposed of as non-hazardous waste, this material will be double-bagged and disposed of off-site as non-regulated solid waste.

Wastes that need to be drummed will be placed in United States Department of Transportation (DOT) approved 55-gallon drums and stored at a central storage location selected by NYSDEC, pending analysis and disposal. Drums will be staged within secondary containment units and covered with a plastic tarp if stored outside. All drums containing IDW will be labeled as to their contents, the site name, location where the material was generated, and date the waste was generated. Composite samples of like wastes will be collected for toxicity characteristic leaching procedure (TCLP) VOCs, TCLP semivolatile organic compounds (SVOCs), TCLP pesticides/herbicides, TCLP metals, PCBs, and pH. A waste disposal firm will then be subcontracted to haul the waste off-site to an appropriate disposal facility as either solid or hazardous waste. The site specific monitoring firm will coordinate drum hauling with the NYSDEC project manager to ensure that NYSDEC or its representative or the site owner or responsible party is available to sign the waste shipping manifest(s), as legal waste generator.

2.3 Sample Handling and Custody

2.3.1 Sample Containers

The volumes and containers required for sampling activities are indicated in Table 2-1. Prewashed sample containers will be provided by the laboratory and will be wide-mouth jars with Teflon-lined caps unless otherwise indicated. The laboratory must use an approved specialty container supplier, which prepares containers in accordance with EPA bottle-washing procedures. The laboratory must maintain a record of all sample bottle lot numbers shipped in the event of a contamination problem. Trip blanks will be transported to the site inside the same box as volatile organic analysis (VOA) vials or as the air sampling canisters.

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
Contract Laboratory Program Analysis					
TCL VOCs	OLM04.2/SOM01.0	Two pre-weighed 40-mL plus one pre-weighed 40-mL vial with stir bar and methanol and one 4-oz. glass vial with septum (if no other containers are shipped)	Three 40-mL glass vials with septa, preserved HCl < pH 2	48 hours for analysis or freezing to <7˚C and 12 days for analysis following freezing	12 days for waters with chemical preservative, and 5 days for unpreserved sample
TCL SVOCs	OLM04.2/SOM01.0	One 8-oz. glass jar	Two 1-L amber glass bottles	12 days/40 days[d]	5 days/40 days[d]
TCL Pest/PCB	OLM04.2/SOM01.0	One 8-oz. glass jar	Two 1-L amber glass bottles	12 days/40 days[d]	5 days/40 days[d]
TAL Metals/ Mercury	ILM05.3	One 8-oz. glass jar	One 1-L HDPE bottle, preserved HNO_3 to pH <2	180 days/26 days for mercury	180 days/26 days for mercury
TAL Cyanide	ILM05.3	One 8-oz. glass jar	One 1-L HDPE bottle, preserved NaOH to pH >12	180 days/12 days for cyanide	180 days/12 days for cyanide
Air/Vapor Samples					
Target VOCs	TO-15[g]	1.0, 1.4, or 6.0 L Minican (depending on lab availability	NA		30 Days
Solid Waste					
Ignitability	SW-846 Chapter 8 (8.1)	One 8-oz. glass jar	One 1-L HDPE bottle for both tests	40 days	40 days
Corrosivity (as pH)	SW-846 Chapter 8 (8.2)	One 8-oz. glass jar		28 days	28 days
Reactivity	SW-846 Chapter 8 (8.3)	One 8-oz. glass jar	Two 1-L HDPE bottles	28 days	28 days

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
TCLP Extraction	1311	Two 8-oz. glass jars	Various (see below)	5 days for SVOCs and mercury, 7 days for VOCs, 180 days for metals	5 days for SVOCs and mercury, 7 days for VOCs, 180 days for metals
TCLP Metals/ Mercury	6010B/7471	One 8-oz. glass jar	One 1-L HDPE bottle[c]	26 days[b] for mercury, 180 days for metals	26 days[b] for mercury, 180 days for metals
TCLP Volatile Organics	8260B	One 125-mL VOA jar	Two 40-ml glass vials with septa	7 days	7 days
TCLP Base/ Neutral Acid Extractables	8270C	One 8-oz. glass jar	Two 1-L amber glass bottles	7 days, 40 days for analysis[b]	7 days, 40 days for analysis[b]
TCLP Pesticides	8081A	One 8-oz. glass jar	Two 1-L amber glass bottles	7 days, 40 days for analysis[b]	7 days, 40 days for analysis[b]
TCLP Herbicides	8151A	One 8-oz. glass jar	Two 1-L amber glass bottles	7 days, 40 days for analysis[b]	7 days, 40 days for analysis[b]
TCLP STARS Base/Neutral Extractables	8270C	One 8-oz. glass jar	Two 1-L amber glass bottles	7 days, 40 days for analysis[b]	7 days, 40 days for analysis[b]
TCLP STARS Volatile Organics	8021B or 8260B	One 125 mL VOA jar	Two 40-mL glass vials with septa	7 days[b]	7 days[b]
Additional Methods					
Hardness	130.1,130.2	NA	One 1-L HDPE bottle (can combine with metals) preserved HNO_3 to pH <2	NA	180 days
pH	150.1	NA	To be performed in the field	NA	ASAP
TDS	160.1	NA	One 1-L HDPE bottle	NA	24 hours
TSS	160.2	NA	One 1-L HDPE bottle	NA	5 days

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
Priority Pollutant Metals	200.7	One 4-oz. glass jar	One 1-L HDPE bottle preserved HNO_3 to pH <2	180 days, 26 days for mercury	180 days, 26 days for mercury
Alkalinity	310.1, 310.2	NA	One 1-L HDPE bottle	NA	12 days
Nitrate or Nitrite	353.2/300,/9056	One 4-oz. glass jar	One 1-L HDPE bottle (can combine with pH and BOD_5)	24 hours	24 hours
Nitrate-Nitrite	353.2	One 4-oz. glass jar	One 1-L HDPE bottle preserved H_2SO_4 to pH <2	26 days	26 days
Orthophosphorus	365.2/300,/9056	NA	One 1-L HDPE bottle (can combine with pH and BOD_5)	NA	24 hours
Total Phosphorus	365.2	One 4-oz. glass jar	One 1-L HDPE bottle preserved H_2SO_4 to pH <2	26 days	26 days
Chloride, Bromide, Sulfate, Fluoride	300, 9056 or individual methods	One 4-oz. glass jar	One 1-L HDPE bottle	26 days	26 days
COD	410.1	NA	One 1-L HDPE bottle (can combine with ammonia and TKN) preserved H_2SO_4 to pH <2	NA	26 days
Oil/Grease	1664	One 4-oz. glass jar	One 1-L amber glass bottle preserved HNO_3 to pH <2	26 days	26 days
TRPH	1664	One 4-oz. glass jar	One 1-L amber glass bottle preserved H_2SO_4 to pH <2	26 days	26 days
Metals/Mercury	6010B	One 4-oz. glass jar	One 125-mL HDPE bottle preserved HNO_3 to pH <2	180 days/26 days for mercury	180 days/26 days for mercury
Chromium, Hexavalent	7196A	One 4-oz. glass jar	One 1-L HDPE bottle unpreserved or preserved pH of 9.3 to 9.7 with an ammonia sulfate buffer solution	24 hours from collection for unpreserved soils and 28 days for preserved soils	24 hours from collection for unpreserved water and 28 days for preserved water
PCBs	8082	One 4-oz. glass jar	Two 1-L amber glass bottles	12 days/40 days[d]	5 days/40 days[d]

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
VOCs and related tests	8260B/8021B/8015B	Two pre-weighed 40-mL with deionized water and one pre-weighed 40-mL vial with stir bar and methanol and one 4-oz. glass vial with septum(if no other containers are shipped)	Three 40-mL glass vials with septa preserved HCl < pH 2	48 hours for analysis or freezing to <7˚C and 12 days for analysis following freezing	12 days for waters with chemical preservative, and 5 days for unpreserved sample
SVOCs and related tests	8270C	One 8-oz. glass jar	Two 1-L amber glass bottles	12 days/40 days[d]	5 days/40 days[d]
Chlorinated Dioxins and Furans	8280A or 8290	One 8-oz. glass jar	Two 1-L amber glass bottles	30 days/45 days[d]	30 days/45 days[d]
Cyanide	9010C/9012B	One 4-oz. glass jar	One 1-L HDPE bottle preserved NaOH to pH >12	12 days	12 days
TOX	9020B	One 4-oz. glass jar	One 1-L amber glass preserved H_2SO_4 to pH <2	7 days	7 days
pH	9045C/9040B	One 4-oz. glass jar	One 125-mL HDPE bottle	ASAP	ASAP
Total Phenols	420.1	One 4-oz. glass jar	One 1-L amber glass preserved H_2SO_4 to pH <2	26 days	26 days
Total Organic Carbon	Lloyd Kahn; 415.1; 9060	One 4-oz. glass jar	NA	26 days	26 days
Total Glycol	DEC 89-9	One 4-oz. glass jar	One 1-L glass	26 days	14 days
Specific Gravity	SM 22710 F	NA	Can combine with other analyses (requires 500 mL)	NA	40 days
TKN	351.3	One 4-oz. glass jar	One 1-L HDPE bottle (can combine with COD and ammonia) preserved H_2SO_4 to pH <2	26 days	26 days

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
Ammonia	350.2	One 4-oz. glass jar	One 1-L HDPE bottle (can combine with COD and TKN) preserved H_2SO_4 to pH <2	26 days	26 days
BOD_5	405.1	NA	One 1-L HDPE bottle (can combine with pH and nitrates)	NA	24 hours

[a] All samples to be cooled to 4°C except for metals analysis samples shipped alone. Sample containers must have Teflon-lined lids. Holding times are based on verified times of sample receipt and are consistent with NYSDEC requirements. 0.008% Na2S2O3 to be added to water samples in the presence of residual chlorine.
[b] Time listed is from TCLP extraction.
[c] TCLP analysis of water samples assumes less than 0.5% solids.
[d] Holding time is 5 days from collection to extraction and 40 days from extraction to analysis.

Key:
ASAP = As soon as possible.
BOD_5 = Biochemical oxygen demand-5.
BTX = Benzene, toluene, xylene.
COD = Chemical oxygen demand.
EPA = U.S. Environmental Protection Agency.
HDPE = High-density polyethylene.
HNO_3 = Nitric acid.
H_2SO_4 = Sulfuric acid.
L = Liter.
mL = Milliliter.
NA = Not applicable.
NaOH = Sodium hydroxide.
oz. = Ounce.
PCBs = Polychlorinated biphenyls.
SM = Standard Methods of Analysis for Water and Wastewater.
STARS = NYSDEC Spill Technology and Remediation Series (Memorandum No. 1 [1992]).
SVOCs = Semivolatile organic compounds.
TAL = Target Analyze List.
TCL = Target Compound List.
TCLP = Toxicity characteristic leaching procedure.
TDS = Total dissolved solids.
TKN = Total Kjeldahl nitrogen.
TOX = Total Organic Halides.
TRPH = total recoverable petroleum hydrocarbon.
TSS = Total suspended solids.
VOC = Volatile organic compounds.

For air samples, laboratories will follow cleaning procedures and checking for canisters as outlined in Method TO-15 and the NYSDOH Guidance for Soil Vapor Instrusion. Laboratories are required to certify that containers are clean and provide copies of the certification in the data package.

2.3.2 Samples Preservation and Holding Times

All samples requiring preservation will be collected in containers pre-preserved by the laboratory supplier. If field preservation is necessary, preservation will be immediately after collection and transportation to the site office. A clean, disposable pipette or a premeasured, single-use, glass ampule will be used to transfer liquid preservatives to the sample container. Care will be taken to avoid contact between the pipette or ampule and the sample or sample container. Solid preservatives will be transferred to the sample container using a clean, stainless-steel spoon. The sample preservation will be checked on representative samples by pouring the sample into a clean cup and testing with pH paper to determine if a sufficient amount of preservative has been used. Preserved samples for VOA will be tested on an extra vial at a rate of approximately 10%. Use of additional preservative also will be recorded in the logbook. Field blanks, which require preservation, will be preserved with a volume of reagent equal to the volume of reagent used in the samples that the blanks represent. A list of preservatives and holding times for each type of analysis are indicated in Table 2-1. Additional preservation requirements and holding times for non-target analyses are listed in the NYSDEC ASP.

Samples for soil VOCs will be collected in accordance with EPA Method 5035. The laboratory must supply two pre-tarred VOA vials with 5 mL of deionized water, one pre-tarred vial with methanol, and one 2-ounce container for dry weight analysis (only if no other tests are required). The laboratory also must provide one coring device per sample for collection of a 5-gram plug. Soil samples for VOCs must arrive at the laboratory within 48 hours to be frozen at -7^{o}C.

Reagents used for preservation are reagent-grade and are supplied by the laboratory or approved chemical supplier. The laboratory must maintain traceability records on preservatives in the event of potential field contamination of samples. Each bottle is received from the laboratory and must be clearly labeled with laboratory name, type of chemical, lot number, and expiration date. Field personnel should record the date used in the field, site name, and site specific project number on the label or in the site logbook. Fresh sample containers and preservatives will be obtained from laboratory stocks prior to mobilization for each sampling event. Preservatives stored on site will be disposed of after use unless containers are sealed and stored under COC in a secure area. No preservatives will be used passed the expiration date.

Sample preservation will be verified at the laboratory at receipt or prior to analysis for VOCs. The preservation or pH will be recorded in the logbook. If samples are improperly preserved, a corrective action form will be submitted to the laboratory project manager for follow-up action. The laboratory will notify the Field Leader or Project Manager to implement corrective action in the field.

Methods for the analysis of soils, sediments, or solid matrices for VOCs will be used in conjunction with EPA Method 5035A: Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples. The recommended collection technique for EPA Method 5035A calls for the transfer of a 5-gram aliquot of sample to a tarred empty 40-mL VOA vial. The sample is iced at 4°C for transport to the lab. The laboratory will refrigerate VOA vials at 4°C ± 2°C for 48 hours or less or preserve by freezing at < -7°C within 48 hours of receipt to extend holding time to 14 days.

2.3.3 Sample Handling

The transportation and handling of samples must be accomplished in a manner that not only protects the integrity of samples but also prevents any detrimental effects due to the possible hazardous nature of the samples. Regulations for packaging, marking, labeling, and shipping of hazardous materials are promulgated by the DOT in 49 CFR 171 through 177. The site specific monitoring firm needs to trains all staff responsible for the shipment of samples in these regulations. Procedures for sample packing and shipping are documented in the site specific monitoring firm's SOP.

Sample Packaging

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

- Sample bottle lids must never be mixed. All sample lids must stay with their original containers;
- Shipping coolers must be partially filled with packing materials and ice (when required) to prevent bottles from moving and breaking during shipping;
- Environmental samples are to be cooled. Wet ice packaged in sealable, plastic bags will be used to cool samples during shipping. Ice is not to be used as a substitute for packing materials;
- Any remaining space in the cooler should be filled with inert packing material such as bubble wrap. Under no circumstances should material such as sawdust or sand be used;

- A duplicate custody record must be placed in a plastic bag and taped to the inside of the cooler lid. Custody seals are affixed to the sample cooler; and

- All containers for a given sample will be shipped in the same cooler when possible. In cases where samples for volatile analysis would be shipped in several coolers on a single day, VOA vials will be consolidated into a single cooler to minimize the number of required trip blanks.

Shipping Containers

Environmental samples will be properly packaged and labeled for transport and dispatched to the laboratory facility. The SOP procedure will be followed to mark and label sample shipments. A separate COC record must be prepared for each shipping container. The following requirements for shipping containers will be followed.

Sample shipping containers will generally be commercially purchased coolers (e.g., Coleman coolers) or boxes provided from the laboratory for air canisters. Each container will be custody-sealed for shipment, as appropriate. The container custody seal will consist of filament tape wrapped around the package at least twice and custody seals affixed in such a way that access to the container can be gained only by cutting the filament tape and breaking a seal.

Field personnel will make arrangements for transportation of samples to the laboratory. In most cases, samples will be shipped using an overnight express carrier (e.g., Federal Express). Field monitoring personnel will provide the laboratory with a shipment schedule and notify them of deviations from planned activities. The field monitoring personnel will notify the laboratory of all of samples intended for Saturday delivery, no later than 3 p.m. (Eastern Standard Time) on Thursday.

2.3.4 Sample Custody

Formal sample custody procedures begin when the precleaned sample containers leave the laboratory or upon receipt from the container vendor. The laboratory must follow written and approved SOPs for shipping, receiving, logging, and internally transferring samples. Sample identification documents must be carefully prepared so that sample identification and COC can be maintained and sample disposition controlled. Sample identification documents include:

- Field notebooks;

- Sample labels;

- Custody seals; and

- COC records.

The primary objective of COC procedures is to provide an accurate written or computerized record that can be used to trace the possession and handling of a sample from sampling through completion of all required analyses. A sample is in custody if it is:

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

Field Custody Procedures
Precleaned sample containers will be relinquished by the laboratory to the Field monitoring personnel. The Field monitoring personnel will record receipt of the sample containers in the project logbook. The following field custody procedure will be used for collection of samples:

- As few persons as possible should handle samples;
- Coolers or boxes containing cleaned bottles should be sealed with a custody tape seal during transport to the field or while in storage prior to use;
- The sample collector is personally responsible for the care and custody of samples collected until they are transferred to another person or dispatched properly under COC rules;
- The sample collector will record sample data in the field logbook; and
- The Field monitoring personnel will determine whether proper custody procedures were followed during the fieldwork and decide if additional samples are required.

Chain-of-Custody Record
The COC form must be fully completed in duplicate by the field technician designated by the site specific monitoring firm’s Project Manager as responsible for sample shipment to the appropriate laboratory for analysis. In addition, if samples are known to require rapid turnaround in the laboratory because of project time constraints or analytical concerns (e.g., extraction time or sample retention period limitations), the person completing the COC record should note these constraints. The custody record also should indicate any special preservation techniques necessary or whether samples need to be filtered. Copies of COC records are maintained with the project file.

Custody Seals

Custody seals are preprinted, adhesive-backed seals with security slots designed to break if the seals are disturbed. DOT-approved sample shipping containers are sealed in as many places as necessary to ensure security. Seals must be signed and dated before use. Upon receipt at the laboratory, the custodian must check and document on a cooler receipt form that seals on boxes are intact.

2.3.5 Laboratory Custody Procedures

All laboratory custody procedures must maintain a system that provides for sample log-in, sign-out and sign-in of samples to and from individual analysts, data storage and reporting, and sample disposal. These procedures must ensure continuous documentation of sample custody from receipt to disposal. Procedures used by the laboratory must meet all NYSDEC requirements. Laboratories must complete a cooler receipt form documenting the temperature and condition of samples on receipt. The form must be provided in the laboratory data package.

The laboratory must submit sample receipt documents for each set of samples received. A sample delivery group (SDG) is defined as a batch of up to 20 samples collected during one calendar week. Samples shipped on Friday will normally conclude an SDG. The sample receipt documents consist of the Sample Receipt file, a pdf of the COC, and a pdf of the laboratory log report showing the tests selected.

The laboratory must implement, practice, and maintain programs for managing waste disposal. The site specific monitoring firm's and NYSDEC markings must be removed from all sample containers prior to disposal. Waste disposal procedures must include use of a certified hauler and meet Federal and State regulations.

2.4 Analytical Method Requirements

Analytical method requirements will be documented in the appropriate work plan or FSP. The specific implementation of analytical methods will be documented in laboratory SOPs. Laboratory SOPs and the QA program will be reviewed and approved as part of the procurement process.

2.4.1 Standard Laboratory Analytical Procedures

Analytical methods in support of NYSDEC activities are referenced in NYSDEC's ASP. The protocol is based on the following methods:

1. 40 CFR Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants under the Clean Water Act;

2. "Standard Methods for the Examination of Water and Wastewater," APHA/AWWA/WEF, 21st ed, 1992;

3. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Revised March 1983;

4. "Test Methods for Evaluating Solid Waste, Physical Chemical Methods," 3rd ed, SW-846, 1998, latest update;

5. "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air," 2nd ed, EPA/625/R-96/010b, January 1999;

6. "USEPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration, OLM04.3, 2003or SOM01.2, 2007";

7. "EPA Contract Laboratory Program, Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration ILM05.4, 2007; and

8. American Society for Testing and Materials (ASTM).

The laboratory must be certified by the NYSDOH ELAP for all analytical methods for which the NYSDOH provides an approval program. Laboratories also must be National Environmental Laboratory Accreditation Program (NELAP) approved by NYSDOH or related accrediting authority.

Table 2-1 lists all analyses that may be performed for NYSDEC projects. Reporting limits for any additional methods will be included in the site-specific QAPP.

The site specific monitoring firm's anticipates that laboratories will use the most current method available and/or recommended by EPA. For example, EPA has promulgated the use of Standard Methods references instead of the water method reference listed above. The actual methods for the project will be reviewed and approved as part of the project planning process.

2.5 Quality Control

QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of glassware and reagents. Field QC will include duplicates, trip blanks, field equipment blanks, and miscellaneous field QC samples. Field QC samples will be preserved, documented, and transported in the same manner as the samples they represent. Laboratory-based QC will consist of standards, replicates, spikes, and blanks. Method QC limits for analyses need to be provided by the site specific monitoring firm's laboratory or are included in NYSDEC ASP 2005. Quality control limits for any additional methods will be included in the site-specific work plan or FSP.

2.5.1 Field Quality Control Samples

The collection of field QC samples and the conditions, under which the samples were collected, will be documented in the field logbook. Unless otherwise directed by NYSDEC, the field QC samples listed below will be collected and analyzed at the frequency listed in Table 2-2.

Table 2-2 Field Quality Control Guidelines, NYSDEC Projects

QC Sample	Description
Field Duplicate	One per matrix per 20 samples for each analysis.
Field Equipment Blank	One per equipment per 20 samples for each analysis. Only equipment sets that are subject to decontamination require equipment blanks. Dedicated or disposal equipment does not require equipment blanks.
Field Background Samples	Per sampling day for indoor air samples as specified in the guidance for soil vapor intrusion.
Trip Blank	One per shipment for each cooler in which aqueous samples for VOC analysis are shipped or one per shipment batch for air samples. Trip blanks are analyzed for all VOC methods designated for samples. Trip blanks are shipped only for aqueous matrix.

Duplicate Samples

Duplicate samples will be collected at the rate one duplicate per 20 project samples of the same matrix. Duplicate soil samples will be prepared by collecting equal aliquots from the same sample source and placing them in separate sample bottles. Duplicate water samples will be prepared by collecting successive volumes of water and placing them in separate bottles. Duplicate air samples will collected with a tubing splitter. Duplicate samples will be shipped with the samples they represent and will be analyzed in the same manner.

The RPD between the concentration in the original and duplicate sample measures the overall precision of the field sampling and analytical method. Field duplicates are evaluated by using two times the laboratory QC criteria for duplicates (i.e., RPDs of 40% for water and air and 70% for soils). If all other laboratory QC criteria are met, RPD results outside control limits indicate potential matrix effects. Significant deviations in RPD results of field duplicates are assessed to evaluate whether data met all quality objectives for the project.

Trip Blanks

Trip blanks are collected to establish that the transport of sample bottles to and from the field does not result in contamination of the sample from external sources. Trip blanks will be collected for, and in conjunction with, only VOA for aqueous samples. If the 40-mililiter (mL) VOA vials are shipped to the field team by the laboratory sample custodian, a representative number of vials filled with analyte-free water (preserved, capped, and labeled) will accompany the shipment to and from the laboratory. Trip blanks will be treated in the same manner as the VOA samples they represent and will be taken to representative field sample sites, but remain unopened. Trip blanks will be sent with each sample-shipping container that contains aqueous samples for VOA.

Field Equipment Blanks

Field equipment blanks are blank samples (also called rinsate blanks) designed to demonstrate that sampling equipment has been properly prepared and cleaned before field use and that cleaning procedures between samples are sufficient to minimize cross-contamination. Field equipment blanks will be prepared in the field using an approved water source. Sampling of the water source may also be required if analyte-free water is not obtained from the lab. The field equipment blank will be preserved, documented, shipped, and analyzed in the same manner as the samples it represents. Equipment blanks will be collected at the rate of one sample per day, per equipment set.

An equipment set is all sampling equipment required to collect one sample. For example, one soil sample equipment set may include a stainless-steel bowl, a stainless-steel trowel, and a bucket auger. Samples collected with dedicated or disposable equipment do not require equipment blank samples.

Field equipment and trip blanks serve to demonstrate contamination-free procedures in the field and during sample transport. The goal is for field blanks to be free of contamination. Low-level contamination may be present, but must be less than five times the level found in associated samples. If contamination is greater, the sample results are qualified as non-detect at an elevated-reporting limit. If field blank contaminants are also present in the method blank, or are typical laboratory contaminants, or are not present in project samples, then no further action is required. All other sources of contamination must be investigated as part of the corrective action process. Sample results that do not meet quality objectives after qualification, re-sampling may be required. The QA Officer, Project Chemist, and Project Manager must determine potential changes in field procedures to eliminate contamination sources prior to re-sampling.

Miscellaneous Field QC Samples

This type of QC sampling involves analysis of investigation water sources and monitoring well drilling fluids (if used). Because the water supply source is used in decontamination and well drilling activities, it may be necessary to determine the possibility for the introduction of outside contaminants. Drilling fluids (muds) that are used during well installation may also be analyzed in order to assess the possibility of such constituents affecting groundwater samples.

Field background samples are required for air sampling events. Results of the background sample are used in the assessment process to determine whether contamination is site-related or significant.

2.5.2 Laboratory Quality Control Analyses

Analytical performance is monitored through QC samples and spikes, such as laboratory method blanks, surrogate spikes, QC check samples, matrix spikes, matrix spike duplicates, duplicate samples, and duplicate injections (see Table 2-3). All QC samples are applied on the basis of a laboratory batch. Batches do not exceed 20 samples excluding associated field and laboratory QC samples. The QC samples associated with sample preparation include method blanks, laboratory control samples (LCSs) (also called matrix spike blanks [MSB] by NYSDEC), matrix spikes, and duplicates. The run batch represents all samples analyzed together in the run sequence. The run sequence is typically limited to 24 hours unless defined differently for the analytical method. For some analyses, such as volatile organics, the run batch is equivalent to the preparation batch. The QC samples associated with the run sequence include calibration standards, instrument blanks, and reference standards. Unless otherwise directed by NYSDEC staff, the laboratory QC samples listed below will be collected and analyzed at the frequency listed in Table 2-3.

Instances may arise where high sample concentrations, nonhomogeneity of samples, or matrix interferences preclude achieving detection limits or associated QC target criteria. In such instances, data will not be rejected *a priori* but will be examined on a case-by-case basis. The laboratory will report the reason for deviations from these detection limits or noncompliance with QC criteria in the case narrative.

Table 2-3 Laboratory Quality Control Sample Guidelines, NYSDEC Projects

QC Sample	Description
MB	One per matrix per preparation batch for each analysis.
LCS/MSB	One per matrix per preparation batch for each analysis. The LCS/MSB must contain all target analytes of concern at the site.
Surrogate Spikes	All samples analyzed for organic methods.
Internal Standards	All samples analyzed by GC/MS methods.
MS/MSD	One per matrix per SDG for each analysis. The spike solution must contain a broad range of the analytes of concern at the site. The overall frequency of MS/MSD on project samples must be at least one set per 20 samples.
MS/MD	One per matrix per SDG for metals and general chemistry methods. The spike solution must contain a broad range of analytes of concern at the site. The overall frequency of MS/MD on the project samples must be at least one set per 20 samples.
Serial Dilution/Post Digestion Spike	All samples analyzed for metals.

Table 2-3 Laboratory Quality Control Sample Guidelines, NYSDEC Projects

QC Sample	Description

Key:

SDG = Sample Delivery Group.
LCS = Laboratory Control Samples.
MSB = Matrix Spike Blank.
MS/MD = Matrix Spike/Matrix Duplicate.
MS/MSD = Matrix Spike/Matrix Spike Duplicate.
MB = Method Blank.
TAL = Target Analyte List.

Laboratory Method Blank

Laboratory method blanks serve to demonstrate a contamination-free environment in the laboratory. The goal is for method blanks to be free of contamination. Low-level contamination may be present, but must be less than the reporting limit. If contamination is greater, samples are reanalyzed. If contaminants are present in the method blank but not in project samples, no further action is required. All sources of contamination that are not common laboratory contaminants as defined in the method SOPs must be investigated as part of the corrective action process. Sample results must not be blank subtracted unless specifically required by the analytical method.

Surrogate Standards

Surrogate recoveries must be within QC criteria for method blanks and LCSs to demonstrate acceptable method performance. If surrogate recoveries are outside QC criteria for method blanks or LCSs, corrective action is required and the Project Chemist should be notified. Surrogate recoveries in the samples indicate the method performance on the particular sample matrix. Surrogate recoveries that are outside QC criteria for a sample indicate a potential matrix effect. Matrix effects must be verified based on review of recoveries in the method blank or LCS, sample reanalysis, or evaluation of interfering compounds. Sample clean-up procedures are required by the NYSDEC ASP must be implemented to alleviate potential matrix problems.

Laboratory Control Sample

LCS recoveries must be monitored on control charts for all non-CLP methods. Laboratory QC criteria must be established for each method and matrix using a minimum of 30 points. QC criteria should be updated annually for all non-CLP methods. The LCS recovery must be within the control limits to demonstrate acceptable method performance. Sporadic marginal failures of a few target analytes reported when greater than five target analytes are required are allowed as part of the data review guidance. If LCS recoveries are outside QC criteria for more than a few target analytes, recoveries are significantly low, or the compounds were detected in the samples, then corrective action is required. After corrective action is complete, sample re-analysis is required for failed parameters. If LCS recoveries exceed the QC criteria, and that parameter is not found in any samples, re-analysis is not necessary. For any other deviations from LCS control limits that can not be resolved by sample re-analysis within holding times, the Project Chemist must be notified immediately. If critical samples are affected, the Project Manager may determine that re-sampling is required.

Matrix Spike Sample

MS recoveries are a measure of the performance of the method on the sample being analyzed. Field and trip blanks must not be chosen for spiking. MS recoveries outside the control limits applied to the LCS indicate matrix effects. Sample clean-up procedures may be warranted for samples with severe matrix effects. The laboratory should notify the Project Chemist of these instances to determine an appropriate corrective action.

Matrix Spike Duplicate Sample

The MSD sample is commonly prepared in conjunction with the MS sample. The MSD is prepared from a separate portion of the sample and processed with the same additions as the MS. The MSD is prepared for methods that do not typically show concentrations of target analytes above MDLs, such as organic methods. The RPD between the recoveries in the MS and MSD measures the precision of the analytical method on actual project samples. QC criteria for RPDs are 20% for waters and 35% for soils unless the laboratory provides additional statistical criteria.

Duplicate Sample

The duplicate is prepared for methods that typically show concentrations of target analytes above MDLs, such as metals and wet chemistry methods. The RPDs between recoveries in the original and duplicate measures the precision of the analytical method on the actual project samples. QC criteria for RPDs are 20% for waters and 35% for soils unless the laboratory provides additional statistical criteria.

If all other QC criteria are met, RPD results outside control limits indicate potential matrix effects. The laboratory should investigate significant deviations in the RPD results by observing the sample to determine any visual heterogeneity or reviewing sample chromatograms for matrix interference. If visual observation does not indicate a potential problem, the sample may be reanalyzed. Potential matrix effects are reported in the case narrative.

Instrument Blanks

Instrument or reagent blanks are analyzed in the laboratory to assess laboratory instrument procedures as possible sources of sample contamination. Instrument blanks are part of the laboratory corrective action if method blanks show contamination or the analyst suspects carryover from a high concentration sample. Instrument blank results are reported on a laboratory corrective action form.

QC Check Standards
A QC check standard is obtained from a different source or at a minimum a lot different from that of the calibration standard. A check standard result is used to validate an existing concentration calibration standard file or calibration curve. The check standard provides information on the accuracy of the instrumental analytical method, independent of various sample matrices. Check standards are analyzed with each new calibration curve.

Internal standard area counts for water and solid sample analysis for all samples must be in the inclusive range of 50% to 200%, and retention time must not marry more than +/- 30 seconds of its associated 12-hour calibration standard (i.e., opening Continuing Calibration Verification or mid-point standard from Initial Calibration).

The serial dilution analysis (a five-fold dilution) must agree within a 10% difference of the original determination after correction for the dilution if the analyte concentration is sufficiently high (concentration in the original sample is >50 times [50x] the MDL).

The post-digestion spike (%R) must be within the acceptance limits of 75% to 125%. However, spike recovery limits do not apply when the sample concentration is greater than 4x the spike added.

Other Laboratory QC Samples
The laboratory performs analysis of other QC samples or standards, depending on the analytical method. Method-specific QC samples or standards include internal standard spikes for gas chromatography/mass spectrometry (GC/MS) methods; post-digestion spikes and serial dilutions for metals analysis; and interference check samples (ICSs) for ICP analysis.

Blind QC Check Samples
Types of blind QC check samples include external performance evaluation (PE) samples provided by an outside certifying agency and internal QC samples submitted for routine analysis by the laboratory QA officer. The laboratory must pass NYSDOH samples as part of the approval process. If methods are used that are not included in NYSDOH approval process, blind QC samples may be submitted to the laboratory to evaluate method performance.

2.6 Instrument/Equipment Testing, Inspection, and Maintenance
All laboratory and field instruments and equipment used for sample analysis must be serviced and maintained only by qualified personnel. Laboratory instrument maintenance procedures will be evaluated to verify that there will be no impacts on analysis of project samples due to instrument malfunction. For example, the

laboratory must have duplicate instrumentation and/or major laboratory instruments (e.g., GC/MS, ICP, atomic absorption spectroscopy [AAS]) maintained under service agreements with the manufacturer that require rapid respond by manufacturer-approved service agents.

Field instruments will be rented through approved suppliers that have manufacturer-approved maintenance programs.

2.6.1 Field Equipment Maintenance

Field equipment will be checked upon receipt to verify that instruments are in working condition and that the rental company provided appropriate calibration records or certifications. On-site operation will be performed in accordance with manufacturer manuals. If any problems occur, the instrument will be replaced immediately. Equipment purchased for the contract will be maintained in accordance with manufacturer guidance.

2.6.2 Laboratory Equipment Maintenance

The laboratory must maintain a stock of spare parts and consumables for all analytical equipment. Routine preventive maintenance procedures should be documented in site specific monitoring firm's SOPs. Maintenance performed on each piece of equipment must be documented in a maintenance logbook. Daily checks of the laboratory deionized water and other support systems are required. The laboratory must operate backup instrumentation for most of its analytical equipment in the event of major instrument failure or have an alternative approached to ensure analytical work proceeds within holding times with no adverse impacts on data quality.

2.7 Instrument/Equipment Calibration and Frequency

All instruments and equipment used during sampling and analysis will be operated and calibrated according to the manufacturer's guidelines and recommendations, as well as criteria set forth in applicable analytical methodology references. Personnel properly trained in these procedures will perform operation and calibration of all instruments. Documentation of all field maintenance and calibration information will be maintained in the field logbook. Table 2-4 lists typical monitoring equipment used during fieldwork. This equipment is representative of instruments typically required for NYSDEC projects. All equipment used for the NYSDEC projects will be NYSDEC-owned or rented. All field personnel receive annual refresher training on the field operation of all health and safety related

Table 2-4 General Field Equipment and Calibration Procedures

Instrument or Equipment	Description[a]	Field Calibration Procedure	Acceptability/ Performance Criteria	Responsible Personnel
Organic Vapor Analyzer (OVA)	Flame Ionization Detector to provide continuous data on organic vapor concentrations. Unit must be Class I, Division 1, Grade A,B,C,D. Unit must have rechargeable battery, range of 0 to 1,000 ppm, and ultra-high purity hydrogen as fuel source.	Units are factory calibrated to remain with performance specification for an excess of 6 months. During field use, a carbon filter is used with the OVA to distinguish methane from other organics. The unit is checked daily with calibration gas to ensure the response is consistent. If needed, the unit will be re-calibrated to manufacturer specifications. When the OVA is used to screen samples (except samples for headspace analysis), periodic ambient air readings will also be recorded in the logbook.	A carbon filter must remove sources of organic vapors other than methane (i.e., marker). Instrument must detect organic vapors without filter. Response should be checked daily with calibration gas. The accuracy will depend on the application.	Site Safety Officer, Project Geologist
O_2 Explosimeter	Gas monitor designed to simultaneously monitor areas for oxygen deficiency and dangerous levels of combustible gas. Units must be equipped with sample pumps and hoses to measure gases in a confined space. Range O_2 - 0 to 25%, LEL - 0 to 100%, H_2S - 0 to 200 ppm, and CO - 0 to 999 ppm. Not all units have the additional capability to detect hydrogen sulfide or H_2S or carbon dioxide.	Procedures for field calibration of the O_2/explosimeter are as follows: ■ Inspect instrument to ensure entry and exit ports are clear; ■ Turn the switch to ON position; ■ Allow the meters to stabilize and then press the reset button; ■ Check the battery level; ■ Calibrate the oxygen meter to 20.8% by using the calibrate knob; ■ Adjust the explosimeter to zero by using the zero knob; and ■ Check alarm levels by adjusting the calibrate knob for oxygen levels and the zero knob for explosimeter levels and note the readings when the alarm sounds. Return readings to normal and depress the reset button.	Alarm must sound during calibration procedure. Battery must have sufficient charge for operation. Blocking the sample line probe and observing the drop of the flow indicator float checks flow system. If flow system is not functioning, return unit for repairs.	Site Safety Officer, Project Geologist

Table 2-4 General Field Equipment and Calibration Procedures

Instrument or Equipment	Description[a]	Field Calibration Procedure	Acceptability/ Performance Criteria	Responsible Personnel
pH/Conductivity, Temperature, Dissolved Oxygen (DO), Oxidation Reduction (REDOX) Meter	Meter designed for field use with battery operation. The unit must contain separate pH, temperature, conductivity, DO, and ORP probes in one unit.	Before use, pH, specific conductance, DO, and ORP probes need to be calibrated or tested for responsiveness. The pH probe will be calibrated first. This is done by placing the probe in pH 7, then pH 4, standard solutions and adjusting the pH calibration knobs until the correct measurement is obtained. The ORP probe is then calibrated with the ORP standard solution (Zobell), and the DO probe is checked in accordance with manufacturer guidelines. The probes should be rinsed with deionized water between each calibration solution and following calibration. Used calibration solution is to be discarded. Finally, the conductivity probe is checked with a solution of known conductivity.	Turbidity and DO ∀ 10% pH ∀ 0.01 pH Conductivity at ∀ 2% FSD The instrument will be checked with a pH standard every 4 hours and at the end of the sampling day. If the response is greater than 0.2 units more or less than the standard, complete calibration will be conducted.	Project Geologist, Sampler
Turbidity Meter	Nephelometer designed for field use with battery operation. Range 0.01 to 1,000 NTU.	The unit is factory calibrated. Field procedures involve checking the unit's responsiveness at least once a day using factory supplied standards. The responsiveness should be checked on the 0 to 10 range, 0 to 100 range, and 0 to 1,000 range.	∀ 10%	Sampler

Table 2-4 General Field Equipment and Calibration Procedures

Instrument or Equipment	Description[a]	Field Calibration Procedure	Acceptability/ Performance Criteria	Responsible Personnel
PID Meter	The PID is a portable, non-destructive trace gas analyzer. Units for site characterization must have a range of 0 to >2,000 ppm and a 10.6 or 11.7 eV lamp (e.g., MiniRAE 2000). Units for indoor air monitoring must have a range of 1 ppb to 2,000 ppm and a 10.6 eV lamp (e.g., ppb RAE Plus).Calibration check gas (e.g., isobutylene) must be provided with unit.	In the field, PIDs will be calibrated at the start of each field event by the manufacturer. Initial calibration must be verified by a certificate of calibration from the rental company or field calibration is required. There is no field calibration for a Mini-Rae 2000. If a significant change in weather occurs during the day (i.e., change in humidity or temperature) or if the unit is turned off for an extended period, then there is a field test, called a Bump Test. It consists of having the unit sniff 100ppm cal gas and determine the reading. If the unit is reading 100 ppm or close to it, then it is OK. If not, depending on how far off it is, either dry out the unit on a heater (due to potential fogging of the lamp), or send the unit back to the rental company for in-house calibration.	Meter must give consistent background readings.	Site Safety Officer, Project Geologist

[a] Description is for typical equipment; equivalent units may be used.

equipment, which includes calibration procedures. Brief descriptions of calibration procedures for major field instruments are listed on Table 2-4.

The site specific monitoring firm requires laboratories to use the most current method available for calibration criteria. For example, EPA no longer allows the use of the grand mean to evaluate calibration linerity for organic methods. The site specific monitoring firm requires that the most stringent method criteria be met for all compounds of concern at site. Unless modified by the method, the site specific monitoring firm requires at least a five point curve for all calibrations for organics and a minimum of three calibration points for inorganics; exclusion of points is not allowed to meet criteria without technical justification. Any manual integration performed for calibrations needs to be documented with the rationale and included in the data package. Manual integrations of internal standards or surrogates in calibrations are not allowed.

2.8 Inspection/Acceptance of Supplies and Consumables

Measures are established by the site specific monitoring firm's QMP to assure that purchased material, equipment, and services whether purchased directly or through contractors or subcontractors conform to procurement documents.

2.9 Non-Direct Measurements

For data acquired from non-direct measurement sources include the following:

- Physical information such as descriptions of sampling activities and geologic logs;
- State and local environmental agency files;
- Reference computer databases and literature files; and
- Historical reports on a site and subjective information gathered through interviews.

Data from non-direct measurements will be reviewed and used as indicated in the work plan. Data from all non-direct measurement sources are stored as indicated in Section 1.6.

2.10 Data Management

Data management procedures track samples and results from work plan generation to the final report. The field data include approved work planning tables, labels, field sampling forms, COC forms, and logbooks. The surveyor will provide coordinates for all sample locations. The field team leader of the monitoring firm will review all field data for accuracy. Any field data not provided by the laboratory will be entered into a database or spreadsheet.

Electronic data will be provided in accordance with the most recent version of EPA Region 2's standardized electronic data deliverable (EDD) format. The format is based on the Multimedia Electronic Data Deliverable, or MEDD format. Further information on MEDD is available at the Web site http://www.epa.gov/region02/superfund/medd.htm. Currently this is the EPA Region 2 EDD dated December 2003. If required for the project, the laboratory also may provide an alternative EDD consistent with the Corporate EDD or other approved format.

The site specific monitoring firm will process the EDD to verify that criteria established in this QAPP are met. The Project Chemist will review all laboratory and field data to verify the results against the hard copy and check for transcription errors. The Project Chemist will verify qualifiers added by data processing and add any data qualifiers. The individual SDG EDD files will be processed to a centralized data management system to store all reviewed and approved data. Data that will appear on data tables for the report will be generated from the centralized database, which will serve as the central, protected data source for all data handling operations.

The central database will be stored in a secure area on site specific monitoring firm's network with access limited to data management specialists designated by the Project Manager. Data users may enter additional electronic data such as risk-based criteria for comparison of results. This data will be stored in separate tables in the database and linked to the actual results. Any data from outside sources will include a description of the data, a reference to the source, and the date updated. Outside data will be checked prior to use verify that current values are used. The central database will be used to create tables for the final report.

3 Assessment and Oversight

The site specific monitoring firm's assessment and oversight procedures will be implemented in accordance with the QMP. The QMP outlines general roles and responsibilities for the project team.

3.1 Assessment and Response Actions

The site specific monitoring firm's overall assessment activities include management assessments, development of SOPs, and performance evaluations. Management assessments include weekly meetings and conference calls to evaluate project readiness and staff utilization. Assignment of qualified personnel, maintenance of schedules and budgets, and quality of project deliverables are verified as part of these assessments. The development of SOPs and performance evaluations are used to provide trained and qualified personnel for the project.

The site specific monitoring firm's technical assessment activities include peer review, data quality reviews, and technical system audits (i.e., laboratory and field). Procedures for assessment and audit of data quality are described in Section 4 of this QAPP. Procedures for peer review and technical assessments are summarized briefly below.

Both overall and direct technical assessment activities may result in the need for corrective action. The site specific monitoring firm's approach to implementing a corrective action response program for both field and laboratory situations is summarized briefly below. The NYSDEC QA Officer has stop work authority on all NYSDEC projects that may have negative quality impacts prior to completion of corrective actions.

3.1.1 Peer Review

The site specific monitoring firm's implements peer review for all project deliverables including work plans, QAPPs, draft and final reports, and technical memoranda. The peer review process provides for a critical evaluation of the deliverable by an individual or team to determine if the deliverable will meet established criteria, quality objectives, technical standards, and contractual obligations. The Project Manager will assign peer reviewers, when the publications schedule is established. The publications staff will be responsible for ensuring all peer reviewers participate in the review process and approve all final deliverables. For technical memoranda and other project documents, the Project Manager will be responsible for obtaining principal review and approval.

3.1.2 Technical Systems Assessments

The entire project team is responsible for ongoing assessment of the technical work performed by the team, identification of nonconformance with the project objectives, and initiation, implementation and documentation of corrective action. Independent performance and systems audits are technical assessments that are a possible part of the QA/QC program. The following describes types of audits conducted, frequency of these audits, and personnel responsible for conducting audits.

Field Audits

Field audits are performed under the direction of the QA Officer. The need for field audits will be determined during project planning and indicated in the work plan. Field audits will be documented on the site specific monitoring firm's field audit checklists. Field audits will be typically performed during the early field programs.

Field Inspections

The Project Manager will be responsible for inspecting all field activities to verify compliance of activities with project plans.

Laboratory Audits

The laboratory must implement a comprehensive program of internal audits to verify compliance of their systems with SOPs and QA manuals.

NYSDOH must certify the laboratory and will perform external systems audits at an approximate frequency of once a year. External audits include reviews of analytical capabilities and procedures, COC procedures, documentation, QA/QC, and laboratory organization. These audits also include analysis of blind PE samples.

The QA Officer or designee may also audit laboratories. These audits are typically performed to verify laboratory capabilities and implementation of any complex project requirements or in response to a QC nonconformance identified as part of the data review process.

3.1.3 Corrective Action

Corrective actions will be implemented as needed. In conjunction with the QA Officer and Laboratory QA Coordinator, the Project Manager is responsible for initiating corrective action and implementing it in the field and office, and the laboratory project manager is responsible for implementing it in the laboratory. It is their combined responsibility to see that all sampling and analytical procedures are followed as specified and that the data generated meet the prescribed acceptance criteria. Specific corrective actions necessary will be clearly documented in the logbooks or analytical reports.

Field Situations

The need for corrective action in the field may be determined by technical assessments or by more direct means such as equipment malfunction. Once a problem has been identified, it may be addressed immediately or an audit report may serve as notification to project management staff that corrective action is necessary. Immediate corrective actions taken in the field will be documented in the project logbook. Corrective actions may include, but are not limited to:

- Correcting equipment decontamination or sample handling procedures if field blanks indicated contamination;
- Recalibrating field instruments and checking battery charge;
- Training field laboratory personnel in correct sample handling or collection procedures; and
- Accepting data with an acknowledged level of uncertainty.

After a corrective action has been implemented, its effectiveness will be verified. If the action does not resolve the problem, appropriate personnel will be assigned to investigate and effectively remediate the problem. Corrective actions recommended by NYSDEC personnel will be addressed in a timely manner.

Laboratory Situations

Out-of-control QC data, laboratory audits, or outside data review may determine the need for corrective action in the laboratory. Corrective actions may include, but are not limited to:

- Reanalyzing samples, if holding times permit;
- Correcting laboratory procedures;
- Recalibrating instruments using freshly prepared standards;
- Replacing solvents or other reagents that give unacceptable blank values;
- Training additional laboratory personnel in correct sample preparation and analysis procedures; and
- Accepting data with an acknowledged level of uncertainty.

The laboratory corrective actions must be defined in analytical SOPs. Any deviations from approved corrective actions must be documented and approved by the Project Chemist.

Whenever corrective action is deemed necessary by the Project Chemist or NYSDEC technical staff, the laboratory project manager will ensure that the following steps are taken:

- The cause of the problem is investigated and determined;
- Appropriate corrective action is determined;
- Corrective action is implemented and its effectiveness verified by the laboratory QA officer; and
- Documentation of the corrective action verification is provided to the Project Chemist and NYSDEC staff in a timely manner.

3.2 Reports to Management

For reports to management include the following:

- **Audit Reports** - Audit reports are prepared by the audit team leader immediately after completion of the audit. The report will list findings and recommendations and will be provided to the Project Manager and QA Officer.
- **Data Usability Summary Report** - A DUSR will be completed by the Project Chemist and provided to the NYSDEC technical staff in the appendix of the report. Impacts on the usability of data will be tracked by adding qualifiers to individual data points as described in Section 4.

Upon completion of a project sampling effort, analytical and QC data will be included in a comprehensive technical report that summarizes field activities and provides a data evaluation. A discussion of the validity of results in the context of QA/QC procedures will be made and the DUSR will be provided.

Serious analytical problems will be reported immediately to NYSDEC personnel. Time and type of corrective action (if needed) will depend on the severity of the problem and relative overall project importance. Corrective actions may include altering procedures in the field, conducting an audit, or modifying laboratory protocol.

4 Data Validation and Usability

The site specific monitoring firm will implement procedures for data validation and usability described below. These procedures will be adapted, if necessary, to meet project-specific requirements as determined in the work plan or FSP. A generic data usability validation checklist report form is provided in Appendix A.

4.1 Data Review, Validation, and Verification Requirements

All data generated will be reviewed by comparing accuracy and precision results for the QC samples to QC criteria listed in NYSDEC ASP 2005. The following types of data will be reviewed:

- Analytical reporting limits and target compounds will be compared to limits listed in the site-specific QAPP;
- Holding times will be verified against Table 2-1;
- QC summary data for surrogates, method blanks, LCS, and MS/MSD samples will be compared to criteria listed in the site-specific QAPP;
- Field QC results for duplicates and blanks will be compared to criteria listed in Section 2.5.1;
- Calibration summary data will be checked by the laboratory to verify that all positive results for target compounds were generated under an acceptable calibration as defined by the analytical method. Any deviations will be noted in the case narrative and reviewed by the Project Chemist;
- Field data such as sample identifications and sample dates will be checked against the laboratory report; and
- Any raw data files from the field and laboratory will not be reviewed unless there is a significant problem noted with the summary information.

4.2 Validation and Verification Methods

The data review scheme for analytical results from the receipt of the analytical data through the validated report is described below. The laboratory is responsible for performing internal data review. The laboratory data review must include 100% analyst review, 100% peer review, and 100% review by the laboratory project manager or designated QC reviewer to verify that all project-specific requirements are met. All levels of laboratory review must be fully documented and available for review if requested or if a laboratory audit is performed.

After receipt from the laboratory, project data will be validated using the following steps:

Evaluation of Completeness

The Project Chemist checks the electronic files for compliance with required format and the project target compounds and units. If errors in loading are found, the EDD files will be returned to the laboratory and the Project Chemist will request resubmission via SubLab. The Project Chemist also verifies that the laboratory information matches the field information and that the following items are included in the data package:

- COC forms and laboratory sample summary forms;
- Case narrative describing any out-of-control events and summarizing analytical procedures;
- Data report forms (i.e., Form I);
- QA/QC summary forms; and
- Chromatograms documenting any QC problems.

If the data package is incomplete, the Project Chemist will request resubmission. The laboratory must provide all missing information within one day.

Evaluation of Compliance

The Project Chemist will review all processed files and add data qualifiers for outliers. If QC data are provided in the EDD, the results will be used to verify compliance electronically. If no QC data are provided in the EDD, the reports will checked manually. Additional compliance checks on representative portions of the data are briefly outlined below:

- Review chromatograms, mass spectra, and other raw data if provided as backup information for any apparent QC anomalies;

- Review of calibration summaries or any other QC samples not provided in the EDD by the laboratory;

- Ensure that all analytical problems and corrections are reported in the case narrative and that appropriate laboratory qualifiers are added;

- For any problems identified, review concerns with the laboratory, obtain additional information if necessary, and check all related data to determine the extent of the error;

- Project chemists will follow qualification guidelines in EPA Region 2 data validation SOPs or *EPA CLP National Functional Guidelines for Organic Data Review, EPA 540/R-99-008* (October 1999) or *EPA CLP National Functional Guidelines for Inorganic Data Review,* EPA 540-R-04-004 (October 2004), but will use the specific method criteria for evaluation. The DUSR will be completed as specified in NYSDEC *Guidance of the Development of DUSRs* (July 1999); and

Data Review Reporting

The Project Chemist will perform the following reporting functions:

- Alert the Project Manager to any QC problems, obvious anomalous values, or discrepancies between the field and laboratory data, that may impact data usability; and

- Discuss QC problems in a DUSR for each laboratory report. DUSR will include a short narrative and print out of qualified data;

- Prepare analytical data summary tables of qualified data that summarize those samples and analytes for which detectable concentrations were exhibited including field QC samples; and

- At the completion of all field and laboratory efforts, summarize planned versus actual field and laboratory activities and data usability concerns in the technical report.

4.3 Reconciliation with User Requirements

For routine assessments of data quality, The site specific monitoring firm's will implement the data validation procedures described in Section 4.2 and assign appropriate data qualifiers to indicate limitations on the data. The Data Validation Chemist will be responsible for evaluating precision, accuracy, representativeness, comparability, and completeness of data using procedures described in Section 2.5 of this QAPP. Any deviations from analytical performance criteria or quality objectives for the project will be documented in the DUSR provided to the data users for the project.

The QA Officer or Project Chemist will work with the final users of the data in performing data quality assessments. The data quality assessment may include some or all of the following steps:

- Data that are determined to be incomplete or not usable for the project will be discussed with the project team. If critical data points are involved which impact the ability to complete project objectives, data users will report immediately to the Project Manager. The Project Manager will discuss resolution of the issue with NYSDEC technical staff and implement necessary corrective actions (for example re-sampling);

- Data that are non-detect but have elevated reporting limits due to blank contamination or matrix interference will be compared to screening values. If reporting limits exceed the screening values, then results will be handled as incomplete data as described above; and

- Data that are qualified as estimated will be used for all project decision making. If an estimated result is close to a screening value, then there is uncertainty in any conclusions as to whether the result exceeds the screening value. The data user must evaluate the potential uncertainty in developing recommendations for the site. If estimated results become critical data points in making final decisions on the site, the Project Manager and NYSDEC technical staff should evaluate the use of the results and may consider the data point incomplete.

The assessment process involves comparing analytical results to screening values and background concentrations to determine if the contamination present is site-related (i.e., above background levels) or significant (i.e., above screening values). Additional data assessment may be performed on a site-by-site basis.

A Data Usability Summary Report Model

Attachment A – Sample Data Usability Summary Report

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs (March 2010). Specific criteria for QC limits were obtained from the project QAPP. Compliance with the project QA program is indicated on the in the checklist and tables. Any major or minor concerns affected data usability are summarized listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

ProjectID	Lab Work Order
DHOC	L1227

Table 1 Sample Summary Tables from Electronic Data Deliverable

Work Order	Matrix	Sample ID	Lab ID	ID Corrections
L1227	GW	TB1-060112	L1227-01	
L1227	GW	ES1-5-R-060112	L1227-02	
L1227	GW	MP1-8S-R-060112	L1227-03	
L1227	GW	RB1-060112	L1227-04	
L1227	GW	MP1-9S-R-060112	L1227-05	
L1227	GW	MP1-13B-R-060112	L1227-06	
L1227	GW	MP1-13B-R-060112/Q	L1227-07	

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	Yes
Did coolers arrive at lab between 2 and 6^{o}C and in good condition as indicated on COC and Cooler Receipt Form?	Yes
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	Yes – Project QC goals have been met.
All ASP Forms complete?	Yes
Case narrative present and complete?	Yes
Any holding time violations (See table below)?	No

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)

- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Go to Tables List

Volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	Yes. One organic compound was detected in the trip blank for this SDG.
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	Results qualified as shown in Table 2B.
Surrogate for method blanks and LCS within limits?	Yes
Surrogate for samples and MS/MSD within limits? (See Table 3). All samples should be re-analyzed for VOCs? Samples should re-analyzed if >1 BN and/or > AP for BNAs is out. Matrix effects should be established.	Yes
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	Yes
MS/MSD within QC criteria (see Table 4)? If out and LCS is compliant, then J flag positive data in original sample due to matrix?	Yes
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	Yes
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	No.
For TICs are there any system related compounds that should not be reported?	No.
Do field duplicate results show good precision for all compounds except TICs (see Table 7)?	Yes. Samples MP1-13B-R-060112 and MP1-13B-R-060112/Q are a field duplicate sample pair – see Table 7.

Summary of Potential Impacts on Data Usability
Major Concerns
None
Minor Concerns
Result qualified due to trip blank contamination.

Table 2 - List of Positive Results for Blank Samples

Method	Sample ID	Samp Type	Analyte	Result	Qual	Anal Type	Units	MDL	PQL
SW8260	TB1-060112	BLK	Methylene chloride	1.3	J	W	µg/L	0.41	5.0

Table 2A - List of Samples Qualified for Method Blank Contamination
None

Table 2B - List of Samples Qualified for Field Blank Contamination

Method	Trip Blank	Matrix	Analyte	Blank Result	Sample Result	Lab Qual	PQL	Affected Samples	Sample Flag
SW8260	TB1-060112	GW	Methylene chloride	1.3	2.1	J	5.0	RB1-060112	U Qualified

Table 3 - List of Samples with Surrogates outside Control Limits
None

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits
None.

Table 5 - List LCS Recoveries outside Control Limits
None.

Table 6 –Samples that were Reanalyzed
None.

Table 7 – Summary of Field Duplicate Results

Method	Analyte	MP1-13B-R-060112	MP1-13B-R-060112/Q	RPD	Rating	Sample Qualifier
SW8260	Tetrachloroethene	3.6 J	3.6 J	0	Good	None
SW8260	Trichloroethene	0.80 J	0.81 J	1.24	Good	None

Key:
A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound