FINAL
REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT
DINABURG DISTRIBUTING, INC.
SITE NO. 828103

WORK ASSIGNMENT NO. D004434-17

Prepared for:

New York State Department of Environmental Conservation
Albany, New York

Prepared by:

MACTEC Engineering and Consulting, P.C.
Portland, Maine

PROJECT NO: 3612082107

FEBRUARY 2011

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

1,1-DCA	1,1-dichloroethane
1,1,1-TCA	1,1,1-trichloroethane
1,2-DCE	1,2-dichloroethene
AST	above ground storage tank
AWQS	Ambient Water Quality Standard and Guidance Values
bgs	below ground surface
cm/sec	centimeter(s) per second
COC	Contaminant of Concern
Dinaburg	Dinaburg Distributing, Inc.
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
ESA	environmental site assessment
°F	degrees Fahrenheit
ft/d	feet per day
ft/ft	feet per foot
FS	Feasibility Study
gpm	gallon(s) per minute
GWE	groundwater extraction
HRC^{TM}	Hydrogen Release Compound^{TM}
IRM	Interim Remedial Measure

GLOSSARY OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

K	hydraulic conductivity
Kg	kilogram
L	liter
lbs	pounds
MACTEC	MACTEC Engineering and Consulting, P.C.
MCPW	Monroe County Pure Waters
mg	milligram
MNA	monitoring natural attenuation
MPE	multi-phase extraction
NAPL	non-aqueous phase liquid
NPW	net present worth
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
PAH	polycyclic-aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCE	1,1,2,2-tetrachloroethylene
PID	photoionization detector
PNOD	permanganate natural oxidant demand
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride
QC	quality control

GLOSSARY OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

QEA	Quality Exposure Assessment
RAO	Remedial Action Objective
Report	Remedial Investigation and Feasibility Study Report
RI	Remedial Investigation
Site	Dinaburg Distributing, Inc. site
SCGs	standards, criteria and guidance values
SCO	Soil Cleanup Objective
SVE	soil vapor extraction
SVOC	semi volatile organic compound
TAGM	Technical and Administrative Guidance Memorandum
TCE	trichloroethylene
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
URS	URS Corporation
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound
WA	Work Assignment

1.0 INTRODUCTION

MACTEC Engineering and Consulting, P.C. (MACTEC), under contract to the New York State Department of Environmental Conservation (NYSDEC), is submitting this Remedial Investigation (RI) and Feasibility Study (FS) report (Report) for the Dinaburg Distributing, Inc. (Dinaburg) site (Site) located in the City of Rochester, Monroe County, New York (Figure 1.1). The Site, Site No. 8-28-103, is listed as a Class 2 hazardous waste site, in the Registry of Hazardous Waste Sites in New York State (NYS). This Report has been prepared in accordance with the NYSDEC requirements in Work Assignment (WA) No. D004434-17 dated July 3, 2008, and with the April 2005 Superfund Standby Contract No. 4434 between MACTEC and the NYSDEC.

The RI portion of this Report summarizes the investigations and remedial actions conducted to date at the Site. This RI/FS report was completed in accordance with the WA, as well as with the NYSDEC DER-10 “Technical Guidance for Site Investigation and Remediation” (NYSDEC, 2010). This approach integrates the RI and quality exposure assessment (QEA) with the screening and evaluation of alternatives performed during the FS.

The objectives of previous site investigations were to determine the nature and distribution of contamination associated with the Site. Previous and current investigations were conducted to gather data necessary to assess potential threats to human health and the environment by identifying potential contaminant source areas, delineating the extent of potential groundwater and soil contamination, and identifying areas of potential vapor/indoor air contamination. This Report presents results of the previous and current field activities/remedial measures and associated potential risks to human health and the environment.

The objectives of the FS are to evaluate potential remedial alternatives from an engineering, environmental, public health, and economic perspective and to develop a preferred alternative based on that evaluation.

1.1 REPORT ORGANIZATION

This RI/FS report is structured in accordance with the NYSDEC DER-10 (NYSDEC, 2010). The Sections of the RI/FS report are outlined below.

Section 1.0 Introduction:
Discusses the purpose of the RI/FS report and includes a description of the Site, the Site history, and findings of previous Site investigations.

Section 2.0 RI Field Work:
Describes the RI field work conducted by MACTEC.

Section 3.0 Physical Setting:
Summarizes the physical characteristics of the Site and surrounding area. This includes results of physical characteristics as determined during the various field programs.

Section 4.0 Nature and Extent of Contamination:
Presents a summary of the analytical data collected to date and discusses the nature and extent of contamination.

Section 5.0 Contaminant Fate and Transport:
Discusses the fate and transport of the Site contaminants.

Section 6.0 Qualitative Exposure Assessment:
Presents the QEA.

Section 7.0 Summary and Conclusions:
Presents the summary and conclusions of the RI, including a discussion of Remedial Action Objectives (RAOs).

Section 8.0 Development of RAOs and General Response Actions for Contamination Requiring Remediation:

Presents the RAOs and General Response Actions which apply to soil contamination at the Site and identifies the extent of contamination to be addressed through remedial action.

Section 9.0 Identification and Screening of Technologies:
Describes the identification and screening of potential remedial technologies.

Section 10.0 Development and Screening of Alternatives:
Combines the retained remedial technologies into remedial alternatives for the Site.

Section 11.0 Detailed Analysis of Alternatives:
Presents the detailed analyses of remedial alternatives for the Site. The detailed analysis is intended to provide decision-makers with the relevant information with which to aid in selection of a site remedy.

Section 12.0 Comparative Analysis of Alternatives:
Evaluates the relative performance of each alternative using the same criteria by which the detailed analysis of each alternative was conducted. The purpose of the comparative analysis is to identify advantages and disadvantages of each alternative relative to one another to aid in selecting a remedy for the Site.

Section 13.0 References
Presents a list of references used in the preparation of this Report.

Field data sheets and supporting information are included in the Appendices attached to this Report.

1.2 PURPOSE OF REPORT

The purpose of this RI/FS Report is to present findings of previous and current site investigations, discuss the Interim Remedial Measure (IRM) currently being conducted at the Site as a result of previous investigation findings, develop RAOs to address potential receptor exposure to identified soil contaminants, and to identify and develop remedial alternatives to mitigate or prevent threats to human health and the environment.

Previous investigations and historical documentation at the Site indicated that solvents (including chemicals related to dry cleaning operations) exist in site soils at concentrations above the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 “Soil Cleanup Objectives to Protect Groundwater” (NYSDEC, 1994). Title 6 of New York Codes, Rules and Regulations (6 NYCRR) Part 375-6 Remedial Program Soil Cleanup Objectives (SCOs) (effective December 14, 2006) replaces TAGM 4046, and has been used in preparing this RI/FS report. Previously collected groundwater data also indicated that chlorinated solvents, including tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2–DCE), 1,1-dichloroethane (1,1-DCA), and 1,1,1-trichloroethane (1,1,1-TCA), and vinyl chloride (all listed hazardous wastes under 6 NYCRR Part 371 (NYS, 1999a) existed in Site groundwater at concentrations in exceedance of the state Class GA groundwater standards as defined in 6 NYCRR Part 700-705 (NYS, 1999b) and by the NYS Class GA Groundwater Quality Guidance Values from the Division of Water Technical and Operational Guidance Series 1.1.1 “Ambient Water Quality Standards and Guidance Values” (NYSDEC, 1998).

Based on previous investigations and data, the Site poses a potential significant threat to public health and the environment as defined in 6 NYCRR 375 (NYS, 2006). This RI/FS report will:

- Characterize the historical source area(s) and potential continuing source areas for chlorinated solvent contaminants.
- Characterize the areal and vertical extent of contaminants in Site groundwater.
- Characterize the extent of the solvent and fuel contamination source(s) in soil.
- Determine if other potential continuing sources of contamination exist.
- Characterize the potential and actual threat to human health and the environment. Evaluate potential present and future human health exposure pathways, such as through exposure to contaminated soils and groundwater, and vapor migration to indoor air (i.e., complete a QEA).
- Determine if there is sufficient data to evaluate the remedial action alternatives for the Site to mitigate the potential or actual threats to human health and the environment.
- Determine what soil and groundwater contamination remedies are the most applicable.

1.3 SITE BACKGROUND

Information pertaining to the history of the Site is contained in past reports. This information was reviewed and summarized in the following subsections.

1.3.1 Site Description

The Site is located at 1012 South Clinton Avenue in the City of Rochester in Monroe County, New York (see Figure 1.1). The property is located in a mixed commercial/residential area just inside the Rochester City limits. The Site occupies 0.25 acres on two parcels aligned perpendicular to one another, and is currently surfaced by a combination of pavement, a concrete former building slab, and soil. The property is currently vacant and abuts several residential and commercial properties.

1.3.2 Site History

The history of the Site is summarized from past Site reports which are discussed in more detail in Section 2. Tables and figures from past investigations are referenced throughout this report and, if referenced, are included in Appendix A (Sears Brown and URS Figures) and Appendix B (URS Tables).

The property and buildings were reportedly used as an automobile repair shop from around 1950 through approximately 1969. From 1971 to 1993, the Site was occupied by Dinaburg Distributing, Inc., which operated a dry cleaning supply company and sold chemical solvents to various dry cleaners in the area (Sears Brown Group, 1995b). Dinaburg stored TCE and PCE in above ground storage tanks (ASTs) located within the north area of the former site building (URS Corporation [URS], 2001). The former building layout is shown on Sears Brown Figure 2 in Appendix A, and the footprint of the former Site building is also shown on Figure 1.2. Property street numbers are also included on Figure 1.2. As a result of the previous Site operations, solvents and fuels were either spilled to the ground surface or to floor drains, where they flowed/leaked into the soils at the Site. The property has been vacant since 1995 and currently consists of a vacant lot. The building and an adjacent house at 350 Benton Street were demolished in 2004 (URS, 2004a).

A voluntary site investigation was completed in 1998 by the estate of Saul Dinaburg. On-site soils and groundwater were found to be contaminated with TCE, PCE, and their breakdown products. TCE and PCE were found in the groundwater at concentrations up to 93 parts per million (ppm) and 33 ppm, respectively. A second investigation completed in 1999 encountered volatile organic compounds (VOCs) at concentrations of up to 1% in the soil, and revealed that solvent vapors were migrating from the Site and into the basements of nearby properties. Indoor air samples in two of the properties contained PCE at levels above 100 milligrams (mg) per cubic meter (The New York State Department of Health [NYSDOH] indoor air guidance value for PCE is 100 micrograms per cubic meter [$\mu g/m^3$]).

Attempts to remediate the Site under the voluntary agreement program were unsuccessful and the agreement was terminated in 1999. Later that year, the NYSDEC installed two off-site soil vapor extraction (SVE) systems under an IRM to address the migration of solvent vapor contamination into the nearby basements. Additional soil investigations completed in 1999 confirmed the presence of TCE and PCE contamination in nearby off-site areas. An RI was performed by URS in 2001 to support the design of a multi-phase extraction (MPE) system. An MPE system was designed and constructed under the IRM program. Construction of the remedy began in the fall of 2005 and was completed in 2006. Operation of the MPE system (a groundwater and SVE system) began in April, 2006 and is currently ongoing.

1.3.3 Previous Investigations

Several field investigations were conducted at the Site from January 1994 through 2008. This Report is based in part on information and conclusions presented in the data sources listed below. Conclusions presented in this Report regarding contaminant extent, fate, and transport rely heavily on the information and data presented in these data sources.

The data sources include:

- Sear Brown Group, Inc., April 1995, Environmental Site Characterization Report, Former Dinaburg Distributing, Inc., 1012 South Clinton Avenue, Rochester, New York
- Sear Brown Group, Inc., December 1995, Basement Survey and Air Monitoring Report, Former Dinaburg Distributing, Inc., 1012 South Clinton Avenue, Rochester, New York

- Letter from Sear Brown Group, Inc. to NYSDEC, Dated December 15, 1997, RE: Progress Report, Voluntary Investigation, Former Dinaburg Distributing, Inc., 1012 South Clinton Avenue, Rochester, New York
- Sear Brown Group, Inc., April 1998, Voluntary Investigation Report, Former Dinaburg Distributing, Inc., 1012 South Clinton Avenue, Rochester, New York
- BEACON Environmental Services, Inc., March 29, 2000, EMFLUX® Passive, Non-Invasive Soil-Gas Survey, Dinaburg Distributing, Rochester, NY
- URS Corporation, May 2001, Remedial Investigation Report, Former Dinaburg Distributing, Inc., Site # 8-28-103, Rochester, New York
- Letter from URS Corporation to NYSDEC, Dated January 23, 2004, RE: Supplemental Soil Gas Sampling Letter Report, Dinaburg Distributing, Inc., Work Assignment #D003825-26
- Letter from URS Corporation to NYSDEC, Dated December 2004, RE: WA# D003825-66, Pre-design Investigation – Dinaburg Distributing Site, No. 8-28-103
- Daily Field Activity Report from URS Corporation, Dated February 16, 2006
- URS Corporation, April 2007, Final Remediation Report for Former Dinaburg Distributing, Inc., Site # 8-28-103, Rochester, New York
- Memoranda to NYSDEC, RE: Former Dinaburg Distributing, Inc. (#8-28-103), Evaluation of Remedial System Performance:
    - Dated May 18, 2006– February 22 through March 31, 2006
    - Dated June 1, 2006– April 2006
    - Dated June 29, 2006– May, 2006
    - Dated July 24, 2006– June 2006
    - Dated August 18, 2006– July 2006
    - Dated September 12, 2006– August 2006
    - Dated November 6, 2006– September 2006
    - Dated May 1, 2007– September 26 through November 7, 2006
    - Dated November 27, 2007– May 8 through August 8, 2007
    - Dated January 31, 2008– August 8 through November 13, 2007
    - Dated April 23, 2008– November 13, 2007 through February 6, 2008
    - Dated July 28, 2008–February 6 through May 6, 2008
    - Dated October 1, 2010–February 2, 2009 through May 17, 2010
- URS Corporation, Site CAD Drawing Dated December 2006, Site Plan Survey Information, Former Dinaburg Distributing, Inc. Site
- URS Corporation, Letter Report dated September 3, 2008 from Don McCall and Craig Pawlewski of URS Corporation to Will Welling, NYSDEC. Subject: Former Dinaburg Distributing, Inc. (#8-28-103), Evaluation of Remedial System Performance – Soil Sampling Assessment Report

The following discussions summarize the past investigations and the data presented in those sources.

Phase I Environmental Site Assessment – Empire Soils Investigations, Inc., January 1994.

This Phase I Environmental Site Assessment (ESA) was performed prior to an anticipated sale of the property. The Phase I report identified potential environmental concerns and recommended that a Phase II investigation be conducted specifically to investigate the hydraulic lift, TCE and PCE AST area, and the AST tank location in the rear of the building.

Phase I ESA Addendum – Empire Soils Investigations, Inc., March 1994

This Report provided additional information requested from various utilities and agencies. This Report identified spills at the Site which were reported to the Monroe County Health Department, the NYSDEC, and the United States Environmental Protection Agency (USEPA). The spills reportedly involved PCE, fuel oil/diesel oil and Varsol (mineral spirits). The Phase I Addendum reported that all of the spill files had been closed, suggesting that the spills were cleaned up to the satisfaction of the agencies.

Soil Vapor Survey Report – Marcor of New York, Inc., November 1994

This Report included further investigation of the extent of contamination by VOCs. The investigation included the installation of 35 soil-gas test points, the collection of a soil sample from beneath the concrete floor near the hydraulic lift and the collection of a water grab sample from a floor sump near the lift. The soil vapor survey identified elevated concentrations of total VOCs on the north and east sides of the Site. Results from the floor sump water sample identified exceedances of the NYSDEC groundwater quality criteria for a number of gasoline/diesel fuel compounds as well as for PCE and TCE. Analytical results from the floor soil sample identified the presence of PCE at a concentration of 175,830 parts per billion (ppb). This value exceeded the NYSDEC TAGM 4046 criteria for PCE in soil of 1,400 ppb, which is the SCO to protect groundwater quality. The 2006 6 NYCRR Part 375 SCO for PCE for unrestricted use is 1,300 ppb (NYS, 2006).

Environmental Site Characterization Report – Sear-Brown Group, Inc., April 1995

The Environmental Site Characterization Report investigation included a dye test in the floor drain, sampling of hydraulic oil from the hydraulic lifts, and sampling of soil and groundwater from four groundwater monitoring wells, MW-01, MW-01A, MW-02 and MW-03, at the locations shown on URS Figures 1-3 and 2-2 in Appendix A. The dye test confirmed that the floor drain in the building discharged into the city sewer system. PCE and TCE were detected in soil and groundwater samples at concentrations greatly exceeding their respective criteria, as shown in Appendix B, URS Tables 1-2 and 1-3, respectively. The highest contaminant concentrations in soil were encountered in the shallow (1 foot to 3 foot deep) sample from the B-2/MW-02 location, and the highest groundwater concentrations were detected in MW-02 and MW-03. The analytical result for the hydraulic oil in the automobile lift cylinders was non-detect for polychlorinated biphenyls (PCBs).

The Report concludes that the sanitary sewer lines likely drain the upper portion of the groundwater on Site. Sewer samples were subsequently collected at locations downstream from the Site by the Monroe County Pure Waters (MCPW). A summary of the sewer sampling analytical results of November 1995 is presented in URS Table 1-4 in Appendix B which shows that PCE, TCE, and 1,2-DCE were detected in sewer sample SEW-02 which is located on South Clinton Avenue downstream from the Site (see URS Figure 1-3 in Appendix A) (URS, 2001).

Voluntary Investigation Report Former Dinaburg Distributing, Inc. – Sear Brown Group, Inc., April 1998

This Report documented the installation of four additional monitoring wells (MW-03C, MW-04, MW-05, and MW-06) (see URS Figure 1-3 in Appendix A), and the sampling of soils and groundwater. Sampling revealed that concentrations of TCE and PCE in soil and TCE, PCE, and associated breakdown products in groundwater exceeded the NYSDEC standards, criteria, or guidance (SCG) values as shown in URS Tables 1-5 and 1-6 in Appendix B, respectively. Contaminants were not noted in the offsite groundwater samples at MW-04 and MW-05 at concentrations above SCGs.

The Report also includes the results of indoor air samples collected from the basements of five nearby buildings in October 1995, and two adjacent residences at 338 and 350 Benton Street in October 1997. During both rounds, neither PCE nor TCE were detected in the indoor air samples.

Soil Gas Survey Report, Galson Consulting, May, 1999

The Galson soil gas investigation included the collection of 31 soil gas samples from both onsite and offsite locations, 9 Geoprobe soil samples collected from four boring locations (B-01, B-03, B-06, F-04), and air sampling from the basements of 338 and 350 Benton Street during April 1999. The Report identified TCE and PCE in both onsite and offsite soil gas samples, and in onsite soil samples. Soil sample results area presented in URS Table 1-7 in Appendix B. Additionally, PCE was detected at concentrations of 245 µg/m³ in the basement air sample from 350 Benton Street, and 72 µg/m³ in the basement air sample from 338 Benton Street.

Geoprobe Survey, Zebra Environmental Corp., November 1999.

Zebra Environmental Corp. performed a Geoprobe soil and groundwater survey prior to the installation of SVE systems adjacent to 350 and 338 Benton Street (see next section for discussion). Four Geoprobe borings were installed between the Site and 350 Benton Street (GP-01 through GP-04), and four between the Site and 338 Benton Street (GP-05 through GP-08) (see URS Figure 1-3 in Appendix A – sample locations referenced with a (99) for the year 1999). The investigation included the collection of 17 soil samples and the installation of two offsite 1½-inch monitoring wells (GPW-01 and GPW-02) (see URS Figure 1-3 in Appendix A). Soil sample analytical results identified TCE and PCE at both Geoprobe locations, as shown in URS Table 1-8 in Appendix B. The highest concentrations of PCE were detected in the soil samples collected from 4.0-8.0 feet below ground surface (bgs) in boring GP-04 (110 ppm), and from 0.0-4.0 feet bgs in boring GP-07 (120 ppm). TCE, PCE, and associated breakdown products were detected at concentrations exceeding groundwater criteria in samples collected in June 2000 from GPW-01 and GPW-02, as shown in URS Table 1-9 in Appendix B.

EMFLUX® Soil Gas Survey, Beacon Environmental Services, Inc., March 2000

Between March 20 and March 23, 2000, eight passive soil gas samples were collected from beneath the basement concrete floor of 350 Benton Street and two passive soil gas samples were collected from the backyard, as shown in URS Figure 1-3 in Appendix A. The passive soil gas analytical results identified the presence, identity, and relative concentration of compounds in subsurface soil gas. The analytical results identified PCE and TCE at every sample location, as shown in URS Table 1-10 in Appendix B. Chloroform, toluene, 1,1-trichloroethene, 1,1,1-TCA, and cis-1,2-DCE were identified in various samples. Soil gas concentrations beneath the basement floor at 350 Benton Street were significantly high on the west (Dinaburg) side of the building.

SVE Remediation System Installation, NYSDEC, 1999

In the fall of 1999, a SVE system was installed by the NYSDEC to address indoor air contamination detected in the residential basements of 338 Benton Street and 350 Benton Street. As described by URS (URS, 2001), the SVE system consisted of two separate extraction trenches (338 Benton Street trench and 350 Benton Street trench) with two horizontal SVE wells in each trench separated by approximately 1 to 2 vertical feet. The trenches (approximately 6 feet deep) were located between the Former Dinaburg Distributing, Inc. buildings and the residential properties (URS Figure 1-4 in Appendix A). The 338 Benton Street trench was approximately 70 feet long and the 350 Benton Street trench was approximately 80 feet long. The SVE system became operational on December 16, 1999, with regular maintenance schedules needed to replace carbon filters.

Indoor air samples were regularly collected from 350 Benton Street and 338 Benton Street by the NYSDOH from April 1999 until after the SVE system was turned on in April 2000, with a limited number of samples collected from other buildings near the Site. TCE and PCE analytical results indicated that concentrations decreased after the system start up (URS, 2001).

Remedial Investigation Report, URS Corporation, May 2001

Work performed for this 2001 RI Report was designed to collect additional Site data to develop an IRM design for the Site. As discussed in the Report, specific goals of the RI were to determine the extent of soil contamination in the northern portion of the Site, and to determine the extent of groundwater contamination to the north, east, and west of the Site. An MPE system was previously selected as an IRM for the Site with the purpose of the IRM being the remediation of onsite source contamination to the extent practicable as well as to prevent the migration of contaminated groundwater and soil vapors to offsite residential properties. Field activities performed for the RI included: a utility survey; site survey and mapping; soil gas survey including the collection and analysis of 59 soil gas samples from Geoprobe points; soil sampling at 23 of the Geoprobe soil gas locations; sewer sampling; a groundwater investigation including the installation of four water table (overburden) and overburden/bedrock interface (weathered bedrock interface zone) monitoring well couplets at locations around the Site; and, the installation of a recovery well and two piezometers inside the Dinaburg building. As part of the RI, a groundwater pumping test was performed to determine the underlying semi-confined overburden/bedrock interface zone aquifer characteristics, and a SVE pilot test was performed to determine the radius of influence for the vapor extraction component of an MPE system.

Results obtained in the soil gas survey helped direct the placement of 18 Geoprobe soil borings from which 23 soil samples were collected to help determine the nature and extent of soil contamination at the Site and immediate surroundings. Analytical results show that the primary soil contaminants (contaminants of concern [COCs]) at the Site are chlorinated compounds representative of dry cleaning solvents, specifically PCE and TCE, with PCE occurring at higher concentrations (URS Table 4-1 in Appendix B). The highest contaminant levels were found to occur in shallow soils with contaminant concentrations generally decreasing with depth in the vadose zone. Areas with high soil contaminant concentrations were found to occur beneath the tank storage room at the back of the Dinaburg building, the new building extension adjacent to the Benton Street driveway, and beneath the adjacent driveways at the 350 and 338 Benton Street properties. Although contamination was observed at offsite locations, the RI states that it is not believed to extend far offsite. Analytical results also indicated that there was no evidence of significant natural attenuation or a reduction of soil contamination with time, suggesting that biodegradation of PCE and TCE is not occurring at a significant rate.

For the RI, a total of 18 groundwater samples were analyzed for VOCs, semi-volatile organic compounds (SVOCs), and metals (URS Table 4-2 in Appendix B). Analytical results confirmed the primary chlorinated solvent COCs were PCE and TCE. These were detected at concentrations exceeding the NYSDEC Class GA groundwater criteria [5 micrograms per liter (µg/L), or ppb] in 11 of the 18 wells. As with the soils, the primary source area for the groundwater contamination was determined as being the Dinaburg building, including the former tank storage room, new building extension, and the Benton Street driveway. The results obtained indicated the existence of a source (contaminated soils) at the Site. Contaminated groundwater was determined to flow away from the source areas in directions ranging primarily from southeast to west, as controlled by the predominant groundwater flow directions. The extent of bedrock contamination was not determined in the RI because the only monitoring well screened within bedrock was the monitoring well MW-03C. Analytical results of this well show PCE, TCE, 1,2-DCE and vinyl chloride present in groundwater at concentrations that exceed Class GA groundwater criteria.

URS indicated that results of the sewer sampling (URS Table 4-4 in Appendix B) demonstrate that the sewer systems in Benton Street and South Clinton Avenue intercept groundwater contamination originating at the Site and likely act as drains to intercept the flow of groundwater flowing toward them.

The information collected during the RI enabled the design of a conceptual MPE system. The conceptual system included the installation of approximately 20 on-site and five off-site extraction wells which would be connected to separate groundwater and vapor-phase treatment systems. The system would treat soil vapor and groundwater simultaneously obtained from the same monitoring well network. The Report estimated that successful remediation of soil in the vadose zone would require at least 4 to 5 years of MPE system operation.

<u>Supplemental Soil Gas Sampling Letter Report, URS Corporation, January 23, 2004</u>

URS conducted soil gas sampling in three buildings near the Site: 354 Benton St., 338 Benton St., and 1018 Clinton St. (URS Figure 1 in Appendix A and Figure 1.2). Results of this sampling show that PCE is present in the soil vapor and is migrating into the buildings at 1018 Clinton St. and at 338 Benton St. At each of the three buildings, the concentration of PCE was higher in the sub-slab sample than in the ambient air sample, indicating that the PCE vapors found within the two residences are due to migration of vapors from the subsurface into the basements. For the third residence, 354 Benton St, PCE was detected at 2.6 µg/m³ in sub-slab and was not detected in indoor air, and TCE was not detected in either sub-slab or indoor air samples. Based on results of the soil vapor sampling, URS did not recommend that any additional sampling be conducted or that any specific activities other than the proposed remedy be performed.

Subsequent to this Report, a sub-slab depressurization system was installed at 338 Benton Street (same building foundation as 1018 Clinton Avenue).

<u>Predesign Investigation Report, URS Corporation, December 2004</u>

URS and the NYSDEC agreed during the RI process that source removal of contaminated hot spots should be incorporated into the project which would include the installation of a dual phase vapor and groundwater extraction (GWE) system at the Site. It was during this process that the Site buildings were removed, as well as the buildings at 350 Benton Street (early 2004). The Pre-design Investigation Report presents the results of a field investigation that URS conducted to better define the limits of excavation of contaminated soils on Site. The investigation conducted included the installation of 16 Geoprobe borings (SB-01 to SB-16) for the collection of soil samples for laboratory analysis (URS Table 1 [Soil Analytical Results (2004)] in Appendix B). The fieldwork was performed on October 13 and 14, 2004.

Based results of the pre-design field work, URS recommended that soil hot spot removal be performed to the extent practical on all soils above the water table (to a depth of approximately 8 feet bgs), but not under buildings where soil concentrations of PCE exceeded 100 mg per kilogram (Kg). Under this scenario, the proposed excavation volume was 310 cubic yards, effectively removing an estimated 1,070 pounds (lbs) of VOCs from the Site soils.

<u>Final Remediation Report, URS Corporation, April 2007</u>

This Report documents remedial activities completed to date including construction, operation, and analysis of the MPE system installed as the IRM. The MPE system was installed to address the source area of contamination (soil removal and groundwater treatment) and to provide a more permanent solution to control off-Site vapor migration into nearby homes (vapor treatment) by using vacuum pumps to extract contaminated groundwater and vapors from wells in the ground. The MPE system construction and installation consisted of the following major components:

- Excavation of contaminated soils from the source area – an approximately 32 feet square by 8 feet deep area, as well as soils to one foot bgs outside this hot spot (see URS Figure 1-2 in Appendix A for proposed excavation and Figure 1.2 for completed excavation).
- Backfilling with clean soil in the source area removal area.
- Installation of 18 multi-phase extraction wells (MPE-1 through MPE-18) to the top of till layer at around 10 to 13 feet bgs.
- Installation of three groundwater extraction wells (GWE-1 through GWE-3) to the top of bedrock, generally twice as deep as the MPE wells.
- Construction of a multi-phase extraction and treatment system for both groundwater and SVE and treatment systems.
- Connection and integration of the existing SVE trenches with the new system, and the removal of the existing treatment systems at the adjacent structures at 338 Benton Street and 1018 South Clinton Avenue.
- Construction of a discharge line from the groundwater treatment system to the MCPW combined sewer system located on Benton Street.
- System startup and performance testing, followed by six months of operation and maintenance (O&M) of the systems.
- Decommissioning of the existing wells and piezometers MW-2, PZ-1, PZ-2, and RW-1 which were located within the footprint for excavation of the source area soils.

On February 22, 2006 the MPE treatment system began operation, and April 1, 2006 was considered to be the official start of the six month operation period (MPE well locations are shown on Figure 1.3). On February 16, 2006, and prior to the startup of the treatment system, a round of groundwater samples and water levels were collected to set a baseline of the contaminant concentrations prior to operation of the treatment system. Since March 2006, no water samples have been collected from MW-11K because this well was damaged during RI activities; this well has not been repaired or replaced.

The goal of the MPE treatment system is to address contamination in both vadose soil gas and the saturated zones at the Site. Rather than having separate extraction and treatment of the contaminated soil vapors and groundwater, the MPE system was installed to use one set of extraction wells to concurrently extract soil vapor and groundwater. These concurrent systems benefit from the combined operation in that the vacuum in the vadose zone increases the efficiency of groundwater collection, while depression of the groundwater table from pumping exposes additional soil for remediation via vapor extraction. Most of the MPE wells were installed within the footprint of the buildings that were formerly located at the Site. A few of the MPE and GWE wells are immediately adjacent to the former buildings, or farther east along Benton Street. In addition to the MPE wells, the SVE system is connected to two pre-existing trenches, one located at a property on Benton Street, and one located at a property on the corner of Benton Street and South Clinton Avenue. These trenches were previously connected to SVE systems (now removed) and were intended to continue to mitigate the intrusion of subsurface vapors into the adjacent buildings.

After a month of startup and shakedown of the MPE system, a six-month period of routine system O&M was conducted starting on April 1 and continuing through September 2006. At the completion of the six-month operating period, the system was turned over to the NYSDEC. The Report contains monthly operating reports that summarize sampling and estimated quantities of contamination removed by the MPE system. At the end of September 2006 the system was estimated to have removed approximately 212 lbs of contamination, with most of the contamination being removed via the MPE wells, primarily from the vapor phase (195.8 lbs). The recommendation to the NYSDEC was to continue with the MPE extraction and treatment system in its current configuration for at least an additional six-month period.

Evaluation of Remedial System Performance – Multiple periods (see reference dates listed under data source above), URS Corporation

These memoranda summarize data obtained during operation of the MPE system. Data includes analytical results of soil vapor and groundwater collected from the 18 dual phase extraction wells, three groundwater extraction wells, and existing 17 monitoring wells (well locations are shown on Figure 1.3). The memoranda were issued monthly from system start-up (February 2006) to September 2006, and then quarterly to May 2008. The most recent report was February 2009 to May 2010 (Reports from May 2008 to February 2009 were not available for review). The most recent report (February 25, 2009 through May 17, 2010) indicate that both the water and vapor extraction and treatment from the MPE wells continued to perform as designed, with a total removal of 41.7 lbs of contaminants during this sampling period. The total VOCs removed as of May 2010 was calculated at 382.8 lbs (with 69.7 lbs via water and 113.1 lbs via vapor). The rate of removal of contaminants from the MPE wells has decreased from a high of approximately 1.29 lbs per day at system startup to approximately 0.09 lbs per day. Of the three Groundwater Extraction wells, wells GWE-2 and GWE-3 contribute considerably more flow than GWE-1. Extraction flow rates appear to have dropped from approximately 1.5 gallons per minute (gpm) at system startup to an average of 0.25 gpm over this sampling period, although the memorandum indicated that the GWE wells may not be operating (URS, 2010). May 2010 groundwater analytical results are presented in URS Table 2 (Validated Groundwater Sample Results [5/2010]) in Appendix B.

Evaluation of Remedial System Performance – Soil Sampling Assessment Report, URS Corporation, dated September 3, 2008

This Report summarizes results of 39 soil samples collected in July 2008 from 37 Geoprobe soil borings to assess the progress of the current remedial system. Soil sample results were compared to five SCOs outlined in 6 NYCRR 375 (unrestricted use, residential use, restricted residential use, commercial use, and industrial use). With the exception of the unrestricted use scenario, PCE and TCE were the only VOCs to exceed the SCOs, but they exceeded the SCOs for each use scenario.

VOCs were detected at concentrations above the SCOs for unrestricted use at 23 of the 37 locations. Soil boring sample locations are presented on URS Figure 2 in Appendix A and analytical results compared to unrestricted use SCOs are presented on URS Table 1 (2008 Geoprobe Sampling Comparison to Unrestricted Use Cleanup Objectives) in Appendix B. In addition, photoionization detector (PID) readings for each boring compared to PCE analytical results are presented on URS Table A-1 in Appendix B. Based on concentrations detected, URS estimated that there are approximately 53 lbs of TCE/PCE and approximately 64 lbs of total VOCs remaining in Site soils. Based on an estimated removal rate of 0.06 lbs per day, the current system would need to operate for approximately three additional years to achieve unrestricted use SCOs. URS stated that this projection was an estimate and the actual clean-up time frames could vary significantly (i.e. an order of magnitude) due to the varied lithology at the Site and the potential presence of PCE as a dense non-aqueous phase liquid (DNAPL) at the Site. It was recommended to complete another soil sampling event in one to two years.

2.0 RI FIELD INVESTIGATIONS

The RI field work was conducted to address data gaps identified after reviewing the results of previous Site investigations. The components included in the RI scope of work include:

- installation of four monitoring wells (MW-12S, MW-12K, MW-13K, and MW-14K)
- groundwater sampling of the four new wells and 13 existing wells
- completion of six Geoprobe groundwater points (GW-1 to GW-6) and collection of nine groundwater samples in May 2009
- collection of three exterior soil vapor samples (SV-1 to SV-3)
- collection of one sub-slab soil vapor sample (SV-4)
- collection of water level measurements
- collection of vacuum measurements from the MPE system during performance evaluation
- completion of 10 Geoprobe soil points (GS-1 to GS-10) between the MPE wells
- installation of 10 microwells within the above mentioned Geoprobe soil points
- completion of four Geoprobe soil points (GS-11 to GS-14) north of the Site
- collection of water samples (SL-1 to SL-6) from six sewer man ways
- completion of five additional Geoprobe groundwater points (GW-7 to GW-11) and collection of eight groundwater samples in December 2009

A summary of these field tasks and methodologies are described in more detail in the following subsections.

2.1 FIELD OPERATIONS

Field work was completed in general accordance with the Field Activities Plan (MACTEC, 2009) and MACTEC's Program Quality Assurance Program Plan (MACTEC, 2007).

The RI fieldwork was conducted in Level D personal protection. No health and safety incidences or near misses were reported.

2.2 SITE INVESTIGATION ACTIVITIES

The flowing subsections detail the specific field investigation activities conducted at the Site and the rationale for the activities.

2.2.1 Groundwater Monitoring Well Installation

Use of the existing Site groundwater monitoring well network was determined to exhibit the following data gaps:

- There were no groundwater monitoring points south of the Site,
- There were no overburden/bedrock interface zone groundwater wells on the east side of the Site, and therefore it was not known how far groundwater contamination in this zone extended to the east.
- The contamination boundary in the overburden/bedrock interface zone on the west side of the Site was not confirmed (PCE was detected at overburden/bedrock interface well GWE-1 at 2,400 µg/L, but was not detected in MW-1, located approximately 10 feet west of GWE-1).

To fill these data gaps and evaluate the presence of VOCs in the deep overburden/shallow bedrock (i.e. interface zone) groundwater at the Site perimeter, three two-inch interface zone monitoring wells (MW-12K, MW-13K and MW-14K) were installed (Figure 2.1). In addition, one well (MW-12K) was paired with a shallow overburden well (MW-12S) to evaluate shallow groundwater concentrations south of the Site and if site contaminants are migrating through the till layer and into the bedrock groundwater south of the Site.

Each deep overburden/bedrock interface monitoring well boring was advanced using hollow stem auger drilling techniques into the top of the weathered bedrock. Soil samples were collected at five-foot intervals using two-foot split spoons. For each five-foot interval, PID headspace readings, sample description and classification using the Unified Soil Classification System, and drilling observations were recorded on field data records (included in Appendix C). Borings MW-13K and 14K were continued two feet into bedrock using tri-cone drilling techniques. Boring MW-12K was augered two feet into what was interpreted as weathered bedrock.

The monitoring wells were constructed of 2-inch inside diameter schedule 40 polyvinyl chloride (PVC) with five-foot well screens and threaded flush joint. The deep overburden/bedrock interface wells were constructed so that the well screens were set into the bedrock below the till layer with a bentonite seal within the till such that the wells were hydraulically isolated from the shallow overburden. The shallow overburden monitoring well was installed with five-foot screens set just below the water table to a depth of 14 feet bgs. Well screens have 0.010-inch wide machine slots with # 0 sand pack to two feet above the screen, a two foot bentonite seal above the sand pack and bentonite chip or clean backfill to the ground surface. The wells were completed with a locking cap and a six-inch flush mount steel cover.

Upon completion of monitoring well installations, the newly installed monitoring wells were developed (no sooner than 24 hours after installation) using pump and surge techniques. Well development activities were documented on a Well Development Record (Appendix C).

2.2.3 Groundwater Sampling

On May 25 and 26, 2009, the four newly installed wells and 13 existing monitoring wells (MW-1A, MW-1, MW-3 to MW-6, MW-3C, MW-8K, MW-9K, MW-10K, MW-11S [MW-11K was blocked], GPW-1, and GPW-2) were sampled for VOCs and the four new wells and 10 existing wells (above list of wells minus MW-5, GPW-1 and GPW-2) were sampled for natural attenuation parameters to get current groundwater data for the Site.

Prior to sampling, a synoptic round of water level measurements was collected from existing monitoring wells, MPE wells, and microwells (due to water lines and electrical wires in the well, water levels could not be collected from the groundwater extraction wells). Monitoring wells were sampled using low-flow sampling techniques. Samples were collected using a geopump with dedicated sample tubing. Field measurements for pH, temperature, specific conductivity, oxidation reduction potential, dissolved oxygen, and turbidity were collected through a flow through cell (with the exception of turbidity) from each well during pre-sample purging. Purge water was screened with a PID and observed for sheens and odors. If no evidence of contamination was detected then the water was poured on the ground at the well location. If contamination was observed in the development water then the water was containerized and pumped into the on-site treatment system for treatment prior to discharging to the local sewers.

Monitoring well sampling activities were documented using a Low Flow Groundwater Data Record (Included in Appendix C).

2.2.4 Soil Vapor Sampling

Soil vapor samples were collected to evaluate if contaminants of concern from the Site are present in off-Site soil vapor (either from direct vapor migration, or from volatilization from contaminated groundwater) and creating a potential exposure pathway via vapor intrusion. The soil vapor samples were collected from approximately seven to eight feet bgs, or just above the water table at each location. Groundwater was present at approximately 10 feet bgs; however the depth to groundwater was variable across the Site.

A total of three soil vapor samples were collected near the Site (SV-1 to SV-3), in the down gradient groundwater flow direction. Two soil vapor points (SV-2 and SV-3) were completed on the south side of Benton Street and one (SV-1) was located on the west side of Clinton Avenue. The soil vapor sample point locations are shown on Figure 1.2.

Soil vapor samples were collected using direct push technology by pushing the rods to approximately six to eight feet bgs, which was anticipated to be immediately above the water table.

Soil vapor samples were collected using the Geoprobe® PRT system using SUMMA canisters. Approximately one liter of soil vapor, plus the volume of the tubing, were purged using a personal air monitoring pump before collecting samples. During the soil vapor purge, vapors were screened with a PID. A helium leak test was conducted at soil vapor sample location SV-3 to assess the integrity of the soil vapor probe seal prior to sampling. Based on the leak test, the sample point was determined to be adequately sealed (i.e. less than 6% breakthrough as measured with a helium detector), and therefore the methods employed for the soil vapor sampling were determined to be acceptable.

In addition to the exterior soil vapor samples, one sub-slab soil vapor sample (SV-4) was collected from below the concrete floor of the business located to the west and adjacent the Site. The sample was collected by drilling a 3/8-inch diameter hole through the floor and inserting a ¼-inch outside diameter tubing sealed at the floor with bentonite. The sub-slab sample was collected in an approximate one-liter Summa-type can with over an approximate 20-minute time period (i.e. less than 0.1 liter per minute). The approximate sample location is shown on Figure 2.1.

Soil vapor sampling activities were documented using a Soil Vapor Sampling Record (included in Appendix C).

2.2.5 Geoprobe Soil Borings

Source Area Borings. Based on existing data, it was not clear if the contaminant source material was limited to the upper overburden/lacustrine soil, or if it had migrated down to the till layer. To fill this data gap, 10 Geoprobe soil borings (GS-1 to GS-10) were completed at the Site between the multiphase extraction wells. Figure 2.1 shows the location of the Geoprobe soil borings. Geoprobe borings were advanced using direct push. Soil samples were collected from four-foot long 2-inch diameter core sampler with an acrylic liner. Soil samples were collected continuously from the ground surface to approximately 16 feet bgs. PID headspace readings were used to screen soil samples for the presence of VOCs as each soil sample was removed from the sample collection tube. Samples were described in general accordance with the Unified Soil Classification System. The sample description and classification, VOC headspace reading, and boring observations were recorded on the Data Record (included in Appendix C). Based on the PID readings and physical evidence such as color or odor, 20 soil samples plus quality control (QC), were submitted to the off-Site laboratory for VOC analyses. The data was used to evaluate the vertical distribution of contaminants in the soil and whether the contamination source material was limited to the upper stratified lacustrine soils that overlie the till layer, or whether it has migrated into the till layer. A microwell was installed at each boring location as described in the following subsection.

Delineation Borings. Based on existing data, it was not clear if the soil contamination was limited to the Site property, or if it extends onto the property to the north of the Site. To fill this data gap, four Geoprobe soil borings (GS-11 to GS-14) were completed north of the Site in the vicinity of monitoring wells MW-10S and MW-10K (see Figure 2.1). Soil samples were collected continuously from the ground surface to 16 feet bgs, with the exception of GS-13, which was sampled continuously to refusal on assumed bedrock at approximately 21 feet bgs. PID headspace readings were used to screen soil samples for the presence of VOCs and samples were described in general accordance with the Unified Soil Classification System. Based on the PID readings and physical evidence such as color or odor, 9 soil samples, were submitted to the off-Site laboratory for VOC analyses. The data was used to evaluate the potential presence of contamination north of the Site, and if present, the horizontal and vertical distribution of contaminants in the overburden north of the Site.

2.2.6 Geoprobe Microwell Installation

The zone of influence of the MPE system on both the soil vapor and water table drawdown was not known. To fill this data gap, 10 microwells were installed in the "source area borings" noted previously (GS-1 to GS-10) (see Figure 2.1). Each of the Geoprobe source area soil borings described previously was completed with a microwell (microwell numbers coincide with the GS numbers, but are labeled as GMW-1 to GMW-10). The Geoprobe soil borings/microwell exploration locations are shown on Figure 2.1. The microwells were constructed with 1-inch ID schedule 40 PVC. Well screens were five feet long with 0.01" slots and set across the water table from approximately 7 to 12 feet bgs. The well screens extend approximately 2 feet above the water table so that both water level and vacuum measurements can be collected. The water level and vacuum measurements were used to evaluate the influence of the MPE wells on both the groundwater drawdown and the zone of influence for vapor extraction. The microwells were backfilled with #0 sand to approximately 2 feet above the screen if possible and sealed with bentonite chips to approximately 1 foot bgs. Microwells were completed at the surface with a locking cap and a six inch flush mount casing cemented in place.

2.2.7 Geoprobe Groundwater Points – May 2009

The existing set of monitoring wells did not give sufficient coverage to adequately characterize the limits of the shallow and deep overburden groundwater contamination. To supplement data from the existing and new monitoring wells and to fill these data gaps, geoprobe groundwater points were completed at six locations around the perimeter of the Site (GW-1 to GW-6). The approximate locations are shown on Figure 2.1. Groundwater grab samples were collected from depths of approximately 12 feet bgs and 20 feet bgs at three locations and at approximately 20 feet bgs at the remaining three locations (due to poor water flow, shallow water samples could not be collected at three of the locations). The groundwater samples were collected by using direct push methods to advance a screen sampler to the desired depth and then pulling the casing back to expose the well screen to the formation. Water was pumped using either a peristaltic pump or a Waterra foot valve type pump. One tubing volume of water was purged and one set of groundwater parameters including temperature, conductivity, pH, and turbidity were collected before sampling, if possible. Groundwater grab samples for VOC analysis were collected at a low purge rate (approximately 100 milliliters per minute) from each depth at each location to characterize the groundwater potentially migrating off Site and to evaluate the potential for vapor to migrate from the shallow groundwater to the vadose zone soils. Geoprobe groundwater sampling activities were documented on Field Data Records included in Appendix C.

2.2.8 Water Level and Vacuum Measurements

A round of water levels was collected from the MPE wells, the new microwells and the monitoring well network while the MPE system was operating. These water level measurements were used to evaluate the amount of drawdown the MPE system creates, as well as to evaluate groundwater flow direction.

2.2.9 MPE System Evaluation

The MPE system evaluation included the collection of vacuum readings and collection of water levels. The vacuum measurements were collected from the MPE wells and the new microwells to evaluate the area of influence of the vapor extraction system. While the system was operating, vacuum readings were recorded from each of the pressure indicators for the MPE wells from inside the treatment building. A manometer was used to measure the vacuum in the microwells. The MPE system was then turned off to allow the subsurface vapor pressures to equilibrate. To evaluate the recharge of the water table, water levels were periodically monitored in select wells (MPE-2, MPE-3, MPE-5, MPE-6, MPE-8, MPE-10, MPE-15, GS/GMW-4, and GS/GMW-2).

Prior to starting the blower for the SVE system, flow control valves to the MPE wells were closed off, and the dilution air flow control valve was fully opened. To test select MPE wells, the flow control valve to the individual well to be tested was opened, and then the dilution air valve was closed slowly until the vacuum reading for the select well reaches the pre-system shut-down reading. Once the appropriate vacuum has been reached, vacuum at the select well head, as well as in the surrounding MPE wells were measured to evaluate the radius of influence of the MPE wells.

Vacuum measurements were collected by attaching a magnehelic pressure gauge (MPE well) or Manometer (microwell) to the top of the PVC well riser in such a manner that there was an airtight seal. To ensure a secure seal has been achieved, two measurements were collected from each well, waiting 30 seconds between readings. MPE wells were tested in the following manner:

1. Turn on MPE-10.
2. Measure vacuum in GMW-6, GMW-7, GMW-8, and GMW-9.
3. Turn off MPE-10.
4. Turn on MPE-4.
5. Measure vacuum in GMW-1, GMW-2, and GMW-3.
6. Turn on MPE-6 (keep MPE-4 running).
7. Measure vacuum in GMW-3.
8. Turn off MPE-4.
9. Turn on MPE-10 (keeping MPE-6 running).
10. Measure vacuum in GMW-4, GMW-5, GMW-6, and GMW-7.
11. Return SVE system to normal operation.
12. Measure vacuum in all microwells and MPE wells.

Prior to returning system to normal operation, collect last round of water level data from MPE and microwells.

2.2.10 Sewer Sampling

Previous investigations indicate that shallow groundwater at the Site was contaminated with chlorinated solvents. Data collected to date indicates that groundwater present in the shallow overburden flows towards the city sewer lines, which were constructed in the late 1800s. Based on the date of construction, it is possible that contaminated groundwater is leaching into the city sewer system. The NYSDEC requested MACTEC to conduct sewer sampling along Benton Street and South Clinton Avenue to investigate if contaminants from the groundwater were migrating into the city sewer system. Six manholes (SL-1 to SL-6) shown on Figure 2.1 were sampled. Manholes were chosen based on their locations up-stream, adjacent, and downstream of the Site.

Sampling was conducted while the MPE system was shut down, to reduce extra water flow into the sewer lines. Water samples were collected by opening the manholes and sampling sewer water from the road surface. The samples were collected using a Geopump to pull water through ¼-inch low density polyethylene tubing that was attached (for stability) to ½-inch PVC pipe using zip-ties. Dedicated sampling equipment was used to minimize the chance of cross-contamination. At each manhole, MACTEC collected one water sample for VOC analysis by method SW-846 8260B. Field observations were noted in the log book, including observations of manhole depths and approximate water levels (using an electronic conductivity meter). Upon completion of sampling, the manhole cover rims were cleaned of dirt prior to replacing to ensure they were properly seated.

2.2.11 Supplemental Geoprobe Groundwater Points – December 2009

Although additional groundwater sampling points were planned east of the Site (east and northeast of GPW-01), access could not be acquired from the adjacent property owners. Groundwater grab samples were collected from depths of approximately 10 feet bgs and 20 feet bgs at locations GW-8, GW-10, and GW-11, and approximately 16 feet bgs at locations GW-7 and GW-9 (these two points met with refusal at approximately 17 feet bgs). The groundwater samples were collected using direct push methods described in section 2.2.7 of this report. When possible, at least three volumes of water were purged and one set of groundwater parameters including temperature, conductivity, pH, and turbidity were collected before sampling. Groundwater grab samples for VOC analysis were collected at a low purge rate (approximately 100 milliliters per minute) from each location to characterize the groundwater potentially migrating off Site and to evaluate if contaminants are present in the shallow groundwater that have the potential to partition to soil vapor and migrate towards overburden buildings.

2.3 SITE SURVEY

A survey was performed for the four newly installed monitoring wells and the 10 new microwells by a licensed surveyor. Horizontal locations were tied to the NYS Plane Coordinate System using North American Datum of 1983, and measured to an accuracy of 0.1 foot. Vertical elevations of groundwater monitoring wells were tied to msl, using National Geodetic Vertical Datum of 1988, and measured to an accuracy of 0.01 foot. Results of the Site survey are provided in Appendix D Locations of the eleven Geoprobe groundwater grab sample borings, the Geoprobe soil borings GS-11 to GS-14, and the sewer samples were tied to fixed structures and plotted approximately using aerial photographs. Locations of these additional points are included on Figure 2.1.

3.0 SITE PHYSICAL SETTING

The physical characteristics of the site study area are presented in this section. Much of this information was previously submitted in the Remedial Investigation Report by URS Corporation (URS, 2001). MACTEC's investigations confirmed much of the physical characteristics as described by URS.

3.1 SURROUNDING LAND USE

The Site is zoned as commercial and residential and is situated in a combined commercial/residential area within the City of Rochester. Several small businesses including restaurants, a barbershop, a tool rental shop and a convenience store are located near the Site on South Clinton Avenue. Residences with detached garages are situated on small lots along Caroline Street to the north and along Benton Street to the south and east of the Site.

3.2 TOPOGRAPHY

The Site is located approximately 6,000 feet east of the Genesee River and approximately 1,000 feet north of the Pinnacle Hills, which are around 100 to 200 feet higher in elevation than the Site. The Site topography is nearly flat-lying with the elevation of the Site being approximately 515 feet above mean sea level. Surface water run-off is collected by the combined sewer system underlying the adjacent streets, with the Site itself having a slight downward-gradient towards the streets in the southwest and southeast directions.

3.3 CLIMATE

The climate of the area is characterized by moderately warm summers and cold winters. Mean monthly temperatures range from 24 degrees Fahrenheit (°F) in January to 71°F in July. Average annual precipitation is 34 inches. Average annual snowfall is 96 inches (National Climatic Data Center, 2004: for the period of 1971-2000, http://www.ncdc.noaa.gov/oa/ncdc.html).

3.4 GEOLOGY

The geology and hydrogeology at the Site were characterized by the installation of a number of soil borings and groundwater wells that were placed over the course of the historic and MACTEC investigations at the Site.

3.4.1 Regional Geology

The Site is located within the Erie-Ontario Lowlands Physiographic Province of NYS within which low plains with little relief characterize the province. The glaciated topography is an expression of nearly flat-lying sedimentary rock formations covered by glaciolacustrine deposits and till. Kame moraine deposits are found in the Pinnacle Hill located south of the Site. The bedrock structure is homoclinal with a gentle southerly dip into the Appalachian Basin. The bedrock is gently deformed with some scattered, small folds and faults (URS, 2001).

3.4.2 Site Stratigraphy

The Site stratigraphy is illustrated by geologic cross sections shown on Figures 3.1 and 3.2. Figure 3.3 shows the orientation of each of the geologic cross sections shown in Figures 3.1 and 3.2. The Site is underlain by approximately 20 to 25 feet of overburden overlying Silurian age dolostone bedrock. The overburden consists of man-made fill overlying glacial deposits. The glacial deposits are underlain by a weathered bedrock zone of variable thickness, referred to by URS as the overburden/bedrock interface zone.

The fill material consists of re-worked silty sand and contains gravel, bricks, concrete and wood. The fill material ranges in thickness from zero to approximately eight feet in and immediately around the Site, and, where present, overlies glaciolacustrine sediments.

The glacial deposits at the Site are a combination of both glacial tills (till) and glaciolacustrine (lacustrine) sediments. The till at the Site lies immediately above the overburden/bedrock interface (weathered bedrock) zone. The stratified lacustrine sediments lie upon the till and do not appear to contact the overburden/bedrock interface zone. The lacustrine sediments were differentiated from the till based on the presence of alternating thin beds of clayey silt and sand observed in soil borings at the Site.

In general, the glacial deposits at the Site consist of clayey silt, sandy silt and silty clay interbedded with thin sand layers. Within the lacustrine sediments the sandier seams range in thickness between a few inches and a few feet. At depth the glacial deposits consist of angular dolostone fragments in a silty clay (till) with occasional boulders. A gravelly weathered bedrock (overburden/bedrock interface zone) is present atop competent bedrock.

The interpreted bedrock contours are presented on Figure 3.4. Bedrock at the Site consists of a low relief Silurian age dolostone of the Lockport Group, described by URS as medium gray, hard, fine to medium grained, mostly featureless or with some zones of wavy carbonaceous laminae. URS reports that there are a few scattered zones that contain vugs (small cavities) or smaller “pinpoints” of dissolution porosity, along with some white calcite and galena secondary mineralization observed in a few scattered zones. The recovered core samples were reported as being generally broken with rock quality designations ranging from 13 to 56 percent (very poor to fair rock quality) (URS, 2001).

3.5 GROUNDWATER HYDROLOGY

Groundwater at the Site exists in both overburden and bedrock water-bearing units. Further, the overburden water-bearing units exhibit unconfined and semi-confined properties that are distinguished by differences in their geology, hydraulic conductivities and water level elevations. Groundwater is generally encountered from approximately five to fifteen feet bgs.

Conceptually, there are three local water-bearing units below the Site. From top (ground surface) to bottom, the units consist of 1) a glacial deposit (lacustrine and till) unit, 2) an overburden/weathered bedrock interface unit, and 3) a bedrock unit. Fill material, where present, was reported to exist primarily within the vadose zone. Monitoring well construction data and water levels are presented in Table 3.1.

3.5.1 Glacial Deposit Unit

The glacial deposits, consisting of silt, clay, sand and gravel, is between 20 to 25 feet thick with saturated conditions starting between five feet bgs to 15 feet bgs (five to ten feet bgs measured by MACTEC in May and June 2009), with a typical depth to water of approximately five to ten feet bgs. This unit is further subdivided into an upper stratified lacustrine layer and a lower lodgment till layer (URS, 2001). The till layer is present at between seven and nine feet bgs, and extends to the top of weathered bedrock.

The lacustrine zone consists of discrete layers, seams and lenses of clayey silt and silty sand. Discontinuous perched groundwater lenses were identified in sand seams within the upper lacustrine layer and are represented by water level measurements in monitoring well MW-01A, which appears to fluctuate over time and at times appears to be “dry”. Observations such as these are characteristic of a well that is screened in a perched water zone (URS, 2001).

The glacial till is characterized by unstratified silty clay with varying amounts of sand and gravel. The lodgment till was observed as being a semi-confining layer (or aquitard) to the interface and bedrock units immediately below it. An aquitard is defined as a confining bed that retards but does not prevent the flow of water to or from an adjacent aquifer; a leaky confining bed.

3.5.2 Overburden/Weathered Bedrock Interface

This interface unit, referred to as the overburden/bedrock interface zone, is a thin, semi-confined aquifer with a relatively high hydraulic conductivity (K) when compared to the units above and below it. This unit consists of sand and gravel-sized weathered bedrock with varying amounts of silt, clay and cobbles. The thickness of this unit was found to range from less than one foot (MW-08K) to approximately 5 feet (MW-09K) and generally increases in thickness to the northwest and south (URS, 2001).

3.5.3 Bedrock Unit

The bedrock located below the Site is a fossiliferous dolostone of Silurian age. Previous reports (Sear-Brown, 1995b and 1998) described the existence of dislocated and rotated slabs of bedrock, based on steeply dipping laminae observed in the MW-03C rock core and "the highly localized variation in auger refusal" observed during drilling. The presence of dislocated and rotated slabs of bedrock may explain the unexpectedly high bedrock elevation encountered at RW-01. Of the borings installed to date, only MW-03C was installed deeper than the top of competent rock.

URS stated that for the purposes of pumping test data analysis, the bedrock unit was modeled as an aquiclude, i.e., a low-permeability unit that forms a boundary to the local groundwater flow system. URS further states that it is likely that the boundary is less than absolute.

3.6 GROUNDWATER HYDROLOGY

The hydraulic conductivities (K's) of the glacial deposits and bedrock were not directly investigated by URS for their Remedial Investigation Report (URS, 2001) or by MACTEC, but were previously estimated in the 1998 Sear-Brown report based on an analysis of grain-size distributions and slug test data (Sear-Brown, 1998). Sear-Brown calculated the following representative K's for the three units at the Site:

- Glacial Deposits: $K = 2.5x10^{-4}$ centimeters per second (cm/sec), or 0.71 feet per day (ft/d)
- Overburden/Weathered Bedrock Interface: $K = 5.9x10^{-3}$ cm/sec, or 16.7 ft/d
- Bedrock: $K = 8.2x10^{-4}$ cm/sec, or 2.3 ft/d

The hydraulic conductivity of the overburden/weathered bedrock interface unit was calculated from data recorded during a 72-hour pumping test conducted by URS. The calculated K value for this unit was presented as 4.2×10^{-3} cm/sec (12 ft/d), which correlates well with Sear-Brown's previous estimate based on slug test data (URS, 2001).

3.6.1 Groundwater Flow

In URS's RI report (URS, 2001), monitoring wells used for interpreting groundwater contours were divided into two groups; glacial deposit wells and overburden/bedrock interface. Wells categorized as glacial deposits wells are GPW-01, GPW-02, MW-02, MW-08S, MW-09S, MW-10S, and MW-11S; those categorized as overburden/bedrock interface wells are MW-01, MW-03, MW-04, MW-05 MW-06, MW-08K, MW-09K, MW-10K, MW-11K PZ-01, PZ-02, and RW-01. Wells MW-

01A and MW-03C were not included in either the glacial deposit or overburden/bedrock interface groups because MW-01A is screened in a perched zone and MW03C is screened in bedrock only. MACTEC installed the additional glacial deposit wells GS-1 to GS-10 and MW-12S and the overburden/bedrock interface wells MW-12K, MW-13K, and MW-14K in 2009 (GS-1 to GS-10 were installed primarily to evaluate the existing MPE system).

Groundwater contours from prior to the installation of the MPE system are plotted on URS Figure 3-6 in Appendix A for the glacial deposit wells and URS Figure 3-7 in Appendix A for the interface wells. URS indicated that the natural flow of groundwater west and south of the Site is likely intercepted by the sewer line bedding, causing a preferential flow of groundwater along the path of the sewer. Therefore, groundwater contours were omitted for south of the Site along Benton Street and west of the Site along South Clinton Avenue where the elevations of the local storm/sanitary sewer lines/inlets are reportedly below the top of groundwater. MACTEC reviewed sewer installation drawings from the late 1800’s and determined that the sewers are encased in concrete. The permeability of the sewer line bedding is not known.

The direction of local groundwater flow was interpreted by URS to be from the east and northeast to the west, southwest and southeast in both the glacial deposits and the overburden/bedrock interface units. The hydraulic gradient in the glacial deposits were calculated to range between 0.006 feet per foot (ft/ft) and 0.02 ft/ft, with the horizontal hydraulic gradient in the interface unit reported at around 0.02 ft/ft. Vertical flow observations indicated a significant downward gradient based on monitoring well pair measurements. Vertical hydraulic gradients were calculated by URS that range in the downward direction between 0.13 ft/ft at the MW-09 S/K well pair and 0.87 ft/ft at the MW-11 S/K well pair. Vertical gradients measured by MACTEC, eight days after the MPE system shutdown, ranged in the downward direction from 0.63 ft/ft at the MW-9S/K well pair to 1.76 ft/ft at the MW-10 S/K pair. There were also significant downward gradients measured from the SB-10 microwell to the adjacent MW-14K interface well, with gradients measured at 3.18 ft/ft. URS suggested that the high vertical gradients may be interpreted to indicate that the flow rate or “connectiveness” between units is low.

Currently there is a dual phase extraction system operating at the Site. MACTEC collected groundwater measurements both with the system operating, and with the system shut down. Groundwater flow was interpreted to flow generally from east to west, but there were also some flow components to the southwest and northwest. The groundwater measurements collected by MACTEC are discussed in more detail in Section 4, as they relate to the MPE system evaluation.

3.7 GROUNDWATER USE

The Site and surrounding area is serviced by public water. The nearest body of surface water is the northward flowing Genesee River which is located approximately 6,000 feet west of the Site.

4.0 NATURE AND EXTENT OF CONTAMINATION

This section presents results of the previous and current field investigations performed at the Site. The subsections below describe results of laboratory analyses for soil, groundwater, soil vapor, and sewer water samples collected both historically and during the MACTEC RI program. Data as presented in the individual historic reports are assumed to have met the data quality objectives. Analytical data collected by MACTEC was reviewed and determined to be usable as presented in this report. Figures and tables from previous investigations conducted at the Site are also referenced in this section and are provided in Appendix A (Sears Brown and URS Figures) and Appendix B (URS Tables). Field data and observations documented as part of the MACTEC 2009 RI field work are provided in Appendix C. Results of the site survey are included in Appendix D. Analytical data, including a data usability summary report and complete analytical results for the 2009 sampling programs are provided in Appendix E.

4.1 SOURCE AREAS

The primary contaminant source areas reportedly consisted of leaks and spills from the now removed storage tanks on the property, as well as spills to the ground surface in the vicinity of the Benton Street Driveway. The likely secondary source area (contaminated soils) is represented by an area within which PCE in soil exceeds the SCO for unrestricted use of 1.3 mg/Kg. Prior to the 2005 hot spot removal action, this area was estimated by URS to be approximately 40 feet by 80 feet and included the former tank storage room, the former new building extension, Benton Street driveway, and portions of the adjacent residential driveways at 338 and 350 Benton Street (Sears Brown Figure 2 and URS Figure 1-3, both in Appendix A) (URS, 2004a). Within this source area, soils were excavated during a hot spot removal conducted in 2005 from an area measuring approximately 32 feet square by 8 feet deep as shown on URS Figure 1-2 in Appendix A and Figure 1.2. This area contained approximately 1,070 lbs of VOCs and included soils with PCE concentrations above 100 mg/Kg. Secondary source areas of groundwater contamination consisting of soil with concentrations above the SCO for unrestricted use of 1.3 mg/Kg continue to exist across the Site in areas surrounding and below the historically excavated area.

4.2 SOIL

Soil samples were collected and analyzed from explorations that included the drilling of soil borings, geoprobe borings, and monitoring well borings. Prior to 2008, selected soil samples were analyzed for VOCs (79 total samples), SVOCs (23 total samples), and PCBs (23 total samples). Sample locations from prior to 2008 are shown on URS Figure 1-2 in Appendix A and analytical data are presented in URS Tables 1-2, 1-5, 1-7, 1-8, 4-1 and 1 (Soil analytical Results [2004]) in Appendix B. In July 2008, 39 soil samples were collected from 37 Geoprobe soil borings by URS for VOC analysis to evaluate the MPE system performance. Samples were collected from the surface to 12 feet bgs, concentrating primarily on the soil from six to 12 feet bgs. Sample locations from the 2008 sampling are shown of URS Figure 2 in Appendix A and analytical results are presented in URS Table 1 (2008 Geoprobe Sampling Comparison to Unrestricted Use Cleanup Objectives) in Appendix B. As part of the 2009 RI field work, additional soil samples were collected to better delineate the extent of contamination in Site soils above the bedrock. In May 2009, 31 soil samples (including QC samples) were collected from 15 locations at depths ranging from 9 feet bgs to 21 feet bgs. Collected samples were analyzed for VOCs. Sample locations from the 2009 events are shown on Figure 2.1, and associated analytical data are summarized and presented in Table 4.1. In addition PID readings from the soil borings and associated total VOC results from the analytical laboratory are presented in Table 4.2.

The primary soil contaminants detected at the Site are chlorinated compounds which are representative of the dry cleaning chemicals formerly handled during Site operations. The highest contaminant concentrations for PCE and TCE prior to 2008 were observed in shallow soils beneath the former tank storage room and the former new building extension adjacent to the Benton Street driveway. These included the locations below, where PCE concentrations were reported at greater than 100 mg/Kg:

- MW-2: 292 mg/Kg of PCE at 1-3 feet bgs (1995)
- B-03: 9,100 mg/Kg of PCE at 0-4 feet bgs (1999)
- GP-17: 1,700 mg/Kg of PCE at 3-4 feet bgs (2000)
- GP- 19: 1,500 mg/Kg of PCE at 0-2 feet bgs (2000)
- SB-4: 490 mg/Kg of PCE at 3-4 feet bgs (2004)
- SB-5: 1,000 mg/Kg of PCE at 4-6 feet bgs (2004)
- SB-6: 170 mg/Kg of PCE at 4-5 feet bgs (2004)

- SB-7: 390 mg/Kg of PCE at 0-1 feet bgs (2004)
- SB-11: 1,100 mg/Kg of PCE at 3-4 feet bgs (2004)
- SB-15: 1,400 mg/Kg of PCE at 5-6 feet bgs (2004)

Within the source area, contaminant concentrations generally decreased with depth suggesting that surface spills acted as the main contaminant mechanism. PCE occurred almost everywhere at significantly higher concentrations than TCE. In areas outside the former building footprints (i.e. source area) where contaminant concentrations increased with depth (GP-02 (1999), GP-03 (1999), GP-04 (1999), MW-03 (1995), and B-06 (1997)), the concentrations were generally much lower than beneath the former building footprints. This may reflect lateral spread within the vadose zone as dry cleaning solvents migrated primarily downward and moved away from their source area. As discussed in Section 4.2, based on this data, a soil removal program was conducted in 2005 from an area measuring approximately 32 feet square by 8 feet deep. The above referenced locations were excavated as part of the removal action.

In 2008, two years after the soil removal activities and the start up of the MPE system, soil samples were collected from zero to 12 feet bgs by URS to evaluate the remedial efforts. The compounds PCE and/or TCE were detected in 36 out of 37 of the 2008 soil samples (not including duplicates), and at concentrations exceeding the SCO for unrestricted use in 22 of the 37 samples. Soils were collected based on the highest PID reading per boring, with the maximum concentration of PCE detected in the offsite samples of 310 mg/Kg from 8-9 feet bgs in boring 08GP19. PID readings from several of the borings appeared to increase with depth. In addition to PCE and TCE, soil sample results obtained in 2008 indicated that cis-1,2-DCE and ethylbenzene slightly exceeded their unrestricted use SCO at one location (08GP07), and xylene exceeded its SCO for unrestricted use at two locations (08GP07 and 08GP17). The ethylbenzene exceedance and the higher of the xylene exceedances were detected in a sample collected in the vicinity of the former hydraulic lifts. The remainder of the detected VOCs in the 2008 sampling event were below their respective SCO for unrestricted use.

Previous reports indicated that the chlorinated solvents were confined primarily to the lacustrine overburden, and that the underlying till was acting as a barrier layer to continued downward migration of the contaminants. Part of the 2009 sampling objective was to collect data to evaluate the effectiveness of till layer to limit downward migration. Based on data collected during 2009 RI field work, it appears as if the chlorinated solvents have migrated downward into the underlying till layer. Similar to previous investigations, PCE and TCE were detected in most soil samples from the 2009 RI field efforts at concentrations exceeding the SCO for unrestricted use (see Table 4.1). The highest detected concentrations of PCE and TCE during the 2009 field programs were observed in Geoprobe soil borings GS-2 (1,700 mg/Kg of PCE at 11 feet bgs) and GS-7 (1,400 mg/Kg of TCE at 16 feet bgs). Contaminant concentrations show an increase with depth at nine locations (GS-1, GS-2, GS-4, GS-6, GS-7, GS-8, GS-9, GS-12 and GS-13) for TCE, and at five locations (GS-4, GS-7, GS-8, GS-10 and GS-12) for PCE, indicating contaminants have migrated downward from the glaciolacustrine overburden into the till layer. Unrestricted use SCOs were also exceeded for cis-1,2-DCE (GS-1, GS-4 and GS-13), 1,1-DCA (GS-3 and GS-4), xylene (m/p and o [GS-2 and GS-7]) and 1,1,1-TCA (GS-3).

Interpreted isoconcentration lines for PCE (the primary contaminant at the Site) in soil are presented on Figure 4.1. These contours are based on MACTEC's 2009 soil sample analytical results, as well as a review of the URS 2008 soil sample results. These contours are interpreted to represent the primary soil sources of the chlorinated solvent groundwater contamination. Due to the limited number of data points, an interpreted outer isoconcentration line of 10 mg/Kg PCE contamination was used and not the SCG for the protection of groundwater of 1.3 mg/Kg.

Based on concentrations of TCE and PCE detected in the 2009 soil samples, as well as an estimated area of soil contamination exceeding SCGs for unrestricted use (based on the data collected by MACTEC in 2009 and URS in 2008), the mass of remaining PCE and TCE contamination in soil at the Site is estimated to be 835 pounds (combined mass). This assumes that contamination is present in the till to approximately the top of bedrock. Calculations used for this estimate are included in Appendix F.

In addition to VOCs, 23 soil samples from the Site have also been analyzed for SVOCs. Polycyclic-aromatic hydrocarbons (PAHs) were detected in 12 of the 23 soil samples collected for the URS RI in 2000, but generally at concentrations less than 1 mg/Kg and generally less than their individual SCOs for unrestricted use (See URS Table 4-1 in Appendix B). PAH concentrations exceeded their individual SCOs for unrestricted use at the two vadose zone sample locations GP-17 and GP-42 (see URS Figure 2-2 in Appendix A for locations). Although the PAHs may reflect spills or leakages associated with the facility's use as an automobile repair shop, PAHs are relatively common in urban areas, and are frequently associated with fill material. Soil PAH contamination at GP-17 was removed with the soil removal action as part of the IRM and location GP-24 is on an adjacent property to the north at a depth of three to five feet bgs. PAH results for GP-24 were less than five times the SCO for unrestricted use. Because the remaining PAHs detected above their respective SCO for unrestricted use (GP-24) were detected outside the Site property limits and are also associated with urban areas, PAHs may not be regarded as Site-related COCs.

Samples have also been collected from the Site for analysis of PCBs. A total of 23 samples were collected in 2000 from 18 locations and analyzed for PCBs. Of these samples, only three locations (GP-10, GP-11, and GP-19; see URS Figure 2-2 in Appendix A for locations) had detectable concentrations of PCBs. Although total detected aroclors at each of these three locations exceeded the SCO for unrestricted use of 0.100 mg/Kg, none of them exceeded the SCO for residential use of 1.0 mg/Kg or for the protection of groundwater of 3.2 mg/Kg. The highest concentration was from GP-19 in which total aroclors were detected at a concentration of 0.396 mg/Kg; this location was excavated as part of the soil removal action IRM.

4.3 GROUNDWATER

Groundwater samples from both previous and current investigations were collected and analyzed from fixed groundwater monitoring wells, extraction/recovery wells or MPE wells, and temporary geoprobe groundwater sampling locations. Prior to November of 2006, wells were sampled infrequently. Since that time, a number of wells have been installed as part of the MPE system, followed by ongoing quarterly sampling. Samples were analyzed for VOCs in each round of sampling, SVOCs were analyzed in two rounds (February 1995 and November/December 2000), metals were analyzed in the November/December 2000 round, and monitoring natural attenuation (MNA) parameters during the 2009 RI field work. The only locations at which VOCs have not been detected above 1 µg/L are MW-08S, and MW-09S. Locations that were never sampled include PZ-01, PZ-02, and RW-01, each of which were decommissioned along with MW-02 in 2006, prior to the hot spot soil source removal. Select groundwater analytical results prior to the 2009 investigations are present in URS Table 1-3 (1995), URS Table 1-6 (1997), URS Table 1-9 (2000), and URS Table 1 (Validated Groundwater Sampling Results [5/2008]), all in Appendix B.

Groundwater trends for PCE and TCE are presented in Table 4.3. Analytical data generated during the 2009 RI field work is summarized in Tables 4.4 (VOCs) and 4.5 (MNA parameters).

As with soils, the primary groundwater COCs are chlorinated organic compounds which are indicative of past leaks or spills of dry cleaning chemicals at the Site. The two primary chlorinated compounds of concern in groundwater are PCE and TCE. Occurrences of these two compounds in groundwater monitoring locations historically sampled at the Site are summarized in Table 4.3. The maximum concentrations detected have been in groundwater samples from the MPE system. The maximum concentration of PCE detected in groundwater was 220,000 µg/L (compared to a solubility of PCE of 150,000 µg/L) in a sample collected from MPE-16 in May 2008. The maximum concentration of TCE detected in groundwater was 570,000 µg/L (compared to a solubility of TCE of 1,100,000 µg/L) in a sample collected from MPE-10 in March 2006. Concentrations of TCE were detected as high as 170,000 µg/L in May 2008 from a groundwater sample from MPE-10.

Results of the May 2009 sampling event show comparable concentrations of PCE and TCE in relation to the previous sampling rounds, and a general downward trend in concentrations from historic highs (Table 4.3) (the MPE wells were not sampled as part of the 2009 sampling event). Concentrations of PCE exceeded its NYS groundwater standard of 5 µg/L at 15 of the 26 locations sampled, and concentrations of TCE exceeded its NYS groundwater standard of 5 µg/L at 18 of the 26 locations sampled. The maximum concentration detected in groundwater samples collected during the May 2009 event was 9,100 µg/L for PCE in MW-3 and 5,100 µg/L for TCE in MW-14K. In addition to PCE and TCE, twenty-one VOCs were detected, with nine of these VOCs (1,1,1-trichloroethane, 1,1-DCA, 1,1-dichloroethene, benzene, cis-1,2-dichloroethene, ethyl benzene, trans-1,2-dichloroethene, vinyl chloride and o-xylene) exceeding NYS groundwater SCGs.

Additional groundwater sampling was conducted in December 2009 to obtain information downgradient of the Site extending southwest across South Clinton Avenue. Five geoprobe groundwater samples (GW-07 to GW-11) were collected for VOC analysis. Sample locations are shown on Figure 2.1. Although PCE and TCE were not detected above method detection limits in the December 2009 groundwater samples, nine other VOCs (primarily fuel related) were detected at three of the sample locations (GW-8, GW-10 and GW-12). Of the nine detected VOCs in

December 2009, only concentrations of acetone (59 µg/L at location GW-11) exceeded its NYS SCG of 50 µg/L (acetone is a common laboratory contaminant). Results from the May and December 2009 sampling events are presented in Table 4.4.

In addition to VOC analysis, MNA parameters were measured at 10 existing wells (MW-1, MW-1A, MW-3, MW-3C, MW-4, MW-6, MW-8K, MW-9K, MW-10K, MW-11S) and the four newly installed wells (MW-12K, MW-12S, MW-13K and MW-14K) to obtain current groundwater data for the Site. Results of the MNA sampling are presented in Table 4.5.

Based on the results of previous and current investigations, the following conclusions have been drawn regarding groundwater contamination for PCE and TCE at the Site:

- **Source Area.** The highest chlorinated solvent concentrations in overburden occur in the vicinity of the former Site building and driveway, confirming this area as the source area. Concentrations of PCE and TCE detected at various times in groundwater indicate the potential presence of these compounds as a non-aqueous phase liquid (NAPL) in Site soil. This is based on the general "rule of thumb" that NAPL is present if dissolved concentrations in groundwater exceed 1% of the effective solubility of the compound (Plankow, 1996) (PCE was detected in groundwater at greater than it's solubility at MPE-10 in May 2008). PCE and TCE occur in groundwater over a large area at and around the Site. The only wells in which these compounds have not been detected above 1 µg/L were MW-08S, and MW-09S. Concentrations of PCE in groundwater samples collected in May 2010 from the MPE wells and groundwater monitoring wells are presented on Figure 4.2 and highlight the anticipated shallow groundwater source area.
- **Previous shallow overburden groundwater contamination.** URS Figure 4-2 in Appendix A shows the December 2000 estimated extent of groundwater contamination at the Site within the overburden glacial deposits, expressed in terms of PCE concentration contours. This figure is based on the wells MW-01A, MW-2, GPW-01, GPW-02, MW-08S, MW-09S, MW-10S, and MW-11S, and is based on the groundwater data collected from these wells prior to MPE system startup. The figure illustrates that the primary source of groundwater contamination is the identified source area. Under natural conditions, contaminated groundwater moves away from this source area in directions ranging primarily from southeast to west, as controlled by the predominant groundwater flow directions (see URS Figures 3-6 and 3-7 in Appendix A). Based on the results from MW-09S and MW-11S, in which contamination is not present, the sampling data from 2000 indicated that shallow groundwater contamination from the Site did not extend across Benton Street or South Clinton Avenue. Groundwater data from the wells installed as part of the MPE system also confirmed the source area and general areas of groundwater contamination, although data, for the most part, indicates progressively lower concentrations due to the MPE system operation.
- **Previous overburden/bedrock interface zone groundwater contamination.** URS Figure 4-3 in Appendix A shows the December 2000 extent of groundwater contamination within the overburden/weathered bedrock interface zone. This figure is based on the wells MW-1, MW-3, MW-4, MW-6, MW-08K, MW-09K, MW-10K, and MW-11K. Again, this

figure represents data of wells monitored prior to MPE system startup. The pattern presented is generally similar to that of groundwater contamination in the glacial deposits, except that significantly elevated PCE concentrations extend farther to the southwest toward South Clinton Avenue. The non-detect PCE concentrations in MW-04 and MW-05, and the concentration of only 1 µg/L in MW-11K in December 2000, indicates that the sewer system in Benton Street and South Clinton Avenue may have previously intercepted shallow groundwater contamination originating at the Site. Recent data continues to indicate no detectable concentrations of PCE in these wells (MW-11 K was last sampled in May 2007). The sewer invert elevations in these two roadways is reportedly lower in elevation than the surrounding groundwater (approximately 9 feet bgs to groundwater at Clinton Avenue and the bottom of the 36-inch sewer channel near the Site in Clinton Avenue is approximately 12.5 feet bgs), and therefore URS indicated that the sewers may act as drains that intercept the flow of groundwater passing by them. Due to the sewers being historically encased in concrete, this pathway would not be as conductive as if it were placed in gravel, but based on the age of construction, it may still be a possible path of contaminant migration.

- **Recent groundwater concentrations.** Figure 4.3 shows the estimated extent of shallow overburden chlorinated solvent contamination detected in samples from Site groundwater monitoring wells and Geoprobe borings during the 2009 RI field work (the MPE wells were not sampled as part of the 2009 RI field work). When compared to URS Figures 4-2 and 4-3 in Appendix A, Figure 4.3 presents data collected from groundwater sampling locations monitored subsequent to MPE system startup, and shows concentrations of selected chlorinated solvents at the Site at varying depths. The extent of contamination presented in Figure 4.3 is generally similar to that previously depicted in URS Figures 4-2 and 4-3 in Appendix A, however chlorinated solvent concentrations in groundwater are at lower concentrations, and do not extend as far west and south toward South Clinton Avenue as shown on those figures. As indicated in Table 4.2, groundwater monitoring data obtained from Site wells after the MPE system startup show concentrations for PCE and TCE have noticeably decreased across the Site. Figure 4.2 shows concentrations of PCE (the primary contaminant at the Site) in shallow groundwater based on samples collected in May 2010 by URS. This figure highlights the anticipated shallow groundwater source area.

- **Trends in groundwater concentrations from prior to the MPE system to the present**. Detected concentrations of PCE and TCE over time are presented on Table 4.3. Prior to the startup of the MPE system on February 22, 2006, the concentrations of PCE and TCE were generally similar over time in the monitoring wells where they were detected. Both compounds were found at concentrations exceeding their NYSDEC Class GA groundwater criteria (5µg/L) in 13 of 15 wells which had detections of either PCE or TCE (MW-1 through MW11S in Table 4.3). Concentrations of PCE and TCE in wells GPW-01, GPW-02, MW-1, MW-3, MW-6, and MW-10S decreased after startup of the MPE System. The exceptions are MW-01A and MW-10K, which have not show a marked decrease in concentrations after MPE system startup.

- **Trends in groundwater concentrations within the MPE system.** Detected concentrations of PCE and TCE over time are presented on Table 4.3. Groundwater samples from the MPE and GWE wells (GWE-01 through GWE-03 and MPE-01 to MPE-18) do not show consistent trends in concentrations of PCE and TCE. Increase in contaminant concentrations in the extraction well GWE-02 might be the result of the large volume of water it is pumping when active (well pump not working in 2010).

Concentrations in extraction wells GWE-01 and GWE-03 have been fairly consistent, with slight fluctuations in concentrations over time. The consistent concentrations in GWE-01 may be the result of it pulling a significantly smaller amount of water and being spatially farther from the source area than GWE-02. Decreases in concentration, to a varying degree, were noted in nine extraction wells (MPE-01, MPE-02, MPE-04, MPE-05, MPE-06, MPE-08, MPE-09, MPE-11, and MPE-12). Concentrations in seven of the extraction wells (MPE-3 and MPE-13 to MPE-18) have fluctuated, but do not show a clear increasing or decreasing trend. Increases in contaminant concentrations were noted in MPE-10 (long term data was not available for MPE-7).

- **Bedrock groundwater contamination.** Detected concentrations of PCE and TCE over time are presented on Table 4.3. Although bedrock groundwater contamination has been confirmed, the extent of contamination in bedrock cannot be fully characterized based upon existing data obtained during previous and 2009 investigations. Monitoring wells MW-03C, MW-13K and MW-14K, and extraction wells GWE-01, GWE-02, and GWE-03 are screened into the bedrock. MW-03C is totally screened within bedrock. The well screens of the GWE wells, MW-13K and MW-14K extend at least into the upper overburden/weathered bedrock interface zone. The three GWE wells have shown consistently high concentrations of PCE and TCE over time (i.e. both PCE and TCE concentrations fluctuate to above 1,000 µg/L). Detected concentrations of chlorinated VOCs in well MW-13K were above SCGs and are much higher than those historically found in well MW-01, located approximately 10 feet away and screened in the overburden (PCE and TCE concentrations in MW-13K of 5,800 µg/L and 1,300 µg/L compared to concentrations in MW-01 of 53 µg/L and 61 µg/L, respectively in May 2009). There is also inconsistency in the sampling records for MW-3 and MW-3C well pair as to which location is actually the overburden or bedrock well. Earlier site records from Sears and Brown Group show the reverse identifications to what has been recently shown on Site figures by URS. Measurements on the February 16, 2006 URS daily field report were reviewed and indicated an apparent discrepancy in the depths of these two wells (URS, 2006b) (i.e. MW-3 historic depth of 21.2 feet was crossed off and measured as 31.8 feet and MW-3C historic depth of 32.7 feet was crossed off and written as 18.59 feet). Their respective groundwater analytical results shown on Table 4.3 also suggest that their proper identification may have been switched in 2006 by URS, and carried forward for all URS data. Locations of the wells on the figures produced by MACTEC, as well as identification of MACTEC sample IDs, are based on well measurements collected during the 2009 sampling event. Due to uncertainty of results, trends shown on Table 4.3 represent sample analytical results and locations as presented by Sears Brown, URS, and MACTEC and have not been changed based.

Based on groundwater analytical results from the extraction and monitoring well network from previous and 2009 investigations, other VOCs are present in groundwater above their associated SCGs. These include 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, 2-butanone, acetone, cis-1,2-dichloroethene, ethyl benzene, tetrachloroethene, trans-1,2-dichloroethene, trichloroethene, vinyl chloride and o-xylene. URS Table 2 (Validated Groundwater Sample Results [5/2010]) in Appendix B summarizes data obtained during the May 2010 event, with VOC results from the 2009 groundwater sampling events summarized in Table 4.4.

4.4 SEWERS AND ONSITE DRAINAGE SYSTEM

Previous investigations have indicated that the onsite drainage system at the Site has been contaminated by past Site operations and that this contamination may also be impacting the sewer systems in the adjacent roadways. A July 1994 water sample collected from the floor sump within the building detected concentrations of various organic compounds, including PCE, TCE, benzene, toluene, ethylbenzene and xylenes. Later dye testing confirmed that the sump and associated floor drain were connected to the City of Rochester combined sanitary/storm sewer system along South Clinton Avenue. A November 1995 sewer system sample indicated the presence of PCE, TCE and 1,2-DCE at a manhole sampling location downstream from the Site, near the intersection of South Clinton Avenue and Carolina Street.

URS Table 4-4 in Appendix B summarizes the results of five sewer samples collected in October 2000. As shown on URS Figure 2-2 in Appendix A, two of these samples were collected from manholes upstream of the Site on South Clinton Avenue and Benton Street (SEW-01 and SEW-05, respectively); two were collected adjacent to the Site (SEW-03 and SEW-04); and one was collected downstream from the Site on South Clinton Avenue (SEW-02). Sewer water concentrations were evaluated to NYS groundwater SCGs for comparison purposes only (groundwater standards are not applicable from a regulatory standpoint to samples from within a sewer). As stated earlier, the sewer systems in Benton Street and South Clinton Avenue may intercept groundwater flow coming from the Site. As indicated by URS Table 4-4 in Appendix B, groundwater contaminants originating at the Site appear to be entering the adjacent sewer systems. VOCs were not detected at concentrations above groundwater SCGs in the two upstream sewer samples (SEW-01 and SEW-05); concentrations of several VOCs (TCE, total DCE, vinyl chloride, acetone, toluene, xylene, and/or 1,1,1-TCA) exceeded groundwater SCGs in the two adjacent samples (SEW-03 and SEW-04); and the downstream sample on South Clinton Avenue (SEW-02) had only one exceedance (PCE). When compared to soil and groundwater samples, 1,2-DCE and vinyl chloride appeared at much higher concentrations in the sewer samples relative to PCE and TCE. This may reflect an environment within the sewer system that is more conducive to biodegradation of PCE and TCE.

As part of the 2009 sampling event by MACTEC, six additional sewer samples were collected along Benton Street, South Clinton Avenue, and Caroline Street to evaluate current conditions and determine if contaminants from the groundwater were migrating into the city sewer system. Six manholes (SL-1 to SL-6) shown on Figure 2.1 were sampled (the historic manhole SEW-03 located in the Site parking lot was apparently no longer present). Three locations were sampled along South Clinton Avenue (SL-1 through SL-3), one location was sampled on Caroline Street (SL-4), and two locations were sampled along Benton Street (SL-5 and SL-6).

As summarized in Table 4.6, groundwater contaminants were detected at each of the six locations sampled during the 2009 event, although chlorinated solvents were not detected in the two upstream samples SL-1 and SL-5, or in the Caroline Street sample SL-4. Similar to the sewer water samples collected in 2000, contaminant concentrations for the 2009 sewer water sampling event were compared with NYSDEC Class GA groundwater criteria. Three samples collected along South Clinton Avenue (SL-1 through SL-3) had no compound concentrations exceeding groundwater criteria. Sample SL-6, the downstream location located south of the Site near the intersection of Benton Street and South Clinton Avenue had the highest detections of chlorinated solvents (PCE, TCE, and 1,2-DCE exceeded groundwater SCGs), although slightly lower than the concentrations detected in 2000.

The sewer samples collected in both 2000 and 2009 reflect conditions within the sewer pipes themselves and not from within the bedding material that underlies the sewers. Although the sewer line as-built drawings indicate the pipes are encased in concrete, chlorinated solvents appear to be migrating into the sewer line. Due to the sewer being installed in the late 1800’s, it is possible that cracked concrete and possible surrounding more porous material may be intercepting groundwater coming from the Site. Vertical groundwater gradients at the Site were measured in the downward direction. In addition, the sewers installed along Benton Street and Clinton Avenue are located with the bottom of the channels varying in depths from 8 feet bgs to 13 feet bgs. The sewers are likely to be intercepting only shallow groundwater contamination.

Sewer sample depths, sewer size and construction material, and sewer installation dates are included on Table 4.7.

4.5 OFFSITE VAPOR MIGRATION

Organic vapors originating from soil and groundwater contamination at the Site have migrated into the basements of adjacent residences. The passive soil gas survey performed by BEACON Environmental Services, Inc. in March 2000 indicated that PCE and TCE were present at significant concentrations beneath the basement and back yard of 350 Benton Street (see Figure 1.2 for location), with the highest concentration occurring on the side of the property adjacent to the Site. This building has been since removed, and the MPE system is operating in this vicinity.

In January 2004 URS conducted soil vapor intrusion sampling in three buildings near the Site: 354 Benton St., 338 Benton St., and 1018 Clinton St. Results of this sampling show that PCE was present in the soil vapor and was migrating into the buildings at 1018 Clinton St. and at 338 Benton St (same building foundation) (URS, 2004b). Results of sampling at 354 Benton did not detect concentrations of VOCs requiring further action based on the NYSDOH soil vapor intrusion guidance (NYSDOH, 2006). In 2005, a sub-slab depressurization system was installed at 338 Benton St and 1018 Clinton St.

Additional soil vapor samples were collected in May 2009 to evaluate if contaminants of concern from the Site are present in off-Site soil vapor. A total of three soil vapor samples were collected near the Site (SV-1 to SV-3), in the down gradient groundwater flow direction. In addition to the exterior soil vapor samples, one sub-slab soil vapor sample (SV-4) was collected from below the concrete floor of the business located to the west of, and adjacent to, the Site. The soil vapor sample locations are shown on Figure 2.1. Soil vapor analytical results are presented on Table 4.8.

VOCs were detected at each of the 2009 sampling locations. Of the four soil vapor samples collected, sample SV-4 contained the highest number of detected VOCs, including elevated concentrations of PCE (5,500 $\mu g/m^3$) and TCE (3,500 $\mu g/m^3$).

4.5 MPE SYSTEM EVALUATION

Both the groundwater and vapor extraction portions of the MPE system were measured to evaluate the potential area of influence of the extraction system.

Soil Vapor Extraction. The range of influence of the MPE system vacuums were measured as described in Section 2.2.0. Vacuum measurements are presented on Table 4.9.

The MPE vacuum measurements were evaluated, but did not reveal consistent results. When individual MPE wells were tested, there appeared to be a good (measurable) vacuum within five feet of the operating MPE well (MPE-4 and MPE-10). There was not a measurable vacuum at a distance of 8 feet from operating well MPE-4 and 13 feet from operating well MPE-10. On the other hand, , vacuum measurements collected within the area of the historic hot spot removal indicated a measurable vacuum up to 15 feet from the operating MPE well (large area of influence presumable as a result of the more permeable back fill material).

When all wells in the MPE vacuum system were running, a strong vacuum was noted within the area excavated for the historic hot spot, and a recordable vacuum was noted under the adjacent commercial building (vacuum reading of 0.012 inches water column at SV-04, located approximately 12 feet from MPE-7). Vacuums were not noted in GS-2, GS-9, and GS-10, located approximately 8 feet, 13 feet, and 37 feet from operational MPE wells, respectively (Based on observed vacuum in the individual MPE wells, the vacuum extraction systems were apparently not working for wells MPE-1, MPE-2, MPE-5, MPE-9, MPE-11, MPE-12, and possibly MPE-17).

Shallow Groundwater Extraction. Shallow groundwater levels were collected from the Site prior to shutting down the MPE system, and then 24 hours, 31 hours, and eight days after shutting down the MPE system (although the groundwater extraction system was shut down during the entire time, the SVE portion of the MPE system was running during the water level round conducted 31 hours after shutting down the MPE system). Water level measurements are presented in Table 4.10. Groundwater extraction wells MPW-6, MPE-12 and MPE-13 were not operational during the pre-shutdown water level measurements. Water level elevation contours for pre and post shutdown time frames are presented on Figures 4.4 (pre-shutdown), 4.5 (24 hours after shutdown), and 4.6 (eight days after shutdown). Although some of the groundwater measurements collected from the MPE wells may have been skewed due to the operation of the vacuum extraction system, Figure 4.4 shows two clear groundwater depressions as a result of the MPE operation. After the MPE system was shut down, groundwater in these two areas rose approximately two feet. Outside of these two depressions, groundwater was depressed slightly (less than 0.5 feet). It is not known how much of a radius of influence the three non operating groundwater extraction wells may have had if operating.

The groundwater extraction portion of the MPE system is operating to both remove and treat contaminated groundwater and to depress the groundwater table to increase the effectiveness of the soil vapor extraction system. The observed groundwater depression did not appear to cover the entire area of the MPE system and may not be allowing vapor extraction of some of the soil contamination at the Site. The areal extent areas of depressed groundwater likely indicate that the extraction wells are preventing the offsite migration of the shallow groundwater contamination. Figure 4.5 shows what is interpreted as a groundwater mound in the vicinity of GS-9, 24 hours after the groundwater extraction system is shut off. The source of this apparent mound is not clear. It is not known if there are potential utility leaks, or leaks from the MPE system that would cause this mound. Groundwater flow direction under non pumping conditions is interpreted to be primarily to the west/southwest.

The measured area of influence of the MPE system may be greater than that recorded during the 2009 sampling event if both the soil vapor extraction and groundwater extraction systems for all MPE wells are operational during measurement collection. Even if the area of influence is greater than that recorded, soil samples collected during the 2009 soil investigation indicate that soil contamination is present within the till at the Site at depths greater than the MPE wells (example of the detection of PCE at 1,400 mg/Kg at 16 feet bgs at location GS-7, compared to the depth of the MPE wells of between 10 and 13.5 feet bgs). Therefore, the MPE system will not be effective at remediating these deeper areas.

Deep Groundwater Extraction. Groundwater levels were collected the overburden/interface wells at the Site prior to shutting down the MPE system, and then 24 hours, 31 hours, and eight days after shutting down the groundwater extraction system. Water level measurements are presented in Table 4.10. Water levels for these time frames and groundwater elevation contours for the overburden/bedrock interface wells are presented on Figures 4.7 (pre-shutdown), 4.8 (24 hours after shutdown), and 4.9 (eight days after shutdown).

Interpreted groundwater contours during the MPE system pumping do not show a clear picture of groundwater response to pumping stresses and do not indicate that the deeper groundwater extraction wells are effectively controlling contaminated groundwater in the overburden/interface zone. After shutdown of the MPE system, water levels from the overburden/interface groundwater are interpreted to indicate a more westerly flow direction.

5.0 CONTAMINANT FATE AND TRANSPORT

This section presents an assessment of contaminant movement and disposition within the environment.

5.1 SITE CONCEPTUAL MODEL

The Conceptual Site Model takes into consideration sources of contamination, fate and transport processes, potential receptors, exposure pathways, and exposure points. Contaminated media associated with the Site include soil, groundwater, soil vapor, and indoor air. The table below provides a summary of the contamination sources, migration pathways, and potential receptors.

Site Conceptual Model

Media	Source of Contamination	Type of Contamination (General)	COPCs (Specific)	Primary or Secondary Source Release mechanism	Migration Pathways	Potential Receptors
Soil	Leaks/spills to the ground surface at: 1) former tank storage room (primary source gone) 2) new building extension 3) Benton Street driveway, portions of adjacent residential driveways at 338 and 350 Benton Street. Solvent contaminated soil remains outside of excavated area at the former new	Solvents;	PCE; TCE; 1,2-DCE; ethylbenzene; xylene	Leaks and/ or Spills (Site operations have ceased)	Infiltration / percolation	Human: direct contact if excavation occurs in contaminated area (s)

	building extension and driveways					
Groundwater	Contaminated Soil (Secondary Source)	Solvents; fuels	PCE; TCE; 1,2-DCE; 1,1,1-TCA; 1,1-DCA; vinyl chloride	Infiltration / percolation from soils	Groundwater flow / utility trenches (sewer lines)	Human or ecological receptors are not expected to be exposed, although site workers could come in contact with contaminated groundwater if excavation occurred below the water table.
Air / Soil Vapor	1) Contaminated soil or groundwater at and/or under the former Site building. 2) Contaminated groundwater down gradient from the Site building.	Solvents; fuels	TCE; PCE	Volatilization of contaminated groundwater and/or soil	Vapor intrusion Partitioning to air during intrusive soil excavation	Human: Inhalation
Surface Water and Sediment	Erosion or discharge mechanisms and pathways are not currently expected to exist.	NA	NA	Contaminants in groundwater are expected to attenuate prior to potential discharge point(s)	NA	Human or ecological receptors are not expected to be exposed

Site soil contamination is located in subsurface soil that is primarily covered by asphalt or beneath a concrete slab. Workers who excavate the soil for underground utility repair or maintenance, or for construction activities, could be exposed to contaminants in soil through incidental ingestion of soil, dermal contact with the soil, or by inhaling dust or vapor that may be released from the soil.

Residential and commercial properties located within the potential groundwater plume path are serviced by public water. Therefore, direct exposure to groundwater associated with the Site through domestic or other uses is not anticipated. Workers excavating in the vicinity of the Site could come in contact with contaminated groundwater. Although the deep groundwater plume has not been fully defined, discharge of contaminants from groundwater to surface water is not expected, based on distances to local surface waters and attenuation processes (e.g., diffusion, dispersion, biological degradation).

Soil vapor sampling performed at the facility property has identified VOCs in soil vapor. Indoor air samples collected at an adjacent building (338 Benton Street and 1018 Clinton Street; same building footing) have identified the presence of VOCs in indoor air. A sub-slab depressurization system was installed at this location in 2005, mitigating this potential pathway. Although sub-slab sample results from the adjacent commercial building at 1010 Clinton Avenue were above the NYSDOH guidance value recommended for mitigation (based on the sub-slab soil vapor concentration for TCE exceeding 250 $\mu g/m^3$ and for PCE exceeding 1000 $\mu g/m^3$), a vacuum measured in the sub-slab vapor indicates that the existing MPE system is effectively mitigating the potential for vapor intrusion to indoor air.

5.2 CONTAMINANT PERSISTENCE

The following sections discuss contaminant persistence and characteristics of COCs at the Site.

VOCs

VOC COCs detected at concentrations greater than their associated NYS groundwater and/or soil SCGs include PCE, TCE, cis-1,2-DCE, 1,1,1-TCA, 1,1-DCA, vinyl chloride, ethylbenzene, and xylene (PCE and TCE are the primary contaminants). PCE and TCE are classified as halogenated hydrocarbons (specifically chlorinated hydrocarbons) and are present in groundwater and soils on Site. The processes that likely control the fate of VOCs (including PCE and TCE) at the Site include volatilization, dissolution, and biodegradation. These processes are briefly discussed below.

Volatilization. The primary fate of VOCs in surface soils and shallow groundwater is likely volatilization, as VOCs partition rapidly to the atmosphere, and neither biodegradation nor hydrolysis (a photolytic decomposition due to exposure to sunlight) occurs at a rapid rate. (Agency for Toxic Substances and Disease Registry, 1997)

Dissolution. Dissolution of VOCs from site sources to groundwater is a significant transport mechanism for VOCs at the Site. Factors affecting dissolution of VOCs likely are: (1) water table elevation in comparison to source areas; (2) flow rate (residence time) of the groundwater in the contaminated material; (3) solubility of the compound; (4) amount of recharge through VOCs in the unsaturated zone; and (5) the degree of partitioning to soils and sediments.

Biodegradation. Biodegradation reactions can reduce the total mass of VOCs in groundwater. Naturally occurring bacteria in soil are capable of degrading VOCs. The microorganisms require oxygen to aerobically biodegrade VOCs and the concentration of dissolved oxygen (DO) is an indicator of the potential for aerobic biologic activity in groundwater. Aerobic biodegradation is particularly effective for aromatic hydrocarbons, such as benzene and toluene, and may be effective in mineralizing chlorinated solvent daughter products such as 1,2-DCE and vinyl chloride.

Under aerobic conditions, parent compounds PCE and TCE are relatively stable and persistent in the environment. Under suitable anaerobic conditions, however, PCE and TCE may undergo biologic transformation as the dominant fate process. Although PCE is typically the primary COC from dry cleaner sites, site records indicate that TCE was also stored at the Site; therefore the TCE detected is expected to be both a parent material and a daughter product of PCE. It has been shown that biodegradation of PCE and TCE in groundwater increases with the organic content of the soil.

The complete anaerobic biologic transformation pathway for PCE is:
PCE→TCE→1,2-DCE→vinyl chloride→ethane→carbon dioxide and water. Degradation pathways may not be complete, however, depending on the presence of suitable conditions to complete the process.

Persistence of VOCs in Site Media

Chlorinated solvents, the primary COCs at the Site, are fairly persistent in the environment. The chlorinated solvents associated with the dry cleaning process were reportedly no longer used at the Site after 1993.

Although it is likely that the primary source of contamination, PCE and TCE stored at the Site, was released to the environment over 17 years ago, concentrations of PCE were detected in soil during the URS RI investigation as high as 9,100 mg/Kg (B-03, at 0-4 ft bgs), and during the 2009 MACTEC soil investigation as high as 1,700 mg/Kg (GS-2 at 11 ft bgs). The properties of PCE and TCE are listed below.

Contaminant	**Vapor pressure (mm Hg)**	**Henry's Law constant (atm-m^3/mol)**	**Density constant (g/cm^3)**	**Water solubility (mg/L)**	**Octanol-water partition coefficient (K_{ow})**	**Organic carbon partition coefficient (K_{oc})**
Trichloroethene (TCE)	5.79E+01	9.10E-03	1.4679	1.10E+03	240	126
Tetrachloroethene (PCE)	1.78E+01	2.59E-02	1.6311	1.50E+02	398	364

Reference (USEPA, 1990)

Based on the solubility (150 mg/L), Henry’s Constant (0.754-unitless) and organic carbon partition coefficient (364 mg/g) of PCE and using the Soil Saturation Limit (C_{sat}[1]) equation assuming saturated conditions, DNAPL is possible if concentrations in soils exceed 370.6 mg/Kg.
The Csat equation, assuming saturated conditions is as follows:
$C\ sat= S/\rho_b\ (K_d\ \rho_b + \Theta_w)$

<u>Parameter = Definition (units)</u>
Csat = soil saturation concentration (mg/Kg)
S = solubility in water (mg/L-water)
ρ_b = dry soil bulk density (Kg/L) = assume 1.5

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[1] C_{sat} is the concentration in soil at which the solubility limits of the soil pore water, the vapor phase limits of the soil pore air, and the absorptive limits of the soil particles have been reached. C_{sat} is a theoretical threshold above which a free phase liquid hazardous substance may exist. The equation is described in the USEPA “Soil Screening Guidance” (USEPA, 1996).

K_d = soil-water partition coefficient (L/Kg) = K oc x foc
Koc /organic carbon partition coefficient (L/Kg)
Foc = fraction organic carbon in soil (g/g) = 0.006 (0.6%)
Θ_w = water-filled soil porosity (Lwater /Lsoil) = 0.43

The highest concentration of PCE in soil (9,100 ppm) was from a soil sample collected in 2000 from 0 to 4 ft bgs, or within the capillary fringe zone. This location was excavated in 2005 as part of the soil removal program. However, concentrations of PCE detected during the 2009 MACTEC sampling events indicate concentrations of PCE above the Csat concentration of 370 mg/Kg in soil samples from borings GS-2, GS-5, GS-6 and GS-7. This suggests that the presence of PCE as a DNAPL remains a possibility at the Site in soils surrounding the area excavated in 2005.

PCE and TCE were detected in groundwater in 2008 at concentrations as high as 220 mg/liter (L) and 170 mg/L, respectively. Based on the general "rule of thumb" that NAPL is present if dissolved concentrations in groundwater exceed 1% of the effective solubility of the compound (Plankow, 1996), these concentrations indicate the potential presence of these compounds as a NAPL in Site soil. (PCE was detected in groundwater at greater than it's solubility at MPE-10 in May 2008).

Soils below the Site exhibit high silt content and the majority of the remaining mass of PCE may have diffused into the soil silt matrix. Some of the mass may be also be located in sand lenses and "fractures" within the till. As stated above, the primary mechanisms of concentration reduction of VOCs are typically through volatilization into soil gas (for unsaturated soil or water table surface concentrations), and dispersion and diffusion in groundwater, as well as through biological degradation. If the mass of PCE is bound up within the soil matrix (i.e., adsorbed to the soils), then dispersion through advection will be less of a factor in concentration reduction.

To evaluate contaminant persistence in groundwater, contaminant concentrations in samples collected before and after the start up of the MPE system were reviewed. Table 4.3 shows the historical occurrence of PCE and TCE in groundwater for each sampling events at the Site. Contaminant concentrations for the two main COCs show that there is an overall decrease in their concentrations after the MPE treatment system was started, demonstrating the effectiveness of the remedial IRM. Of note is that some of these wells show a marked increase in concentrations followed by a decrease of concentrations after the MPE system was turned on. This may reflect an initial increase in liberated contamination due to the Site soil removal work. For the wells installed as part of the MPE system, there are some wells which show decreased concentrations over time, some wells which show increased concentrations over time, and some wells where concentrations have remained fairly consistent over time. This may be a result of the location of these wells relative to the source area locations.

Considering the results of the site data gathered from the current set of monitoring wells, the understanding of groundwater movement at the Site, and the historical contaminant concentration data, it appears that the remediation system is successfully extracting Site contaminants, as designed, from shallow groundwater. However, the decrease in contaminant recovery, the fairly consistent solvent concentrations at some source area MPE wells, and the 2009 sample results that indicate solvent contamination in soil below the depth of the existing MPE well screens indicate that the MPE system as designed will likely not remediate the Site to meet groundwater standards. In addition, the soil contamination appears to be migrating via groundwater flow downward through the till layer to the bedrock, thereby acting as a continued source of bedrock groundwater contamination.

Evaluation of Biological Degradation/Natural Attenuation of VOCs at the Site

Natural attenuation refers to the presence of microorganisms which are capable of degrading chlorinated solvents. Anaerobic conditions occur under reducing conditions and with little to no DO. Aerobic conditions occur under oxygenated conditions or with high levels of DO.

Analytical results for the Site did not indicate that a significant reduction of contamination in soil was occurring prior to the installation of the MPE system, suggesting that biodegradation of PCE and TCE in soils was not occurring at a significant rate.

MNA parameters for groundwater were collected in May 2009 from select monitoring wells. MNA analytical results are presented in Table 4.5. BIOCHLOR Natural Attenuation Screening forms are included in Appendix G.

BIOCHLOR uses the MNA data to evaluate the likelihood that biodegradation of the chlorinated solvents is occurring in the aquifer. Evaluation results are presented as a numerical value (presented on Table 4.5) which represents whether there is inadequate evidence, limited evidence, adequate evidence, or strong evidence that anaerobic biodegradation of chlorinated organics is occurring in the aquifer. Based on an evaluation of the groundwater data from the Site, there is adequate evidence that biodegradation is occurring under anaerobic conditions in the overburden (MW-1 and MW-1A) and the bedrock interface zone (MW-10K, MW-13K, and MW-14K), as well as in the bedrock zone (MW-3C). Within the source area itself (MW-3), there is inadequate to limited evidence that biodegradation is occurring.

It is likely that the high concentrations within the source area and the potential presence of chlorinated solvents as a DNAPL are limiting the ability for microorganisms to biologically degrade the chlorinated solvents in the source area. Outside this area, where groundwater concentrations have diminished due to mechanical means (i.e. dispersion and dilution), it is likely that biodegradation is occurring and aiding in the diminished concentrations of chlorinated solvents.

SVOCs

Processes that are likely to control the fate of SVOCs (primarily PAHs) at the Site include adsorption, biodegradation, and dissolution. The SVOCs detected in source materials at the Site are expected to be relatively immobile because of strong adsorption of these compounds to the organic carbon fraction of the soil and the typically low solubility in water. Overall, adsorption to soil and sediment is the expected fate of SVOCs at the Site, while some biodegradation may occur in favorable locations (primarily aerobically).

5.3 CONTAMINANT MIGRATION

Sources and Migration Pathways

Contaminants detected in site media at concentrations above associated regulatory SCG values include VOCs.

Historical documentation and previously collected data indicate chlorinated solvents typically used in the dry cleaning industry were released to the environment. In addition, fuel related VOCs were also reportedly released to the environment. Relatively high concentrations of chlorinated solvents in soil beneath the Site suggest one mechanism for release to be spills to the floor and to floor drains. Additionally, the existence of chlorinated solvents in soils outside the site building suggests releases in exterior locations as a result of handling. Concentrations of PCE detected in site soils are likely a continuing source of groundwater and indoor air contamination via diffusion, dissolution, or soil gas migration. The presence of petroleum contaminants are potentially related to past uses associated with the automobile repair shop formerly located at the Site prior to 1969.

VOCs can readily leach from soil with infiltration of precipitation, and migrate to groundwater. Once dissolved in groundwater, solvents can migrate with groundwater flow. Groundwater at and in the vicinity of the Site is located at approximately 9 feet bgs. Localized groundwater flow is interpreted to flow in a generally westerly direction with the regional flow also likely west toward the Genesee River. Groundwater data collected during the RI indicate that VOCs are present in wells throughout the Site. The highest concentrations of chlorinated VOCs are associated with sample locations in the south central portion of the Site in the vicinity of MW-3 (including the MPE wells 10, 15, 16, and 18). Although petroleum-related VOCs were detected in a historic sump sample, concentrations are much lower for these constituents, and the principal contaminants at the Site are PCE, TCE, and their degradation products (e.g., cis-1,2-DCE).

Although shallow groundwater can discharge to surface water, there are no nearby surface water bodies. Due to the distance to area surface waters and expected attenuation of solvent contamination, migration of groundwater contamination to surface water is not anticipated to be a complete migration pathway.

VOCs can partition from both soil and groundwater to soil vapor and then migrate through the soil column. Detections of VOCs in soil vapor samples collected at soil vapor sampling points indicate that VOCs are partitioning from soil (likely primary source) and groundwater to soil vapor. Soil vapor can be drawn into buildings through seams and cracks in foundations and floor slabs. Given the proximity of occupied buildings to locations where soil vapor samples indicated the presence of VOCs, soil vapor samples and indoor air samples were collected at on- and off-property locations during the URS RI field program. Air samples collected from beneath building floors and from within buildings located over the VOC-impacted groundwater indicate that, at some locations, the soil gas to indoor air migration pathway was complete. This location (338 Benton Street and 1018

Clinton Avenue; same building foundation) has been remediated with sub-slab depressurization systems. In addition, although high concentrations of PCE and TCE were detected in soil vapor below the adjacent commercial building (SV-4 collected from 1010 Clinton Avenue), the vacuum measurements recorded in the sub-slab indicate that the MPE system is creating a sufficient vacuum below this building to mitigate any potential vapor intrusion.

6.0 QUALITATIVE EXPOSURE ASSESSMENT

This section provides a QEA for the Site. The QEA is performed in accordance with NYSDEC Technical Guidance (NYSDEC, 2010), which indicates that the QEA should evaluate the populations of humans that may potentially be present at and in the vicinity of the Site, the mechanisms or exposure pathways by which those humans may be potentially exposed to contamination associated with the Site, and the significance of exposure that may occur through the potential exposure pathways. The exposure pathway elements include 1) a description of the contaminants source, 2) the contaminant release and transport mechanisms, 3) the potential human exposure points, 4) the routes of exposure, and 5) a characterization of the potential receptor population.

To complete the QEA, the following three steps were conducted:

1. Characterization of the exposure setting in terms of physical characteristics, current and future uses of the Site, and the populations that may be potentially exposed to site-related contamination under the current and future land uses;
2. Identification of potential exposure pathways and exposure points to which the populations may be exposed; and
3. Screening of potentially complete exposure pathways to identify the pathways and site-related constituents of greatest concern from a health risk perspective.

Exposure Pathway Evaluation and Qualitative Risk Analysis

The Site property is zoned as commercial and residential. The area surrounding the Site is mixed use commercial and residential. It is expected that the Site will remain as a commercial and/or residential property into the future.

The Source areas and contaminant release and transport mechanisms were discussed in Sections 4 and 5. Potentially complete exposure pathways were identified for direct contact with soil and groundwater, and inhalation of vapors that may migrate from soil or groundwater to air within buildings. The significance of exposure pathways associated with these media is evaluated in this section through comparison of analytical data to guideline concentrations published by the NYSDEC and/or background concentrations.

Soil

A comparison of analytical soil data to NYSDEC guideline values indicates that VOCs, principally PCE and TCE , as well as their breakdown product cis-1,2-DCE, and the fuel related compounds xylene and ethylbenzene, were detected in one or more soil samples on the facility property at concentrations greater than the SCOs for unrestricted use. PCE and TCE are the only compounds that exceed residential use SCOs. Based on the IRM removal of the top 1-foot of soil for the installation of the MPE system vapor barrier (see Figure 1.2), concentrations in excess of SCOs were generally detected in subsurface soil. In addition, the area with noted contamination as presented by Figure 4.1 is currently primarily surrounded by a fence. Construction or utility workers would potentially be exposed to subsurface soil if excavation activities were to occur, and under those circumstances exposures would be of a short duration (e.g., typically one week to one month). The principal exposure pathways to the VOCs detected in soil would be via incidental soil ingestion, dermal contact, and inhalation of vapor.

Although PCBs were detected at concentrations above unrestricted use SCOs in subsurface soils below the South Clinton Avenue parking lot, the concentrations were below SCOs for residential use and are therefore not deemed a human health risk.

Groundwater

There are no direct exposures to groundwater associated with the Site under the current or foreseeable land uses. However, a comparison of groundwater analytical data to NYS drinking water standards provides information concerning constituents that would be of concern from a health risk perspective if the groundwater was used as potable water under future conditions. A review of the analytical data indicates that chlorinated solvents (e.g., PCE and its breakdown products, as well as 1,1,1-TCA) were detected at concentrations that exceed drinking water standards. Detections in excess of drinking water standards were associated primarily with samples collected from monitoring wells located on the site property, with the exception of some detections in groundwater from monitoring wells to the north of the site property. Based on current groundwater data, it is not anticipated that overburden groundwater contamination above SCGs extends greater than 50 feet beyond the south, east and west site property boundaries. General water contamination likely extends less than an estimated 100 feet beyond the northern property boundary. It is not known if bedrock groundwater contamination is present greater than 50 feet beyond the western site property boundary (the interpreted bedrock groundwater flow direction is to the west).

Construction or utility workers could potentially be exposed to groundwater if excavation activities were to occur to depths below the water table. Under those circumstances exposures would be of a short duration (e.g., typically one week to one month). The principal exposure pathways to the VOCs detected in groundwater during excavation work would be via incidental ingestion, dermal contact, and inhalation of vapor.

Groundwater that has been affected by releases from the Site is not being used as a source of drinking water due to the availability of public water supply and there are no direct contact exposures to constituents in groundwater. Although constituent concentrations in groundwater exceed drinking water standards, the drinking water/direct groundwater contact pathway is not an exposure pathway of concern from a health risk perspective under the existing and foreseeable land use conditions.

Vapor

A complete vapor intrusion pathway requires the presence of a VOC in soil vapor and in air within an overlying enclosed building. Evaluations of vapor intrusion pathways are often confounded by VOCs in indoor air which are present in part or all due to anthropogenic (background) sources and not to migration of soil gas into enclosed space. Therefore, the evaluation of vapor intrusion pathways was performed by comparing sub-slab soil vapor sampling data, indoor air sampling data from basements, air sampling data from first floors, and background/air guideline values as follows, based on the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH, 2006).

Based on detected concentrations exceeding the values recommended for mitigation, one sub-slab depressurization system was installed at one off-site building (two addresses) by URS. Concentrations detected at other residential locations did not require further action based on NYSDOH guidance. The second commercial property with the potential for vapor intrusion (1010

Clinton Avenue) was noted to have a negative pressure reading in the sub-slab (i.e. a vacuum), as a result of the operation of the MPE system.

In summary, it appears that VOCs that are related to releases from the Site (i.e., PCE and TCE) have the potential to result in vapor intrusion into adjacent off-site buildings (the adjacent commercial and mixed use buildings to the southwest of the Site (338 Benton Street and 1018 Clinton Avenue; same building foundation) and northwest of the MPE system (1010 Clinton Avenue). Because the mixed use building to the southwest of the Site has been mitigated and the MPE system is depressurizing the slab of the commercial building to the northwest of the Site, there are currently no expected exposures resulting from the vapor intrusion pathway at these locations.

7.0 SUMMARY AND CONCLUSIONS

This section presents a summary of the RI and resulting conclusions.

7.1 SUMMARY

The Site is located at 1012 South Clinton Avenue in the City of Rochester in Monroe County, New York (Figures 1.1 and 2.1). The property is located in a mixed commercial/residential area just inside the Rochester City limits. The Site occupies 0.25 acres on two parcels situated perpendicular to one another, and is currently surfaced by a combination of pavement, a concrete former building slab, and soil. The property is currently vacant and abuts several residential and commercial properties. The property and buildings were reportedly used as an automobile repair shop from around 1950 through around 1969. From 1971 to 1993, the Site was occupied by Dinaburg Distributing, Inc., which operated a dry cleaning supply company business and sold chemical solvents to various dry cleaners in the area. Dinaburg stored TCE and PCE in ASTs which were located in the northeast area of the Site building. The property has been vacant since 1995 and currently consists of a parking lot; the Site building and an adjacent house at 350 Benton Street were demolished in 2004 by the property owner to allow access for remediation of the Site.

The primary contaminant source areas reportedly consist of leaks and spills from the historic storage tanks on the property, and spills to the ground surface in the vicinity of the Benton Street Driveway. The likely secondary source area (contaminated soils) is represented by an area within which PCE in soil exceeds its SCO for unrestricted use of 1.3 mg/Kg, and TCE exceeds its SCO for unrestricted use of 0.47 mg/Kg. This area was estimated by URS in 2005 to extend approximately 40 feet by 80 feet and included the former tank storage room, the former new building extension, Benton Street driveway, and portions of the adjacent residential driveways at 338 and 350 Benton Street. Based on more recent soil and groundwater sample results, this area is likely larger, measuring approximately 6,300 square feet (Appendix F).

A hot spot removal IRM conducted in 2005 of the most contaminated soils remediated an area measuring approximately 32 feet square by 8 feet deep. This removal area was previously estimated by URS to contain approximately 1,070 lbs of VOCs including soils with VOCs generally above 100 mg/Kg. Soils outside of this removal area contained PCE contamination with concentrations noted as high as 1,500 mg/Kg detected in GP-19 (from 0-2 feet bgs), (see URS Figure 4-1 in Appendix A). This contamination was evaluated by URS to be confined primarily to the upper stratified overburden and not extend into the till layer which was noted to be present at approximately 13 feet bgs. To remediate the remaining VOCs present in soil at concentrations above their SCOs for unrestricted use, URS installed an MPE system as an IRM. The MPE system consists of 18 soil and groundwater extraction wells (i.e. MPE wells) with screens set to between 10 and 13.5 feet bgs, as well as three bedrock interface groundwater extraction wells with screens set to between 20.7 and 23 feet bgs. This system began operating in February 2006. URS calculated that approximately 382 lbs of VOC contamination was removed via the MPE system between February 2006 and May 2010. Although continuing to operate, the rate of mass contaminant removal by the MPE system has reportedly decreased over time.

Soils data collected in 2009 by MACTEC indicate that VOCs above the SCO for unrestricted use continue to be present across the Site in soil below the water table (groundwater present at approximately eight feet bgs). Soil samples collected in 2009 outside of the 2005 removal area contained PCE and TCE contamination with concentrations noted as high as 1,700 mg/kg for PCE (detected in GS-2 at 11 feet bgs), and 1,400 mg/kg for TCE (detected in soil boring GS-7 at 16 feet bgs) (see Table 4.1). Most of the soil samples collected in 2009 contained concentrations of PCE and TCE above their respective SCO for the protection of groundwater, and many of the exceedances of SCOs were noted to be within the till layer. Soil contamination was also noted to be present in the till to the top of assumed bedrock at boring GS-13 (this location is off the Site property to the north). Based on the 2009 soil sample results, as well as an estimated area where PCE and TCE exceed their SCO for unrestricted use, the remaining combined mass of TCE and PCE contamination at the Site is estimated to be approximately 844 lbs.

This soil contamination continues to be a source of groundwater contamination. Groundwater at the Site is interpreted to flow primarily in a west to southwesterly direction, although the operation of the MPE system appears to be controlling shallow groundwater from flowing off the property. The VOC detected at the highest concentration in groundwater was PCE, detected in a sample collected in May 2008 from MPE-16 at a concentration of 220,000 µg/L, compared to a Class GA groundwater standard of 5 µg/L. This concentration is greater than the solubility of PCE (150,000 µg/L), indicating that PCE product as a NAPL is likely present in the vicinity of this boring. TCE was detected at the highest concentration of 170,000 µg/L at MPE-10, compared to the Class GA groundwater standard for TCE of 5 µg/L. MPE-10 is located just south of the soil source hot spot removal. MPE-16 is located between the soil source hot spot removal and Benton Street, and is between the groundwater extraction wells GWE-2 and GWE-3. Groundwater sampling points outside the MPE system indicate primarily decreasing concentrations of contaminants over time, with total PCE and TCE concentrations in GPW-1, GPW-2, MW-1, MW-1A, MW-3, and MW-3C (the most contaminated wells outside the source areas) decreasing by 88% and 95%, respectively, since the start up of the MPE system.

Although groundwater concentrations of PCE and TCE detected in the MPE wells had an initial drop of just over 70% in the first four months of the system operation, concentrations do not appear to indicate any decreasing trend from June 2006 to May 2010. In addition, although the highest detected groundwater concentrations have occurred in samples from the overburden, VOCs, primarily PCE and TCE are also present in the groundwater in the overburden/bedrock interface zone, as well as in the deeper bedrock zone at concentrations above SCGs. This indicates continued migration of the contamination in groundwater from the shallow overburden source through the till layer.

Low concentrations of Site related VOCs in sewer samples also indicates infiltration of VOCs from shallow groundwater to the municipal sewer system. Based on the sewer system historically being encased in concrete, and the observed downward gradients in the shallow to deep overburden aquifer, the sewer line is not interpreted to be a significant contaminant migration pathway.

Analytical results from soil samples collected prior to the installation of the MPE system did not indicate evidence of significant natural attenuation or a reduction of contamination with time, suggesting that biodegradation of PCE and TCE was not occurring at a significant rate. Compared to concentrations of PCE and TCE, significant concentrations of PCE and TCE daughter products (including cis-1,2-DCE and vinyl chloride) were not detected in soil or groundwater samples collected in 2008 or 2009. An evaluation of MNA parameters collected by MACTEC in 2009 indicates adequate evidence that anaerobic biodegradation is occurring in groundwater outside the source areas. However, an evaluation of MNA parameters provides only limited evidence that natural attenuation of contaminants in the vicinity of the source is occurring. Absence of biodegradation in the source area is likely due to the high concentrations of chlorinated solvents and the potential presence of the solvents as a DNAPL.

Sampling in the vicinity of the Site indicates that VOC contamination has partitioned from soil and groundwater to soil vapor. Results of 2004 soil vapor sampling in three buildings near the Site indicated that PCE was present in the soil vapor and was migrating into the buildings at two locations (same building foundation). Based on these results, a sub-slab depressurization system was installed at the two buildings (one system addresses both locations because of the shared foundation). In addition, although high concentrations of PCE and TCE were detected in a soil vapor sample collected in 2009 from below the commercial property at 1010 Clinton Avenue, the existing MPE system is currently depressurizing the buildings sub-slab. Site related contaminants have not been detected in soil vapor and indoor air at other buildings surrounding the Site at concentrations that warrant further action.

In addition to VOCs, PAHs were detected in two soil samples at concentrations above SCOs; contaminated soil was removed at one of the sample locations during the soil removal action; the second sample location is north of the Site property.

7.2 CONCLUSIONS

Conclusions, including data limitations, recommendations for future work, and recommended RAOs, are discussed in the following subsections.

7.2.1 Conclusions and Data Limitations

The Dinaburg site has been inactive for approximately 16 years. High concentrations of VOC contaminants (PCE detected at 310 mg/Kg at the 08GP-19 location in 2008 and at 1,700 mg/Kg at the GP-2 location in 2009) continue to be present in site soils near the historic source area, as well as generally in soil across the Site. PCE was detected in groundwater at a concentration of 220,000 µg/L in MPE-16, located approximately 60 feet south of the reported historic source area at the Site. PCE and TCE were also detected in sub-slab soil vapor samples collected from below buildings adjacent to the Site. Concentrations of PCE and TCE detected in Site media (soil and groundwater) in 2008 and 2009 indicate possible continued presence of DNAPL at the Site.

Site soil contamination is likely to be a continuing source of groundwater contamination. Groundwater in the shallow and deep overburden aquifer are interpreted to flow in a primarily west to southwesterly direction from the source area. Groundwater contamination has migrated from shallow soil to the overburden/interface bedrock zone, and based on concentrations detected in groundwater samples from MW-13K appears to be migrating in this zone off-site to the west at concentrations above SCGs.

Based on groundwater levels collected during 2009 MPE system evaluation, active dewatering of the source area is ongoing, limiting the offsite migration of contaminated shallow groundwater. In addition, the vapor extraction system appeared to pull air from a five to fifteen feet radius around individual MPE wells, depending on extraction well location and the surrounding soil type. Although this vacuum appeared sufficient to pull vapors from portions of the source area, other areas within the MPE system do not appear to be influenced by the system.

Although the system reportedly removed approximately 382 lbs of contamination from February 2006 to May 2010, removal rates were observed to be decreasing with time. The system as currently configured may not be able to remediate the VOC contamination above the till layer due to the potential insufficient vacuum and dewatering noted in some areas of the Site. In addition, large concentrations of VOCs are present in the till layer below the screened zone of the MPE wells.

Based on this evaluation, the MPE system is not expected to be capable of removing the estimated remaining mass of PCE and TCE contamination (approximately 844 lbs) at the Site, and thus incapable of remediating the Site to meet SCOs for the protection of groundwater.

Data Limitations/Data Gaps

<u>Soil.</u> The extent of VOC contamination in soil above SCOs for the protection of groundwater has not been characterized. Although the shallow overburden above the till is fairly well delineated, the extent of contamination within the till to bedrock has not been characterized. In addition, concentrations of PCE in a groundwater sample from MPE-16 indicate the potential presence of PCE as a DNAPL in this vicinity of the Site.

Groundwater. Overburden groundwater contamination has been sufficiently characterized, but the extent of groundwater contamination in the overburden/interface zone and the deeper bedrock zone has not. Although overburden groundwater samples across South Clinton Avenue to the west of the Site indicate that overburden groundwater in this area has not been impacted by contamination from the Site, the overburden/bedrock interface groundwater zone and bedrock groundwater zone have not been evaluated west of the Site. Based on concentrations of VOCs detected in a groundwater sample from MW-13K, contamination from the site may be migrating off site to the west in these deeper zones. Although apparent groundwater flow direction is to the west, concentrations of VOCs detected in the groundwater sample from MW-14K exceeded SCGs, and the extent of groundwater contamination in these deeper zones has also not been defined east of the Site.

8.0 DEVELOPMENT OF REMEDIAL ACTION GOALS AND OBJECTIVES, AND GENERAL RESPONSE ACTIONS FOR SOIL CONTAMINATION REQUIRING REMEDIATION

The FS portion of the RI/FS commences with this section. The FS addresses soil, groundwater and soil vapor contamination identified and characterized in previous sections of this Report. This section identifies:

- RAOs for contaminated site soil and groundwater;
- general response actions to address the RAOs; and
- extent of soil and groundwater contamination requiring remedial action.

8.1 IDENTIFICATION OF REMEDIAL ACTION GOALS AND OBJECTIVES

RAOs form the basis for identifying remedial technologies and developing remedial alternatives. RAOs are medium-specific or operable unit-specific goals established to protect public health and the environment; RAOs are developed based upon contaminant-specific SCGs (USEPA, 1988; NYSDEC, 2002).

Site-specific COCs were determined by comparison of contaminant concentrations to chemical-specific SCGs, which include 6 NYCRR Parts 700-706 Water Quality Standards (NYSDEC, 1998) and 6 NYCRR Part 375 Remedial Program Soil Cleanup Objectives (NYS, 2006).

The RI results indicate that concentrations of VOCs, principally PCE, TCE, and breakdown product cis-1,2-DCE, and the fuel related compounds xylene and ethylbenzene, were detected in one or more soil samples at or in the vicinity of the Site at concentrations greater than SCOs. PCE and associated breakdown products, as well as 1,1,1-TCA, were detected in groundwater at the Site at concentrations above drinking water standards. That nature and extent of site-related soil and groundwater contaminants are discussed in Subsections 4.2 and 4.3, respectively, and presented in Figures 4.1, 4.2 and 4.3. Soil vapor at and in the vicinity of the Site is also impacted by PCE and TCE. The soil vapor to indoor air exposure pathway of off-site buildings is currently being addressed through implementation of sub-slab depressurization IRMs.

The following RAOs have been developed in accordance with the remedy selection process set forth in 6 NYCRR Part 375 (NYS, 2006) and DER-10 (NYSDEC, 2010). The goal for remedial action is to restore, to the extent practicable, the Site to pre-disposal/pre-release conditions. At a minimum, the remedy shall eliminate or mitigate significant threats to public health and the environment presented by site contaminants through the proper application of scientific and engineering principles (NYSDEC, 2002).

8.1.1 Remedial Action Objectives for Soil

The QEA presented in Section 6.0 concluded that under current and projected future site land use scenarios, potentially complete exposure pathways include direct contact with VOC-contaminated sub-surface soil (for construction or utility workers), and inhalation of vapors that may migrate from soil to air within commercial or residential buildings. Further, the primary COCs detected in soil at the Site, which are also generally detected in Site groundwater, exceed the Protection of Groundwater SCOs. Therefore, the following RAOs are identified for site soil:

- prevent ingestion/direct contact with contaminated soil
- prevent migration of contaminants that would result in groundwater contamination (i.e. reduce soil concentrations to below Protection of Groundwater SCOs)
- prevent inhalation of, or exposure from, contaminants volatilizing from contaminants in soil.

8.1.2 Remedial Action Objectives for Groundwater

The QEA concluded that under existing and foreseeable land use conditions groundwater is not a complete human health exposure pathway since groundwater is not used as a public drinking supply. Therefore, the following RAOs are identified for site groundwater:

- prevent future use of site groundwater with contaminant concentrations in excess of drinking water standards
- restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable
- prevent the discharge of contaminants to surface water
- remove the source of groundwater contamination

8.1.3 Remedial Action Objectives for Soil Vapor

It is likely that the chosen remedial alternatives for soil and groundwater at the site will decrease the potential for soil vapor intrusion. The following RAOs are identified for soil vapor:

- mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at or near the site.

8.2 IDENTIFICATION OF GENERAL RESPONSE ACTIONS

General response actions describe those actions that will satisfy the RAOs (USEPA, 1988). General response actions may include treatment, containment, excavation, disposal, institutional actions, or a combination of these. Like RAOs, general response actions are medium-specific. The general response actions presented in the following subsections include those applicable to subsurface soil, groundwater and soil vapor which has been identified as potential threat to public health and the environment at the Site.

Site-specific RAOs were developed to address the contamination requiring remedial action for subsurface soil.

8.2.1 General Response Actions for Soil

The following general response actions would address the RAOs identified for soil:

- no further action
- access restrictions
- removal / off-site disposal
- in-situ treatment
- ex-situ treatment
- containment

These general response actions are appropriate for site-specific soil contamination requiring remediation.

8.2.2 General Response Actions for Groundwater

The following general response actions would address the RAOs identified for soil:

- no further action
- access restrictions and long term monitoring
- removal
- in-situ treatment
- ex-situ treatment
- containment

These general response actions are appropriate for site-specific groundwater contamination requiring remediation.

8.2.3 General Response Actions for Soil Vapor

The following general response actions would address the RAOs identified for soil vapor:

- no further action
- access restrictions
- engineering controls

These general response actions are appropriate for site-specific soil vapor contamination requiring remediation.

8.3 EXTENT OF SOIL CONTAMINATION REQUIRING REMEDIAL ACTION

This subsection identifies the extent of contaminated soil to which the RAOs and general response actions identified above, and the remedial alternatives to be developed in Section 10.0, will apply. Sample locations within the central to eastern portion of the Site as shown on URS Figure 4-1 in Appendix A exceed Unrestricted Use SCOs for VOCs in soil. Further, using PCE as an indicator of overall VOC contamination, isoconcentration lines as shown on Figure 4.1 indicate the approximate horizontal extents of contamination out to 10 mg/kg for PCE; RI activities to date have not defined the horizontal extents of PCE and thus overall extent of VOC contamination above Unrestricted Use SCOs. The vertical extent of soil contamination is greatest in the zone below the water table which is generally eight feet bgs. Analytical results of subsurface soil samples collected during the RI are compared to both Unrestricted Use SCOs and the Protection of Groundwater SCO in Table 8.1. Remedial alternatives will be developed in Section 10.0 with consideration for the horizontal and vertical distribution of contaminants.

8.4 EXTENT OF GROUNDWATER CONTAMINATION REQUIRING REMEDIAL ACTION

This subsection identifies the extent of contaminated groundwater to which the RAOs and general response actions identified above, and the remedial alternatives to be developed in Section 10.0, will apply. Sample locations, corresponding exceedances of Ambient Water Quality Standard and Guidance Values (AWQS) for the primary VOC contaminants PCE, TCE, cis-1,2-DCE, and Vinyl Chloride (VC), and total chlorinated solvent isoconcentration lines shown on Figure 4.3 indicate the horizontal extents of chlorinated solvent contamination exceeding AWQS both on and off-site. The vertical extent of groundwater contamination extends throughout the saturated zone to bedrock. Analytical results of overburden and bedrock groundwater samples collected during the RI are compared to AWQS in Table 8.2. Remedial alternatives will be developed in Section 10.0 with consideration for the horizontal and vertical distribution of the contaminants.

8.5 EXTENT OF SOIL VAPOR CONTAMINATION REQUIRING REMEDIAL ACTION

This subsection identifies the extent of contaminated soil vapor to which the RAOs and general response actions identified above, and the remedial alternatives to be developed in Section 10.0, will apply. As described in Subsection 4.5, historic field investigations and MACTEC's own field investigations during the RI indicate the contamination of soil vapor by chlorinated solvents both on-site and at proximate buildings off-site. The MPE system operating on-site and the sub-slab depressurization systems installed at 338 Benton Street and 1018 Clinton Street currently address the public health risk of soil vapor intrusion. Continued evaluation and monitoring of potential vapor intrusion pathways will be assessed in conjunction with remedial alternatives for the treatment of contaminated soil and groundwater; these alternatives will be developed in Section 10.0 with consideration for the present and potential future extents of soil vapor contamination.

9.0 IDENTIFICATION AND SCREENING OF TECHNOLOGIES

This section describes the identification and screening of potential remedial technologies. Technologies are identified for the purpose of attaining the RAOs established in Subsection 8.1. Identified technologies correspond to the categories of general response actions described in Subsection 8.2.

Following identification, candidate technologies are screened based on applicability to Site- and contaminant-limiting characteristics. The purpose of the screening is to produce an inventory of suitable technologies that can be assembled into remedial alternatives capable of mitigating actual or potential risks at the Site. Potential technologies representing a range of general response actions (i.e., no action, limited action, removal, treatment, and disposal) are considered. The result of technology screening is a list of potential remedial technologies that may be developed into candidate remedial alternatives.

9.1 TECHNOLOGY IDENTIFICATION

Remedial technologies and specific process options applicable to hazardous waste sites are identified in USEPA's Guidance for Conducting RI/FS (USEPA, 1988). This guidance was used to generate the list of applicable remedial technologies and associated process options presented in Table 9.1 for each general response action developed for soil, groundwater and soil vapor in Subsection 8.2.

9.2 TECHNOLOGY SCREENING

The technology screening process reduces the number of potentially applicable technologies and process options by evaluating factors that may influence process-option effectiveness and implementability. This overall screening is consistent with guidance for conducting an FS under Comprehensive Environmental Response, Compensation, and Liability Act (USEPA, 1988). Effectiveness and implementability are incorporated into two screening criteria: waste- and site-limiting characteristics. Waste-limiting characteristics consider the suitability of a technology based on contaminant types, individual compound properties (e.g., volatility, solubility, specific gravity, adsorption potential, and biodegradability), and interactions that may occur between mixtures of compounds. Site-limiting characteristics consider the effect of site-specific physical features on the implementability of a technology, such as site topography and geology, the location of buildings and underground utilities, available space, and proximity to sensitive operations. Technology screening serves the two-fold purpose of screening out technologies whose applicability is limited by site-specific waste or site considerations while retaining as many potentially applicable technologies as possible.

Table 9.1 presents the technology-screening process. Technologies and process options judged ineffective or prohibitively difficult to implement were eliminated from further consideration. The technologies retained following screening (see Table 9.1) represent an inventory of technologies considered most suitable for remediation of soil at the Site and may be used alone or integrated with other technologies to develop remedial alternatives. Pilot-scale treatability studies may be required prior to final technology selection to confirm the effectiveness of a given technology.

10.0 DEVELOPMENT AND PRELIMINARY SCREENING OF ALTERNATIVES

The retained technologies identified in Table 9.1 are considered technically feasible and applicable to the waste types and physical conditions at the Site. These medium-specific technologies were assembled into potential site-specific remedial alternatives capable of achieving the RAOs for the contaminated soil, groundwater and soil vapor requiring remediation.

10.1 DEVELOPMENT OF REMEDIAL ALTERNATIVES

The retained remedial technologies for soil and groundwater have been combined into the following remedial alternatives:

- Alternative 1: No Action
- Alternative 2: No Further Action: Continued Multi-phase Extraction
- Alternative 3: Restoration to Pre-Disposal or Unrestricted Conditions
- Alternative 4: Enhanced Multi-phase Extraction
- Alternative 5: In-Situ Source Treatment - Chemical Oxidation with Soil Mixing
- Alternative 6: Discrete Soil Source Excavation and Off-Site Disposal and In-Situ Enhanced Biodegradation with Groundwater Monitoring
- Alternative 7: In-Situ Electrical Resistance Heating

10.1.1 Alternative 1: No Action

Alternative 1 was developed as a baseline against which to compare other remedial alternatives for soil, groundwater or soil vapor. This alternative involves no actions to protect human health or the environment and lacks remedial measures that would reduce soil, groundwater or soil vapor contamination at the Site.

10.1.2 Alternative 2: No Further Action: Continued Multi-phase Extraction

Alternative 2 consists of the following system components:

- institutional controls
- continued operation, maintenance, and monitoring of the existing MPE system

Institutional controls would be implemented to restrict future use of the Site for residential purposes. Institutional controls would likely include implementation of land-use restrictions limiting subsurface activity and would prohibit changes in zoning of the Site (e.g., change from commercial to residential use). Land-use restrictions would be implemented through legal instruments such as deeds and/or water well permitting processes.

As noted in Subsection 1.3.2, an initial RI field investigation and report was completed by URS in 2001 and the current MPE was designed and implemented as an IRM. Construction of the IRM began in the fall of 2005 and was completed in 2006, with operation of the MPE system beginning in April 2006 and continuing to date. The existing MPE system consists of four main components housed within an 8 foot wide by 40 foot long enclosed treatment system building (refer to Drawings 2B, 3A, 3B, 3C, 4 and 5 in Appendix A for depiction of MPE system layout and details).

This enclosure houses a vacuum extraction system, off-gas treatment system, groundwater extraction system, and groundwater treatment system. The vacuum extraction system consists of an air/water separator, associated liquid pump, and two regenerative SVE blowers installed in parallel, which receives influent from eighteen MPE wells. The off-gas treatment system, which receives vapor from the vacuum extraction and groundwater extraction systems, previously consisted of two 1,000-gallon vapor phase carbon filters installed in series. Usage of vapor phase carbon for air treatment was discontinued on March 21, 2008 as authorized by the NYSDEC, and the height of the treatment system exhaust stack was increased to allow direct discharge of untreated vapor to the atmosphere (URS, 2008). The groundwater extraction system consists of an air supply compressor, which operates pneumatic pumps present in the eighteen MPE wells and in three groundwater extraction wells. The groundwater treatment system consists of equalization tank, chemical feed system (to prevent mineral fouling), and a low-profile air stripper. Both treatment systems are operated by a programmable logic control based control system with alarm features.

The eighteen four-inch diameter MPE wells (MPE-1 through MPE-18) were installed to the top of till layer at around 10 to 13 feet bgs, with screened interval lengths of between 4 and 10 feet bgs. Each MPE well includes a controller-less pneumatic pump, air supply tubing, SVE piping, and liquid discharge piping.

The three four-inch diameter groundwater extraction wells (GWE-1 through GWE-3) were installed to the top of bedrock (located approximately 20 to 23 feet bgs). Each groundwater extraction well includes a three-foot screened interval, controller-less pneumatic pump, air supply tubing, and liquid discharge piping. The air supply, SVE, and liquid piping for the MPE and groundwater extraction wells were installed within subsurface pipe trenches.

Treated effluent from the off-gas treatment system is discharged to the atmosphere. Treated effluent from the groundwater treatment system is discharged to the MCPW combined sewer system located at Benton Street.

Operation of the existing MPE system includes monthly site visits during which flow readings and water levels from the eighteen MPE and three groundwater extraction wells are collected, and periodic or as-needed maintenance.

Quarterly long-term monitoring activities include collection of groundwater samples from a total of 36 groundwater monitoring, groundwater extraction, and MPE wells, and collection of vapor samples from 20 locations at the Site for VOC off-site laboratory analysis. Quarterly reports are prepared describing the results of the quarterly long-term monitoring and the monthly site visits and monitoring.

10.1.3 Alternative 3: Restoration to Pre-Disposal Conditions

Alternative 3 includes:

- demolition of the building at 1006 South Clinton Avenue
- shoring of the buildings at 1018 South Clinton Avenue and 354 Benton Street
- excavation and off-site disposal of on-site soils including all soil to bedrock within the extents of the property east of the historic former site building's western extents, as well as limited extents at 1006 S. Clinton Avenue and 491-493 Caroline Street
- repaving of the parking lot next to the building at 1018 South Clinton Avenue
- treating overburden and bedrock groundwater contamination in-situ through chemical oxidation.

Under this alternative on-site soils would first be excavated and then transported off-site for treatment and/or disposal.

Imported clean fill would be used to establish the designed finish grades.

Prior to backfilling, chemical oxidation reagent would be placed and mixed with backfill material below the water table. Approximately 72,916 pounds of chemical oxidant (Carus Remediation Technologies' RemOx® L ISCO Reagent is used for estimating purposes) would be mixed with backfill material using the excavator bucket.

10.1.4 Alternative 4: Enhanced Multi-phase Extraction

Alternative 4 consists of:

- enhancement of the existing MPE system
- institutional controls
- operation, maintenance, and monitoring of the enhanced MPE system

Alternative 4 includes installation of up to 20 additional multi-phase extraction wells to target subsurface contamination currently untreated by the current extraction point layout. The expanded network of MPE wells will increase recovery rates and accelerate the treatment of remaining soil contamination.

The September 3, 2008, URS Soil Sampling Assessment Report (URS, 2001) provides a summary of the most recent soil contaminant concentrations. Results of the soil contaminant data, along within an estimated 5 to 7 foot per-well radius of influence (URS, 2001), was used as the basis for the layout of the proposed extraction well points. The proposed enhancement includes the installation of up to 20 additional extraction points that would be connected to the existing MPE system.

Through reducing or eliminating operation of existing MPE points which contribute the least contaminant recovery, it is assumed that the treatment plant capacity will not have to be expanded.
Operation, monitoring, and maintenance of the enhanced MPE system would be similar to that described for Alternative 2.

Institutional controls would be implemented as described for Alternative 2.

The additional MPE points will be added to the existing network of locations that are sampled on a quarterly basis. This analytical data will provide the basis to to evaluate the effectiveness of the enhanced MPE system. Long-term monitoring and reporting would be similar to that described for Alternative 2.

10.1.5 Alternative 5: In-Situ Source Treatment - Chemical Oxidation with Soil Mixing

Alternative 5 consists of:

- in-situ chemical oxidation with soil mixing of source area soils
- institutional controls
- long term groundwater monitoring

Alternative 5 includes in-situ soil mixing and treatment of the on-site soil source area. Soil mixing is a technology which developed by the construction industry allowing for in-situ stabilization/solidification of soils, including the subsurface placement of concrete, without excavation. This technology can be combined with the injection of amendments or reagents to provide treatment and/or stabilization of subsurface contamination. Implementation of this alternative would include mechanical mixing of the on-site source area soils with chemical reagents and/or amendments designed to aid in destruction of the VOC contamination. The targeted source area would be limited approximately to the area within the 10 mg/kg PCE isoconcentration lines as shown in Figure 4.1, due to the reduced cost efficiency typically realized by this technology in areas of lower contaminant concentrations.

Institutional controls would be implemented as described for Alternative 2.

Subsequent to completing site remediation activities, groundwater monitoring would occur on a quarterly basis for the first two years after completion, on a semiannual basis for the next two years, and then on an annual basis.

10.1.6 Alternative 6: Discrete Soil Source Excavation and Off-Site Disposal and In-Situ Enhanced Biodegradation with Groundwater Monitoring

Alternative 6 consists of:

- shoring of the building at 1006 South Clinton Avenue
- excavation of contaminated source area soils
- in-situ enhanced biodegradation
- institutional controls
- long term groundwater monitoring

Alternative 6 includes excavation and off-site disposal of the on-site soil source area, which is a continuing source of on-site and off-site groundwater contamination. Under this alternative, on-site source area soils located both above and below the water table would be excavated and transported off-site for treatment and/or disposal. The source area targeted for excavation would be limited approximately to the areas within the 100 mg/kg PCE isoconcentration lines as shown in Figure 4.1. Based upon results of soil sampling conducted during the RI, the majority of on-site vadose zone soil to a depth of 8 feet is anticipated to be uncontaminated by site-specific COCs, and would be stockpiled separately for potential use as excavation backfill. Approximately 878 cubic yards of contaminated soil would be removed. Clean fill would then be brought in to replace the excavated soil transported off-site for treatment/disposal and to establish the designed finish grades.

Subsequent to source area removal by excavation, enhanced biodegradation amendments would be injected within the remaining site boundary to accelerate degradation of VOCs in site soil and groundwater. Groundwater monitoring wells would be installed to allow for groundwater sampling to monitor the effects of biodegradation; four wells hydraulically downgradient from the site would be installed to track contaminant migration further off site. Additional biodegradation amendment injections may be warranted pending groundwater monitoring analytical results. Groundwater monitoring would continue until groundwater sampling demonstrated site cleanup in accordance with SCGs.

Institutional controls would be implemented as described for Alternative 2.

Subsequent to completing site remediation activities, groundwater monitoring would occur on a quarterly basis for the first two years after completion, on a semiannual basis for the next two years, and then on an annual basis.

10.1.7 Alternative 7: In-Situ Electrical Resistance Heating

Alternative 7 includes:

- implementation of in-situ electrical resistance heating to treat on-site VOC soil and groundwater contamination
- discontinuation of the existing MPE system.

Electrical resistance heating uses an electrical current to heat less permeable soils such as clays and fine-grained sediments so that water and contaminants trapped in these relatively conductive regions are vaporized and readied for vacuum extraction. Electrodes are placed directly into the less permeable soil matrix and activated so that electrical current passes through the soil, creating an electrical resistance which then heats the soil. Implementation of this alternative would include electrical resistance heating of on-site soil and groundwater to volatize VOC contamination, and vapor extraction to capture the resulting VOC emissions. The targeted source area would approximately be the 10 mg/kg PCE isoconcentration line as shown in Figure 4.1.

Subsequent to completing site remediation activities, groundwater monitoring would occur on a quarterly basis for the first two years after completion, on a semiannual basis for the next two years, and then on an annual basis.

10.2 PRELIMINARY SCREENING OF ALTERNATIVES

This Subsection presents a preliminary screening of the developed remedial alternatives for soil. Consistent with DER-10, the developed medium-specific remedial alternatives are screened on the basis of whether they are technically implementable (Implementability) for the site and whether they can meet the RAOs (Effectiveness). Additionally, based upon available information, the relative cost of each remedial alternative is also evaluated. Those remedial alternatives which are not technically implementable, would not achieve RAOs, or would incur costs significantly higher than other remedial alternatives without providing greater effectiveness or implementability are not evaluated further in the FS.

Screening of remedial alternatives is presented in Table 10.1. The No Action alternative for soil is not evaluated according to the screening criteria; it passes through screening to be evaluated during the detailed analysis as a baseline for other retained soil remediation alternatives.

Alternative 2: No Further Action: Continued Multi-phase Extraction would be effective in the long-term at reducing the concentration of potential VOCs near existing extraction points. However, the MPE system contaminant recovery rates have decreased from a high of approximately 1.29 lbs per day at system startup to approximately 0.09 lbs per day currently, and results of on-going long-term monitoring and recent investigations indicate that portions of the source area are not being effectively targeted by the current system configuration. Alternative 2 does not effectively target these residual source areas and therefore has limited long-tem site-wide effectiveness for treating the sum of the source area. This alternative could be readily implemented as it is the current remediation system at the Site.

Alternative 3: Restoration to Pre-Disposal Conditions would be effective in the short term at reducing VOC concentration on site below the unrestricted use criteria. The excavation of contaminated site soils and in-situ chemical oxidation of overburden and bedrock groundwater would eliminate VOC impacts on site soil, groundwater and soil vapor. This alternative would be readily implemented pending the demolition and removal of the existing MPE system and the building at 1006 South Clinton Avenue.. Also, the unknown depth of contaminants in bedrock groundwater would require further site characterization prior to performing in-situ chemical oxidation of bedrock groundwater. This alternative would have high costs to implement due to the relatively large quantities of soil to excavate and haul, and the potentially large quantities of chemical oxidant required to treat overburden and bedrock groundwater. Furthermore, treatment of overburden groundwater may be difficult due to the low hydraulic conductivity of the tight site soils, and treatment of bedrock groundwater may be difficult given the unknown infiltration characteristics between the overburden-bedrock interface layer and bedrock.

Alternative 4: Enhanced Multi-phase Extraction would be effective in the long-term at reducing VOC concentrations of the source area at current and new extraction points. Enhanced remediation would thereby limit potential impacts of the source area on groundwater and soil gas and indoor air. This alternative would be readily implemented with the installation of new extraction points and the connection of these points to the existing system. The enhanced Multi-phase extraction system would have greater cost to operate and maintain than for Alternative 2 due to its increased size. However, gains in rates of contaminant removal from targeting residual source areas would likely outweigh associated cost increases by reducing the time needed to achieve RAOs.

Alternative 5: In-Situ Source Treatment – Chemical Oxidation with Soil Mixing would be effective in the short term at reducing VOC concentrations at the source area and would reduce the greatest impacts of VOCs on site soil, groundwater and soil vapor. With the source area effectively treated, natural attenuation would remediate the remaining VOCs in site groundwater. This alternative would require at least partial deconstruction of the existing MPE system's piping and well infrastructure. Also, shoring would be installed at the building at 1006 South Clinton Avenue, as treatment of source area contamination near and underneath that building would otherwise be further complicated by effects of soil destabilization near the building foundation from mechanical mixing.

Alternative 6: Discrete Soil Source Excavation and Off-Site Disposal and In-Situ Enhanced Biodegradation with Groundwater Monitoring would be effective in the short term at reducing VOC concentrations at the source area and in the long term at reducing residual VOC contamination of site soil and groundwater. Excavation of the most heavily contaminated source soils would greatly reduce VOC impacts on site soils, groundwater and soil vapor, while enhanced biodegradation of contaminants through injection of bioremediation amendments would reduce residual contamination of site soils, groundwater, and soil vapor. This alternative would be readily implemented pending the partial demolition the existing MPE system. Also, shoring would be installed at the building at 1006 South Clinton Avenue, as the presence of contamination near and underneath an adjacent building would otherwise impede portions of the source removal. Further, the tight glacial soils and till may inhibit injection of the bioremediation amendment.

Alternative 7: In-Situ Electrical Resistance Heating would eliminate contaminants in site soils and groundwater. This alternative would effectively volatilize VOC contamination, even in the tight soils of the contaminant source area. Implementation of this alternative would only be limited by the ability to install and operate the system.

All of the above remedial alternatives have been retained for detailed analysis in Section 11.0.

11.0 DETAILED ANALYSIS OF ALTERNATIVES

This section presents the detailed analyses of remedial action alternatives for soil, groundwater and soil vapor at the Site. The detailed analysis is intended to provide decision-makers with the relevant information with which to aid in selection of a site remedy. The detailed description of technologies or processes used for each alternative includes, where appropriate, a discussion of limitations, assumptions, and uncertainties for each component. The descriptions provide a conceptual design of each alternative and are intended to support alternatives-comparison and cost-estimation.

The detailed analysis of each alternative includes evaluation using the first seven evaluation criteria identified in DER-10 (NYSDEC, 2010) and §375-1.8(f) (NYS, 2006), as presented in the following paragraphs.

Compliance with Standards, Criteria, and Guidance. Compliance with SCGs considers whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. SCGs for the Site are identified along with a discussion of whether or not the remedy will achieve compliance. For those SCGs that will not be met, a discussion and evaluation of subsequent impacts and whether waivers are necessary is presented. Chemical-specific SCGs were previously identified in this Report. Location- and Action-specific SCGs are identified for each alternative in this Section and in Table 11.1.

Overall Protection of Public Health and the Environment. This criterion is an evaluation of the remedy's ability to protect public health and the environment, assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls. The remedy's ability to achieve each of the RAOs is evaluated.

Short-term Effectiveness. The potential short-term adverse impacts and risks of the remedy upon the community, the workers, and the environment during the construction and/or implementation are evaluated. A discussion of how the identified adverse impacts and health risks to the community or workers at the Site will be controlled, and the effectiveness of the controls, are considered. Engineering controls that will be used to mitigate short term impacts (e.g., dust control measures) is provided. The length of time needed to achieve the remedial objectives is estimated.

Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedy after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated:

1. magnitude of remaining risk
2. adequacy of the engineering and institutional controls intended to limit the risk
3. reliability of these controls
4. ability of the remedy to continue to meet RAOs in the future.

Effectiveness of alternatives in protecting human health and the environment after RAOs is also evaluated. This includes an evaluation of the permanence of the alternative, the magnitude of residual risk, and the adequacy and reliability of controls required to manage wastes or residuals remaining at the Site.

Reduction of Toxicity, Mobility, or Volume with Treatment. The remedy's ability to reduce the toxicity, mobility or volume of site contamination is evaluated. Preference should be given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of site wastes.

Implementability. The technical and administrative feasibility of implementing the remedy is evaluated. Technical feasibility includes the difficulties associated with remedy construction and the ability to monitor the remedy's effectiveness. 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, or other issues.

Land Use. The current, intended, and reasonably anticipated future land uses of the Site and its surroundings will be considered in the evaluation of remedial alternatives.

Cost. Capital and Operation, Maintenance and Monitoring costs are estimated for the remedy and presented on a present worth basis.

Community Acceptance. In a format that responds to all questions raised (i.e. responsiveness summary), public comment, concerns, and overall perception of the remedy are evaluated following the public meeting presenting the proposed remedial action plan. This criterion is not evaluated in this draft Report.

11.1 COST ANALYSIS PROCEDURES

Costs presented in this Report are intended to be within the target accuracy range of minus 30 to plus 50 percent of actual cost (USEPA, 1988). Costs are presented as a present worth and as a total cost for up to a 30-year period.

A summary of the costs for each alternative identifying capital and net present worth (NPW) costs are included in each alternative's cost description. Each cost estimate includes a present worth analysis to evaluate expenditures that occur over different time periods. The analysis discounts future costs to a NPW and allows the cost of remedial alternatives to be compared on an equal basis. NPW represents the amount of money that, if invested now and disbursed as needed, would be sufficient to cover costs associated with the remedial action over its planned life. A discount rate of 5 percent was used to prepare the cost estimates per NYSDEC guidance.

Consistent with USEPA FS cost estimating guidance (USEPA, 2000), the remedial alternative cost estimates include costs for project management, remedial design, construction management, technical support, and scope contingency.

Project management includes planning and reporting, community relations support during construction or O&M, bid or contract administration, permitting (not already provided by the construction or O&M contractor), and legal services outside of institutional controls.

Remedial design applies to capital cost and includes services to design the remedial action. Activities that are part of remedial design include pre-design collection and analysis of field data, engineering survey for design, treatability study/pilot-scale testing, and the various design components such as design analysis, plans, specifications, cost estimate, and schedule.

Construction management applies to capital cost and includes services to manage construction or installation of the remedial action, except any similar services provided as part of regular construction activities. Activities include review of submittals, design modifications, construction observation or oversight, engineering survey for construction, preparation of O&M manual, documentation of quality control/quality assurance, and record drawings.

Technical support during O&M includes services to monitor, evaluate, and report progress of remedial action. This includes oversight of O&M activities, update of O&M manual, and progress reporting and is generally between 10 percent and 20 percent of total annual O&M costs depending on complexity of the remedial action (USEPA, 2000).

Scope contingency represents project risks associated with the feasibility-level of design presented in this Report. This type of contingency represents costs, unforeseeable at the time of estimate preparation, which are likely to become known as the remedial design proceeds. Scope contingency ranges from 10 to 25 percent, with higher values appropriate for alternatives with greater levels of cost growth potential (USEPA, 2000).

Project management, remedial design, and construction management costs presented in this Report are based upon the following matrix presented in the USEPA FS cost estimating guidance (USEPA, 2000).

Professional and Technical Costs as Percentage of Direct Costs					
Indirect Cost	< $100K (%)	$100K-$500K (%)	$500K-$2M (%)	$2M-$10M (%)	>$10M (%)
Project Management	10	8	6	5	5
Remedial Design	20	15	12	8	6
Construction Management	15	10	8	6	6

All of the remedial alternatives developed in Section 10.0 were retained for detailed analysis.

The following subsections present a conceptual design and cost estimate for each of these remedial alternatives and a discussion of each alternative relative to the evaluation criteria as set forth in NYCRR Part 375 (NYS, 2006).

11.2 ALTERNATIVE 1: NO ACTION

This alternative would not include any actions to address soil contamination at the Site.

Compliance with Standards, Criteria, and Guidance. This alternative would not meet chemical-specific SCGs because it would not address soil contamination in excess of the 6 NYCRR Part 375 Remedial Program SCOs (NYS, 2006) and groundwater contamination in excess of 6 NYCRR Parts 700-706 Water Quality Standards (NYSDEC, 1998).

Overall Protection of Public Health and the Environment. This remedial alternative would not protect public health and the environment through eliminating, reducing, or controlling existing or potential exposure pathways through removal, treatment, engineering controls, or institutional controls. This remedial alternative would not achieve the RAOs for soil, groundwater or soil vapor.

Short-term Effectiveness. Because no actions would be taken, this alternative would not result in short-term adverse impacts and risks to the community, site workers, and the environment.

Long-term Effectiveness and Permanence. This alternative does not include actions to address soil contamination at the Site and its potential impacts to indoor air and groundwater. This remedy may meet RAOs associated with VOC soil, groundwater and soil vapor contamination in the future due to natural attenuation processes, although the time period required to meet RAOs is likely significant.

Reduction of Toxicity, Mobility, or Volume with Treatment. This alternative would not result in the reduction of the toxicity, mobility, or volume of VOC soil or groundwater contamination through treatment.

Implementability. No actions would be conducted, therefore there are no technical difficulties associated with this alternative. However, obtaining regulatory approval of this alternative would be difficult.

Land Use. This alternative does not include actions to remove or treat soil or groundwater contamination in excess of the Protection of Groundwater SCOs, and would therefore not be compatible with current and foreseeable future land use.

Cost. There are no costs associated with Alternative 1.

11.3 ALTERNATIVE 2: CONTINUED MULTI-PHASE EXTRACTION

Alternative 2 consists of the following components:

- Institutional controls
- Continued operation, maintenance, and monitoring of the existing MPE system.

Institutional Controls. Institutional controls would be implemented to restrict future use of the Site. Institutional controls would likely include implementation of land-use restrictions restricting subsurface activity and prohibiting changes in zoning of the Site (e.g., change from commercial to residential use). Land-use restrictions would be implemented through legal instruments such as deeds and/or water well permitting processes.

Continued Operation, Maintenance, and Monitoring of the Existing MPE System. This alternative will include no changes to the current operation, maintenance, and monitoring of the MPE system. The existing MPE system is described in detail in Subsection 10.1.2. Operation of the existing MPE system includes monthly site visits, during which flow readings and water levels from the eighteen MPE and three groundwater extraction wells are collected, and periodic or as-needed maintenance.

Quarterly long-term monitoring consists of the collection of groundwater samples from thirty-six monitoring, groundwater extraction, and MPE wells, and collection of vapor samples from twenty locations at the Site for VOC off-site laboratory analysis. Quarterly reports are prepared detailing the results of the quarterly long-term monitoring and the monthly site visits and monitoring.

Compliance with Standards, Criteria, and Guidance. This alternative includes continued operation of the existing MPE system which was designed and constructed to treat soil contamination at the Site. Operation of the existing MPE System to date, has resulted in the removal of approximately 290 lbs. of VOCs, including the primary COCs, TCE and PCE, and the MPE System continues to provide reduction of VOC soil contamination at the Site. However, available data indicates that as of July 2008 PCE concentrations in site soil remain as high as 310 mg/Kg, and residual source areas exist that are not effectively being treated by the existing network of MPE wells. Therefore, this alternative likely does not comply with chemical-specific SCGs. The operation, maintenance, and monitoring of the existing MPE System is conducted in accordance with applicable action-specific SCGs, which include “Air Guide 1 – Guidelines for the Control of Air Toxic Ambient Air Contaminants”. There are no location-specific SCGs that apply to this alternative.

Overall Protection of Public Health and the Environment. This remedial alternative would protect public health and the environment through reducing and controlling existing or potential exposure pathways through institutional controls and the operation of the existing MPE System to remove soil contamination at the Site. However, as previously stated, the current operation of the existing MPE System may not be capable of treating all soil contamination present at the Site in excess of the SCOs.

Short-term Effectiveness. This alternative does not include construction or other type of activities at the Site that would result in potential short-term adverse impacts and risks to the community, workers, or the environment during implementation.

Long-term Effectiveness and Permanence. Currently, the MPE System is reducing the VOC soil contamination at the Site as evidenced by on-going monitoring of performance (i.e., contaminant mass is being removed). However, evaluation of contaminant mass removal rates suggest that the contaminant mass removal rate of the current system layout has leveled off since August 2007 – which may indicate that the existing MPE system may not be capable of removing the remaining contamination at the Site.

Reduction of Toxicity, Mobility, or Volume with Treatment. This alternative includes continued operation of the existing MPE System which results in the reduction of contaminant volume in the subsurface. Reduction of toxicity, mobility, or volume through treatment would not occur because this alternative includes extraction of VOC soil contamination from the subsurface and direct discharge, without treatment, to the atmosphere.

Implementability. This alternative includes continued operation, maintenance, and monitoring of the existing MPE System, and therefore would not be technically difficult to implement. However, because limitations of the existing MPE System relative to achieving RAOs have been identified, obtaining regulatory approval of this alternative may be difficult.

Land Use. This alternative includes continued operation, maintenance, and monitoring of the existing MPE System. If RAOs are achieved, this alternative would be compatible with existing and foreseeable future land use. However, in the short-term, the presence of the MPE System and associated infrastructure at the Site would limit future use.

Cost. The capital cost of Alternative 2 is $37,000, for the implemenation of institutional controls. Annual operation, maintenance, and monitoring costs total approximately $1,559,000. The NPW of this Alternative is $1,596,000. A summary of the costs associated with this alternative is presented in Table 11.2. These costs assume 10 years of further operation until contaminant mass removal trends become asymptotic and the treatment system is no longer cost-effective to operate. Detailed cost backup is provided in Appendix H.

11.4 ALTERNATIVE 3: RESTORATION TO PRE-DISPOSAL CONDITIONS

Alternative 3 consists of the following components:

- pre-design investigation
- mobilization and temporary facilities and controls
- demolition of the existing MPE system and paved or concrete surface covers
- demolition of the building at 1006 South Clinton Avenue
- shoring of the buildings at 1018 South Clinton Avenue and 354 Benton Street
- excavation and off-site treatment or disposal or both of on-site soils, including all soil to bedrock within the extents of the property east of the historic former site building's western extents and soil removals at 1006 S. Clinton Avenue and 491-493 Caroline Street
- in-situ chemical oxidation of bedrock groundwater
- site restoration, including repaving of the lot next to the building at 1018 South Clinton Avenue

Pre-Design Investigations and Studies. Pre-design investigations and/or studies would be conducted to support the remedial design, and would include, but not be limited to:

- subsurface soil sampling and analysis to provide characterization for treatment/disposal purposes.

Mobilization and Temporary Facilities and Controls. Site preparation, mobilization, and temporary facilities and controls would include activities required to prepare the Site for remediation, including, but not limited to:

- delivery and setup of site trailers
- installation of temporary utilities
- construction of wastewater treatment facilities and equipment decontamination facilities
- implementation of erosion and sediment control measures
- survey layout of the various work extents

Demolition of the Existing MPE System and Paved or Concrete Surface Covers. Prior to excavating contaminated site soils, the existing MPE system would be demolished, along with pavement and concrete surface covers overlying the excavation area. The existing treatment trailer may be retained on-site for treatment of contaminated groundwater generated during dewatering activities, depending on a pre-design analysis of the system's treatment capacity. Also, the existing one story concrete block building at 1006 South Clinton Avenue would be demolished to allow for excavation of contaminated soils underneath the building footprint.

Excavation and Off-Site Treatment or Disposal or Both of Site Soils. On-site soils would be excavated and transported off-site for treatment or disposal both. This alternative assumes that wastewater generated as a result of excavation would be treated and discharged on-site; this alternative also assumes that site space may not be available to dewater soils prior to transport, and hence an absorbent has been included in the cost estimate for excavated saturated zone soils. This alternative also assumes that the approximate excavation area would include the extents of the former site building (see Figure 1.2), the site soils remaining to the east at 1012 South Clinton Avenue and 350 Benton Street, and the contaminated soil present both underneath the building at 1006 South Clinton Avenue to the northwest and on the 491-493 Caroline Street property to the north. The excavation would be shored along its perimeter both for space considerations on site and to protect and support adjacent buildings. Dewatering throughout excavation will support the identification of fractures in the bedrock surface for infiltration of chemical oxidant into the bedrock; dewatering will be discontinued once chemical oxidation activities commence.

Approximately 5,453 cubic yards of soil would be excavated. Per DER-10, 9 excavation floor samples would be taken (at a rate of 1 sample per 900 square feet); no side wall sampling would be taken due to the use of sheet piling.

In-Situ Chemical Oxidation of Bedrock Groundwater. Assuming the pre-design investigation activities do not reveal high concentrations of VOCs deep in bedrock groundwater, chemical oxidant will be administered to the excavation and allowed to infiltrate into the bedrock. It is assumed that approximately 72,916 pounds of oxidant would be added to the excavation to treat groundwater contamination in bedrock beneath the site as well as residual bedrock groundwater contamination outside of the excavation limits. It is assumed that contaminant concentrations in bedrock may be similar to concentrations shown in Figure 4.3 and may extend to a depth of 10 feet within bedrock; the vertical extents of bedrock contamination would need to be investigated during pre-design investigations. A permanganate natural oxidant demand (PNOD) of 2 grams/kg has been assumed for site soils and backfill (http://www.ncbi.nlm.nih.gov/pubmed/17140696).

Site Restoration. Site restoration would include backfilling, compacting, and grading the excavation area, and paving the excavation extent and the driveway to the east of the building at 1018 South Clinton Avenue.

11.4.1 Detailed Evaluation of Alternative 3

Compliance with Standards, Criteria, and Guidance. Alternative 3 would meet Chemical-specific SCGs for soil and groundwater by removing soil contamination on-site and at adjacent properties in excess of the Protection of Groundwater SCGs, extracting overburden and interface groundwater in excess of water quality standards and treating bedrock groundwater in excess of water quality standards. Implementation of excavation, transportation, and treatment and/or disposal would be implemented in accordance with Action- and Location-specific SCGs.

Overall Protection of Public Health and the Environment. Alternative 3 would protect public health and the environment through eliminating both the source of soil, groundwater and soil vapor contamination and residual contamination. Existing engineering controls are in place to address the existing soil vapor to indoor air pathway adjacent to the Site. This remedial action would achieve the RAOs for soil, on-site groundwater, and soil vapor in the short-term and reduce the time to achieve RAOs for potentially contaminated, downgradient, and off-site groundwater and soil vapor.

Short-term Effectiveness. Alternative 3 includes excavation and off-site treatment or disposal or both of the on-site soils and groundwater and application of chemical oxidant to the open excavation. Short-term adverse impacts and risks to the community, site workers, and the environment are possible during the excavation and transportation of soils on-site and at adjacent properties. However, these risks could be controlled through coordination and communication, erosion, sedimentation, and dust control, and a comprehensive contractor health and safety program.

Long-term Effectiveness and Permanence. Alternative 3 would provide permanent reduction of site-related soil contamination through the excavation and off-site treatment and disposal of soils on-site and at adjacent properties. This alternative would rely upon natural attenuation to degrade downgradient groundwater VOC contamination and potential soil vapor contamination. The time required for Alternative 3 to achieve remediation goals for downgradient groundwater would be significant.

Reduction of Toxicity, Mobility, or Volume with Treatment. Alternative 3 would provide reduction in the mobility of VOC soil contamination, but would only provide reduction in toxicity and volume if off-site treatment is conducted prior to disposal. Removal of soils on-site and at adjacent properties, extraction of source area groundwater and in-situ treatment of bedrock groundwater would result in long-term reduction in the toxicity, mobility, and volume of groundwater contamination migrating off site.

Implementability. Implementation of Alternative 3 would be technically difficult due to the presence of source area contamination beneath an adjacent building, the limited site area available to support remediation activities, the relatively shallow water table which would require excavation dewatering, and the difficulty in treating bedrock groundwater in-situ through infiltration.

Land Use. The current and reasonably anticipated future land use of the Site is for commercial and residential purposes. This alternative would be protective of potential commercial workers conducting subsurface work at the Site.

Cost. The capital cost estimate for Alternative 3 is $4,125,000. The NPW of this Alternative is estimated to be $4,125,000. A summary of the costs associated with this alternative is presented in Table 11.3. Detailed cost analysis backup is provided in Appendix H.

11.5 ALTERNATIVE 4: ENHANCED MULTI-PHASE EXTRACTION

Alternative 4 consists of the following components:

- pre-design investigation
- enhancement of the existing MPE system
- institutional controls
- operation, maintenance, and monitoring of the enhanced MPE system.

Pre-Design Investigation. In support of the enhancement of the existing MPE system, a pre-design investigation is proposed. The pre-design investigation would consist of the installation of small-diameter vacuum monitoring points to identify the radius of influence of existing MPE wells and monitor future performance. It is assumed that six small-diameter points would be installed using geoprobe, or equivalent, technology. The radius of influence would be measured through the collection of pressure readings at each point using a hand-held manometer or equivalent during the operation of the existing MPE System. Additional pre-design investigations and/or studies would be conducted as described for Alternative 3. Information collected during the pre-design activities would be used to refine the design of the MPE System enhancements.

Enhancement of the Existing MPE System. Alternative 4 includes installation of up to 20 additional multi-phase extraction wells to target subsurface contamination not treated by the current extraction point layout (refer to Figure 11.1 for proposed extraction point locations). Construction activities associated with enhancement of the existing system would include installation of the additional MPE wells, including associated pneumatic pumps, piping and conduit, valves, gauges and pipe trenches. Through reducing or eliminating operation of existing MPE points which contribute the least contaminant recovery, it is assumed that the treatment plant capacity will not have to be expanded. Further, it is assumed that any increase in VOC soil contaminant removal would not result in concentration of VOCs in the effluent air discharge that would require re-institution of vapor treatment.

Institutional Controls. Institutional controls would be implemented to restrict future use of the Site until remediation objectives are achieved, as described for Alternative 2.

Operation, Maintenance, and Monitoring of the Enhanced MPE System. Operation, maintenance, and monitoring of the enhanced MPE System would be conducted similar to Alternative 2. The additional MPE points will be added to the existing network of locations that are sampled on a quarterly basis; otherwise long-term monitoring and reporting would be similar to that described for Alternative 2. It has been assumed for costing purposes that labor hours would increase 25 percent, electrical usage 10 percent, and chemical usage 25 percent as a result of the addition of twenty additional MPE wells (refer to Appendix H).

11.5.1 Detailed Evaluation of Alternative 4

Compliance with Standards, Criteria, and Guidance. This alternative includes enhancement and subsequent operation of the existing MPE System to treat the remaining soil contamination at the Site in excess of the SCOs. The operation, maintenance, and monitoring of the MPE System would continue to be conducted in accordance with applicable action-specific SCGs, which include "Air Guide 1 – Guidelines for the Control of Air Toxic Ambient Air Contaminants". There are no location-specific SCGs which apply to this alternative.

Overall Protection of Public Health and the Environment. This remedial alternative would protect public health and the environment through reducing and controlling existing or potential exposure pathways through institutional controls and operation of an enhanced MPE System to remove soil contamination remaining at the Site.

Short-term Effectiveness. This alternative includes construction activities associated with the enhancement of the existing MPE System which would result in potential short-term risks to the community, workers, and the environment. These risks would be addressed through coordination and communication with affected property owner(s) and preparation and implementation of a construction health and safety plan. It is estimated that this alternative could be fully implemented in less than one year.

Long-Term Effectiveness and Permanence. This alternative includes enhancement of the existing system to treat soil contamination that the existing MPE system is not capable of removing. This alternative would be expected to provide long-term effectiveness and permanence through the removal of VOC soil contamination in excess of the SCOs.

Reduction of Toxicity, Mobility, or Volume with Treatment. This alternative includes operation of an enhanced MPE System at the Site, resulting in the reduction of contaminant volume in the subsurface. Reduction in toxicity, mobility, or volume through treatment would not occur because this alternative includes extraction of VOC soil contamination from the subsurface and direct discharge, without treatment, to the atmosphere.

Implementability. Technically, this alternative would not be difficult to implement. Because this alternative would be designed and implemented to treat residual soil contamination at the Site, obtaining regulatory approval of this alternative is not anticipated to be difficult.

Land Use. This alternative includes enhanced operation, maintenance, and monitoring of the existing MPE System. If RAOs are achieved (in approximately three years after system start-up), this alternative would be compatible with existing and foreseeable future land use. However, in the short-term, the presence of the MPE System and associated infrastructure at the Site would limit future use.

Cost. The capital cost of Alternative 4 is $177,000 to design and build the expanded network of extraction points. Annual operation, maintenance, and monitoring costs total approximately $1,235,000. The NPW of this Alternative is $1,412,000. A summary of the costs associated with this alternative is presented in Table 11.4. These costs assume 5 years of further operation until mass removal trends become asymptotic and the treatment system is no longer cost-effective to operate. Detailed cost analyis backup is provided in Appendix H.

11.6 ALTERNATIVE 5: IN-SITU SOURCE TREATMENT - CHEMICAL OXIDATION WITH SOIL MIXING

Alternative 5 consists of the following components:

- pre-design investigation
- mobilization and temporary facilities and controls
- demolition of the existing MPE system and paved or concrete surface covers
- shoring installation at the building at 1006 South Clinton Avenue
- in-situ enhanced soil mixing
- site restoration
- institutional controls
- long-term monitoring
- periodic institutional control inspections and reporting

Pre-Design Investigations and Studies. Pre-design investigations and/or studies as described for Alternative 3 would be conducted to support the remedial design and would also include:

- ground-penetrating radar survey in support of subsurface utility/obstruction clearance of the proposed treatment area
- treatability study for proposed soil mixing amendments and/or reagents

Mobilization and Temporary Facilities and Controls. Site preparation, mobilization, and temporary facilities and controls would include activities required to prepare the Site for remediation, including, but not limited to:

- delivery and setup of site trailers
- installation of temporary utilities
- construction of wastewater treatment facilities and equipment decontamination facilities
- implementation of erosion and sediment control measures
- survey layout of the various work extents

Demolition of the Existing MPE System and Paved or Concrete Surface Covers. Prior to excavating contaminated site soils, the existing MPE system on site would be partially demolished and demobilized, along with pavement and concrete surface covers overlying the excavation area..

In-situ Enhanced Soil Mixing. Implementation of this alternative would include mechanical mixing of the on-site soils with potassium permanganate to provide removal of VOC source area soil contamination. It is assumed that due to the vertical limitation of 15 feet for soil mixing equipment that the top 5 feet of the soil mixing area would be excavated and stockpiled for reuse as backfill. Insufficient area is available on site to store the backfill, and it is assumed that the backfill would be stored off-site. It is assumed that the abutting faces of the building at 1006 South Clinton Avenue would be shored with a sheet piling system to protect the building during the mixing activities. It is assumed that approximately 81,439 pounds of oxidant would be added to the treatment area soils, assumed to be comparable to the limits of excavation in Alternative 3, excluding the soils underneath the building at 1006 South Clinton Avenue and at the 491-493 Caroline Street property. It is assumed that the bulk density of the soil is 125 pounds per cubic foot, and a PNOD of 2g/kg has been assumed for site soils and backfill (http://www.ncbi.nlm.nih.gov/pubmed/17140696).

Site Restoration. Site restoration would include paving over the areal extent of treatment..

Institutional Controls. Institutional controls would be implemented similar to Alternative 2.

Long-term Monitoring. Long-term monitoring would consist of the sampling and analysis of both on-site and off-site groundwater monitoring wells for VOCs. It is assumed that long-term monitoring would be conducted on a periodic basis for thirty years and that up to twenty groundwater monitoring wells would be included in the program.

Periodic Institutional Control Inspections and Reporting. Periodic inspections would be conducted to ensure deed and land-use restrictions are being enforced. A report would be prepared documenting the inspection and the conditions observed.

11.6.1 Detailed Evaluation of Alternative 5

Compliance with Standards, Criteria, and Guidance. Alternative 5 would meet Chemical-specific SCGs for soil by treatment of soil contamination in excess of the Protection of Groundwater SCGs and would also treat groundwater in excess of AWQS both in and immediately adjacent to the source area. However, unless the vertical extents of soil contamination in the overburden/interface zone and horizontal extents east and west of the site are determined, RAOs for the site will not be achieved. This alternative would rely upon natural attenuation to meet RAOs for groundwater. Implementation of soil mixing, as well as institutional controls, would be implemented in accordance with Action- and Location-specific SCGs.

Overall Protection of Public Health and the Environment. Alternative 5 would protect public health and the environment through reducing the source of soil, groundwater and soil vapor contamination, and the implementation of institutional controls. Existing engineering controls are in place to address the existing soil vapor to indoor air pathway adjacent to the Site. This alternative would achieve the RAOs for soil in the short-term and reduce the time to achieve RAOs for downgradient groundwater and soil vapor.

Short-term Effectiveness. Alternative 5 includes in-situ mixing and treatment of the on-site source area soils using heavy equipment. Short-term adverse impacts and risks to the community, site workers, and the environment are possible during the course of the work; however, these risks could be controlled through coordination and communication, erosion, sedimentation, and dust control, and a comprehensive contractor health and safety program.

Long-term Effectiveness and Permanence. Alternative 5 would provide permanent reduction of site-related soil contamination through in-situ mixing and treatment of source area soils. This alternative would rely upon existing engineering controls to address downgradient soil vapor contamination and natural attenuation to address groundwater VOC contamination contributing to the downgradient groundwater and soil vapor contamination

Reduction of Toxicity, Mobility, or Volume with Treatment. Alternative 5 would provide reduction in the toxicity, mobility, or volume of VOC soil and groundwater contamination through in-situ treatment of source area soils and groundwater.

Implementability. Implementation of Alternative 5 would require shoring installation at the adjacent building at 1006 South Clinton Avenue in order to treat contaminated soil next to the building. Implementation may be technically difficult due to the small site area, which may require a phased approach to mixing and treatment. Further, the shallow water table may impede soil mixing by reducing the rate of liquid chemical oxidant that can be injected into the soil's pore volume.

Land Use. The current and reasonably anticipated future land use of the Site is for commercial and residential purposes. This alternative would be protective of potential commercial workers conducting subsurface work at the Site.

Cost. The capital cost estimate for Alternative 5 is $1,122,000. The NPW of this Alternative is estimated to be $1,373,000. A summary of the costs associated with this alternative is presented in Table 11.5. Detailed cost analysis backup is provided in Appendix H.

11.7 ALTERNATIVE 6: DISCRETE SOIL SOURCE EXCAVATION AND OFF-SITE DISPOSAL AND IN-SITU ENHANCED BIODEGRADATION WITH GROUNDWATER MONITORING

Alternative 6 consists of the following components:

- pre-design investigation
- mobilization and temporary facilities and controls
- partial demolition of the existing MPE system and paved or concrete surface covers
- shoring installation at the building at 1006 South Clinton Avenue
- excavation and off-site treatment or disposal or both of source area soils
- in-situ enhanced biodegradation
- site restoration
- institutional controls
- long term monitoring
- periodic institutional control inspections and reporting

Pre-Design Investigations and Studies. Pre-design investigations and/or studies would be conducted to support the remedial design, and would include, but not be limited to:

- subsurface soil sampling and analysis to refine the extent of excavation and provide characterization for treatment/disposal purposes.
- installation of additional overburden/interface groundwater monitoring wells east and west of the Site property to evaluate potential groundwater contamination in these areas.

- additional direct push soil samples to better delineate the extent of soil contamination above SCOs for the protection of groundwater and to evaluate the potential for additional VOC hot spots. These would be installed outside the existing MPE system to the east and west, as well as deeper borings to bedrock within the suspected source areas.
- field pilot-scale and laboratory bench-scale testing in support of the design and implementation of in-situ enhanced biodegradation

Laboratory and field studies would be conducted to determine the appropriate amendment type, amendment dosage, and approach for the full-scale program, and to evaluate whether the current populations of micro-organisms in the aquifer are capable of degrading the COCs. In-situ enhanced biodegradation involves inoculation of micro-organisms (i.e., fungi or bacteria, and other microbes) and/or addition of carbon sources (amendments) to the subsurface for use by indigenous micro-organisms capable of degrading organic contaminants found in soil and/or groundwater. Carbon sources (organic substrates) for enhanced biodegradation include, but are not limited to:

- sodium lactate
- propionate/butyrate
- methanol
- ethanol
- emulsified vegetable oil
- chitin
- the Regenesis product Hydrogen Release Compound™ (HRC^{TM}), a slow release lactate
- molasses.

Unit costs for carbon source materials vary widely; the required quantities and delivery methods for implementation also vary widely and are best determined through site-specific laboratory and field studies. For purposes of the following FS conceptual design, it has been assumed that in-situ enhanced biodegradation would be conducted using the Regenesis product HRCTM. However, this is not meant to preclude the testing or use of other reagents. In some cases, carbon source amendments are accompanied by bacteria inoculations when indigenous bacteria populations are insufficient.

Mobilization and Temporary Facilities and Controls. Site preparation, mobilization, and temporary facilities and controls require activities to prepare the Site for remediation and would include, but not be limited to:

- delivery and setup of site trailers
- installation of temporary utilities
- construction of wastewater treatment facilities and equipment decontamination facilities
- implementation of erosion and sediment control measures
- site clearing and grubbing
- survey layout of the various work extents

Partial Demolition of the Existing MPE System and Paved or Concrete Surface Covers. Prior to excavating contaminated site soils, the existing MPE system would be partially demolished, with multiphase extraction wells and piping within the extents of excavation to be demolished and the treatment trailer to be at least temporarily if not permanently relocated on or off-site. Also, pavement and concrete surface covers overlying the excavation area would be demolished. The treatment trailer may be retained on-site for treatment of contaminated groundwater generated during dewatering activities, depending on the outcome of a pre-design analysis of the system's treatment capacity.

Excavation and Off-Site Treatment or Disposal or Both of Source Area Soils. Contaminated soils containing VOCs at concentrations greater than or equal to 100 mg/kg (as shown in Figure 4.1) would be excavated and transported off-site for treatment or disposal both. This alternative assumes that wastewater generated as a result of excavation would be treated and discharged on-site; this alternative also assumes that site space may not be available to dewater soils prior to transport, and hence an absorbent has been included in the cost estimate for excavated saturated zone soils. Vadose zone soil at various depths is anticipated to be uncontaminated by site-specific COCs, especially where previous soil removal actions occurred (see Figure 1.2 and Section 1.3.3), and is assumed to be suitable for use as backfill. However, limited site space may prevent stockpiling these soils for potential reuse as backfill, and hence this alternative also assumes that a stockpiling location could be found near the site. This alternative also assumes that soil in the overburden/interface layer, which has not been fully defined vertically, will be removed to bedrock. This alternative also assumes that the building adjacent to the source area at 1006 South Clinton Avenue will have shoring installed to protect the structure from damage during excavation of nearby soil. Approximately 1,463 cubic yards of soil would be excavated. It is assumed that approximately 585 cubic yards would be suitable for reuse as backfill, and 878 cubic yards would be removed for off-site treatment and/or disposal. Per DER-10, 3 excavation floor samples would be taken (at a rate of 1 sample per 900 square feet); no side wall sampling would be taken due to the use of sheet piling.

In-situ Enhanced Biodegradation. In-situ enhanced biodegradation would be implemented to provide treatment of site-related groundwater contamination migrating from the Site. This alternative assumes for FS costing purposes that implementation would involve the injection of HRC^{TM} 3DMe into temporary injection points on-site upgradient of the excavation areas and where total VOC concentrations exceed 5 ppm. HRC 3DMe would be applied directly to the excavation backfill to accelerate degradation of potential upgradient contamination as it passes through the excavation area. For the conceptual design, it is assumed that average hydraulic gradient would be the average gradient of the overburden and overburden-bedrock interface zones, 0.013 ft/ft. Concentrations of PCE and TCE were based on the average concentrations detected during MACTEC's RI activities in 2009 and sampling of the MPE wells in 2010, while concentrations of cis-1,2-DCE and VC were based on the average concentrations detected during MACTEC's RI activities in 2009. Concentrations of competing electron acceptors were based on the average of detections from MACTEC's RI activities in 2009.

Pre-design field and laboratory testing would be used to refine the full-scale injection design. However, the conceptual injection design includes injection of a total of 540 pounds of HRC^{TM} at 6 injection locations spaced 15 feet on-center across the groundwater plume upgradient from the excavations within the 5 ppm isoconcentration line as shown on Figure 4.3. This approach includes a limited number of injections, although it is anticipated that the active ingredients added both in the excavation and the injection locations will travel downgradient with groundwater flow and accelerate degradation of on-site and off-site contamination. Injection of the amendment will occur from the water table depth to the depth of bedrock, approximately 20 feet. 58,748 pounds of amendment would be applied to the backfill in order to accelerate degradation of upgradient contamination as it migrates downgradient. Supporting calculations, including references and assumptions for the input parameters used, are provided in Appendix H.

Site Restoration. Site restoration would include backfilling, compacting, and grading the excavation area, and paving the excavation extent.

Institutional Controls. Institutional controls would be implemented similar to Alternative 2.

Long-term Monitoring. Long-term monitoring would be similar to Alternative 5.

Periodic Institutional Control Inspections and Reporting. Periodic inspections would be conducted to ensure deed and land-use restrictions are being enforced. A report would be prepared documenting the inspection and the conditions observed.

11.7.1 Detailed Evaluation of Alternative 6

Compliance with Standards, Criteria, and Guidance. Alternative 6 would not meet Chemical-specific SCGs in the short term for soil and groundwater. However, by removing the source of soil and groundwater contamination and injecting enhanced biodegradation amendments, this alternative would satisfy Chemical-specific SCGs in the long term for soil and groundwater. Implementation of excavation, transportation, and treatment and/or disposal would be implemented in accordance with Action- and Location-specific SCGs.

Overall Protection of Public Health and the Environment. Alternative 6 would protect public health and the environment through eliminating a large source of soil, groundwater and soil vapor contamination. Existing engineering controls are in place to address the existing soil vapor to indoor air pathway adjacent to the Site. This alternative would achieve the RAOs for soil, on-site groundwater and soil vapor in the long-term.

Short-term Effectiveness. Alternative 6 includes excavation and off-site treatment or disposal or both of on-site source area soils. Short-term adverse impacts and risks to the community, site workers, and the environment are possible during the excavation and transportation of source areas soils. However, these risks could be controlled through coordination and communication, erosion, sedimentation, and dust control, and a comprehensive contractor health and safety program.

Long-term Effectiveness and Permanence. Alternative 6 would provide permanent reduction of site-related soil contamination through the excavation and off-site treatment and disposal of soils exceeding SCGs. This alternative would rely upon enhanced biodegradation to treat other on-site saturated zone soils and groundwater contamination and natural attenuation to address downgradient groundwater VOC contamination and potential soil vapor contamination. The time required for Alternative 6 to achieve RAOs for unexcavated soil and groundwater would be significant.

Reduction of Toxicity, Mobility, or Volume with Treatment. The excavation component of Alternative 6 would reduce the mobility of VOC soil contamination, but would only provide reduction in toxicity and volume if off-site treatment is conducted prior to disposal. Removal of the source area soils and enhanced biodegradation of VOCs in soil and groundwater would result in long-term reduction in the toxicity, mobility, and volume of groundwater contamination migrating off site.

Implementability. Implementation of Alternative 6 would require shoring installation at the adjacent building at 1006 South Clinton Avenue in order to excavate contaminated soil next to the building. Alternative 6 would be technically difficult due to the limited site area available to support excavation activities and the relatively shallow water table which would require excavation dewatering. Also, the tight glacial soils may inhibit injection and distribution of the enhanced biodegradation amendment.

Land Use. The current and reasonably anticipated future land use of the Site is for commercial and residential purposes. This alternative would be protective of potential commercial workers conducting subsurface work at the Site.

Cost. The capital cost estimate for Alternative 6 is $2,100,000. The NPW of this Alternative is estimated to be $2,360,000. A summary of the costs associated with this alternative is presented in Table 11.6. Detailed cost analysis backup is provided in Appendix H.

11.8 ALTERNATIVE 7: ELECTRICAL RESISTANCE HEATING

Alternative 7 consists of the following components:

- pre-design investigation
- mobilization and temporary facilities and controls
- full-scale in-situ electrical resistance heating system
- site restoration
- long-term monitoring

Pre-Design Investigations and Studies. Pre-design investigations and/or studies would be conducted to support the remedial design, and would include, but not be limited to:

- subsurface soil sampling and analysis to refine the extent of the treatment area
- ground-penetrating radar survey in support of subsurface utility/obstruction clearance of the proposed treatment area
- Additional direct push soil samples to better delineate the extent of soil contamination above SCOs for the protection of groundwater and to evaluate the potential for additional VOC hot spots. These would be installed outside the existing MPE system to the east and west, as well as deeper borings to bedrock within the suspected source areas.

Mobilization and Temporary Facilities and Controls. Site preparation, mobilization, and temporary facilities and controls would include activities required to prepare the Site for remediation, including, but not limited to:

- delivery and setup of site trailers
- installation of temporary utilities
- survey layout of the various work extents

Electrical Resistance Heating. Alternative 7 includes implementation of in-situ electrical resistance heating to treat on-site VOC soil and groundwater contamination. This alternative and the associated conceptual cost estimate are based in part upon information provided by Thermal Remediation Services, Inc. (http://www.thermalrs.com/). The provided estimated cost includes mobilization/demobilization, design, work plans, permits, drilling, soil disposal, electrode connection and usage, electricity, vapor recovery and treatment, operations, confirmatory sampling, well abandonment, and an additional 10% of total project cost to reflect guaranteed fixed pricing for the remediation (Michelle Nanista, personal communication, December 23, 2010). Guaranteed fixed price remediation was assumed for the cost estimate because it would ensure the site cleanup objectives are met. Implementation of this alternative would consist of the installation of 39 12-inch diameter electrodes installed throughout the source area on 14.5-foot spacing and 39 shallow horizontal vapor extraction wells for vapor recovery funds third-party certified carbon offset projects such as renewable energy, energy efficiency, and reforestation. Also, electricity consumed by electrical resistance heating may be purchased from cleaner or renewable sources through NYS's Green Power Program.

Site Restoration. Site restoration would include removing the electrodes and vapor extraction wells.

Long-term Monitoring. Long-term monitoring would be similar to Alternative 5.

11.8.1 Detailed Evaluation of Alternative 7

Compliance with Standards, Criteria, and Guidance. Alternative 7 would meet Chemical-specific SCGs for soil by treatment of soil and groundwater contamination in excess of SCGs but would rely upon natural attenuation to meet RAOs for groundwater outside the treatment area. Implementation of electrical resistance heating as well as institutional controls would be implemented in accordance with Action- and Location-specific SCGs.

Overall Protection of Public Health and the Environment. Alternative 7 would protect public health and the environment through reducing the source of groundwater and soil vapor contamination and through the implementation of institutional controls. Existing engineering controls are in place to address the existing soil vapor to indoor air pathway adjacent to the Site.

Short-term Effectiveness. Alternative 7 includes electrical resistance heating of the on-site source area soils, resulting in contaminated vapors which require capture and treatment. Short-term adverse impacts and risks to the community, site workers, and the environment are possible during the course of work; however, these risks could be controlled through coordination and communication, erosion, sedimentation, and dust control, and a comprehensive contractor health and safety program.

Long-term Effectiveness and Permanence. Alternative 7 would provide permanent reduction in site-related soil contamination through electrical resistance heating of source area soils and groundwater. This alternative would rely upon existing engineering controls to address downgradient soil vapor contamination and natural attenuation to address groundwater VOC contamination contributing to downgradient groundwater and soil vapor contamination.

Reduction of Toxicity, Mobility, or Volume with Treatment. Alternative 7 would provide reduction in the toxicity, mobility, or volume of VOC soil and groundwater contamination through in-situ treatment of source area soils and groundwater.

Implementability. Alternative 7 would not be technically difficult to implement.

Land Use. The current and reasonably anticipated future land use of the Site is for commercial and residential purposes. This alternative would be protective of potential commercial workers conducting subsurface work at the Site.

Cost. The capital cost estimate for Alternative 7 is $1,900,000. The NPW of this Alternative is estimated to be $2,020,000. A summary of the costs associated with this alternative is presented in Table 11.7. Detailed cost analysis backup, including a vendor quotation, is provided in Appendix H.

12.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section presents a summary of the relative performance of each of the seven candidate alternatives based on the criteria evaluation in Section 11. The purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another to aid in selecting an overall remedy for the Site.

The comparative analysis includes a narrative discussion of the strengths and weaknesses of the alternatives relative to one another with respect to each criterion, and how reasonable variations of key uncertainties could change the expectations of their relative performance, as applicable. The comparative analysis presented in this document uses a qualitative approach to comparison, with the exceptions of comparing alternative costs and the required time to implement each alternative.

A comparison of the capital and long-term costs associated with the remedial alternatives is presented in Table 12.1. Detailed cost analysis backup is provided in Appendix H.

12.1 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

The following paragraphs present a comparison of the remedial alternatives which were evaluated in detail in Section 11.0, relative to the following evaluation criteria (an assessment of Community Acceptance will be presented in a future document). The following comparative analysis is presented in tabular form in Table 12.2.

Compliance with Standards, Criteria, and Guidance. Alternative 1 would not meet chemical-specific SCGs because it would not address contamination at and in the vicinity of the Site which exceeds applicable SCG values. Alternative 2 has a low potential to treat the entire source and residue areas and thus would not meet chemical-specific SCGs for soil and groundwater contamination.

Alternatives 4 and 6 would not meet chemical specific SCGs in the short term, but by removing source area contamination they would satisfy SCGs in the long term for soil and groundwater.

Alternative 6 would satisfy chemical-specific SCGs more favorably than Alternative 4 by accelerating the attenuation of contaminants by in-situ enhanced biodegradation.

Alternatives 3, 5 and 7 would meet chemical specific SCGs in the short term through their respective removal or treatment approaches. Alternative 3 would satisfy chemical-specific SCGs more favorably than Alternatives 5 or 7 by completing removing both source area and residual contamination. However, Alternative 7 would be able to treat source area contamination next to and underneath a building adjacent to the site more effectively than Alternatives 3 or 5.

Implementation of the alternatives would be conducted in accordance with applicable municipal, state, and federal guidance and regulations. Table 11.1 presents a summary of Location- and Action-Specific SCGs associated with the alternatives evaluated in this Section.

Overall Protection of Public Health and the Environment. Alternative 1 would not protect public health and the environment through eliminating, reducing, or controlling existing or potential exposure pathways through removal, treatment, engineering controls, or institutional controls. This remedial alternative would not achieve the RAOs for soil or groundwater.

Alternative 2 would protect public health and the environment through reducing and controlling existing or potential exposure pathways through institutional controls and the operation of the existing MPE System to remove soil contamination at the Site. However, the current operation of the existing MPE System is likely not capable of treating all soil contamination present at the Site in excess of SCOs.

Alternative 4 would provide more favorable protection of public health and the environment compared to Alternative 1 or 2 by reducing and controlling existing or potential exposure pathways through institutional controls and operation of an enhanced MPE System.

Alternatives 5, 6 and 7 would provide more favorable protection of public health and the environment compared to Alternative 4 through more immediate and effective reduction or removal of soil and groundwater contamination. Institutional controls and engineering controls would be used until RAOs were met allowing for unrestricted use of the site.

Alternative 3 would be most protective of public health and the environment through implementation of remedial actions to immediately and permanently reduce on-site soil and groundwater contamination. Alternative 3 would allow for unrestricted use of the Site.

Short-term Effectiveness. Because no actions would be taken, Alternative 1 would not result in short-term adverse impacts and risks to the community, site workers, and the environment. Alternative 2 does not include construction or other type of activities that would result in potential short-term adverse impacts and risks to the community, workers, or the environment during implementation. Alternatives 3, 4, 5, 6 and 7 include remedial activities which would result in potential short-term risks to the community, site workers, and the environment. However, the risks could be addressed through coordination and communication with the property owner(s), erosion, sedimentation and dust control where applicable, and preparation and implementation of a comprehensive contractor health and safety plan. It is estimated that these alternatives could be fully implemented in less than one year.

Alternative 4 consists of low impact construction that would least disturb contaminated soils and therefore present the least potential short-term adverse impacts and risks to the community, site workers, and the environment. Alternatives 5 and 7 consist primarily of in-situ treatment which would disturb contaminated soils more than Alternative 4 and therefore present greater potential short-term adverse impacts and risks to the community, site workers, and the environment. Alternatives 3 and 6 include the excavation and transportation off-site of source area soils, and would therefore present a greater potential short-term risk. Alternative 3 includes significantly more excavation and transportation off-site of contaminated soils than Alternative 6, presenting the greatest potential short-term risks to the community.

Alternatives 1 and 2 would provide the least short-term reduction in potential exposure pathways. Alternatives 4, 5, 6 and 7 would reduce source area contamination in the short-term to varying degrees of effectiveness, but Alternatives 4, 5 and 6 would rely upon institutional controls and off-site engineering controls until RAOs for groundwater were met. Alternative 3 would provide for unrestricted use of the Site in the short term and would reduce the time to meet RAOs for groundwater.

Long-term Effectiveness and Permanence. Alternative 1 would not include actions to address contaminated soils and groundwater at and in the vicinity of the Site. This remedy does not currently meet RAOs for soil and groundwater. While Alternative 1 may meet RAOs due to natural attenuation processes, this would not be expected in the near future due to the magnitude of the source area contamination.

Evaluation of contaminant mass removal rates associated with Alternative 2 suggest that the contaminant mass removal rate of the current system layout has leveled off since August 2007, which may indicate that the existing MPE system may not be capable of removing remaining contamination at the Site and thus not provide long-term effectiveness and permanence.

Through implementation of an enhanced system to treat soil contamination that the existing MPE system is not capable of removing, Alternative 4 would be expected to provide a greater degree of long-term effectiveness and permanence through the removal of VOC soil contamination in excess of the SCOs, compared to Alternative 2. However, even assuming Alternative 4 could consistently double current mass removal extraction rates, the time required to remove on-site soil contamination in compliance with RAOs would be significant.

Alternative 6 would allow for continued commercial use of the Site in the short-term, but would rely upon institutional and existing engineering controls to address human health exposure pathways until RAOs were met for off-site groundwater. The time required to meet RAOs could be reduced if enhanced biodegradation was applied to off-site as well as on-site residual groundwater contamination, but in either event the time required would be significant.

Alternatives 5 and 7 would allow for continued commercial use of part of the Site in the short-term, but would rely upon institutional and existing engineering controls to address human health exposure pathways until RAOs were met for off-site groundwater. The time required to meet RAOs through natural attenuation processes for off-site residual groundwater contamination would be significant.

Alternative 3 provides for the most aggressive approach to reducing site-related soil and groundwater contamination in the short-term and would allow for unrestricted use of the Site in the short-term. However, Alternative 3 would not be expected to provide significantly increased contamination reduction in the long-term relative to Alternatives 5, 6, and 7.

Reduction of Toxicity, Mobility, or Volume with Treatment. Alternatives 1 would not result in the reduction of toxicity, mobility, or volume of soil or groundwater contamination through treatment. Neither Alternative 2 nor Alternative 4 provide reduction in toxicity, mobility, or volume through treatment because both alternatives include extraction of VOC soil contamination from the subsurface and direct discharge, without treatment, to the atmosphere.

Alternatives 3 would result in the reduction of mobility and volume of soil and groundwater contamination at and in the vicinity of the Site through excavation and off-site treatment and/or in-situ remediation of VOC contaminated soils present at the Site. This alternative would not result in a reduction in the toxicity of contamination unless contaminated soil removed from the Site received off-site treatment prior to disposal.

Alternatives 5, 6, and 7 would result in the reduction of toxicity, mobility, and volume of soil and groundwater contamination at and in the vicinity of the Site through in-situ treatment of on-site soil and groundwater. Alternative 6 includes excavation of the source areas, and would provide reduction in mobility and volume of source area contamination similar to Alternative 3, and also includes implementation of remedial actions to reduce off-site groundwater contamination, providing the greater potential for reduction of site-related contamination.

Alternative 3 would provide the greatest reduction in mobility and volume of soil contamination at the Site, though potentially only marginally greater than Alternative 5 or 7. However, unless excavated soils for Alternative 3 are treated off-site prior to disposal, Alternatives 5 or 7 would provide greater reduction in the toxicity of contamination.

Implementability. No actions would be conducted under Alternative 1, therefore there are no technical difficulties associated with this alternative. However, obtaining regulatory approval of this alternative would be difficult.

Alternative 2 includes continued operation, maintenance, and monitoring of the existing MPE System, and therefore would not be technically difficult to implement. However, because limitations of the existing MPE System relative to achieving RAOs have been identified, obtaining regulatory approval of this alternative may be difficult.

Technically, Alternative 4 would not be difficult to implement. Because Alternative 4 would be designed and implemented to reduce residual soil contamination at the Site, obtaining regulatory approval of this alternative is not anticipated to be difficult.

There would be technical issues with implementing Alternatives 3, 5, and 6; these issues are associated with addressing contamination present beneath the adjacent off-site building. These alternatives may not be capable of providing remediation of contamination in the short-term. Alternative 5 would primarily rely upon natural attenuation of contamination, while Alternative 3 would rely upon in-situ chemical oxidation treatment of contamination, which may be ineffective due to the tightness of the soils. Alternative 6 would rely upon long-term remediation of contamination using in-situ enhanced biodegradation amendments.

Alternatives 3, 5, and 6 would also face technical difficulties due to the small site area available to support remediation activities. The limited space to stockpile excavated soils for characterization and dewatering prior to transportation and disposal may require a phased approach for these alternatives, which would increase the duration and cost of remediation activities.

Alternatives 3, 5, and 6 may also be difficult to implement due the shallow water table. Excavation of saturated zone soils may be impeded by the need to either dewater or apply an absorbent to excavated soils. Further, the shallow water table may impede mechanical mixing of saturated zone soils by reducing the rate of liquid chemical oxidant that can be injected into the soil's pore volume.

Relative to the other alternatives evaluated, Alternative 7 is the only alternative with the potential to provide effective short-term reduction of VOC contamination beneath the site building through implementation of electrical resistance heating.

Land Use. The current and reasonably anticipated future land use of the Site is for commercial and/or residential purposes; however, residential property is located adjacent to the site, including to the west and southwest. Because no further action would be taken as part of Alternative 1 and there would be no restrictions to future use, Alternative 1 would not be protective of potential occupants/visitors to the Site and the immediate vicinity. In the short-term, the presence of the MPE System and associated infrastructure included with Alternatives 2 and 4 would limit future land use.

Alternatives 2 through 7 would be compatible with current land use and with reasonably anticipated future land use. Alternative 7 would allow for unrestricted use of the Site.

Cost. A comparison of estimated capital and long-term costs associated with the remedial alternatives is presented in Table 12.1.

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- Dated January 31, 2008– August 8 through November 13, 2007
- Dated April 23, 2008– November 13, 2007 through February 6, 2008
- Dated July 28, 2008– February 6 through May 6, 2008
- Dated October 1, 2010– February 2, 2009 through May 17, 2010

United States Environmental Protection Agency (USEPA), 2000. “A Guide for Developing and Documenting Cost Estimates During the Feasibility Study”; EPA 540-R-00-002, OSWER 9355.0-75; U.S. Environmental Protection Agency; Washington, D.C., July 2000.

USEPA, 1990. “Basics of Pump and Treat Groundwater Remediation Technology”. James W. Mercer, et. al.; EPA-600/8-90/003; March 1990.

USEPA, 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (Interim Final); EPA/540/G-89/004. October 1988.

FIGURES

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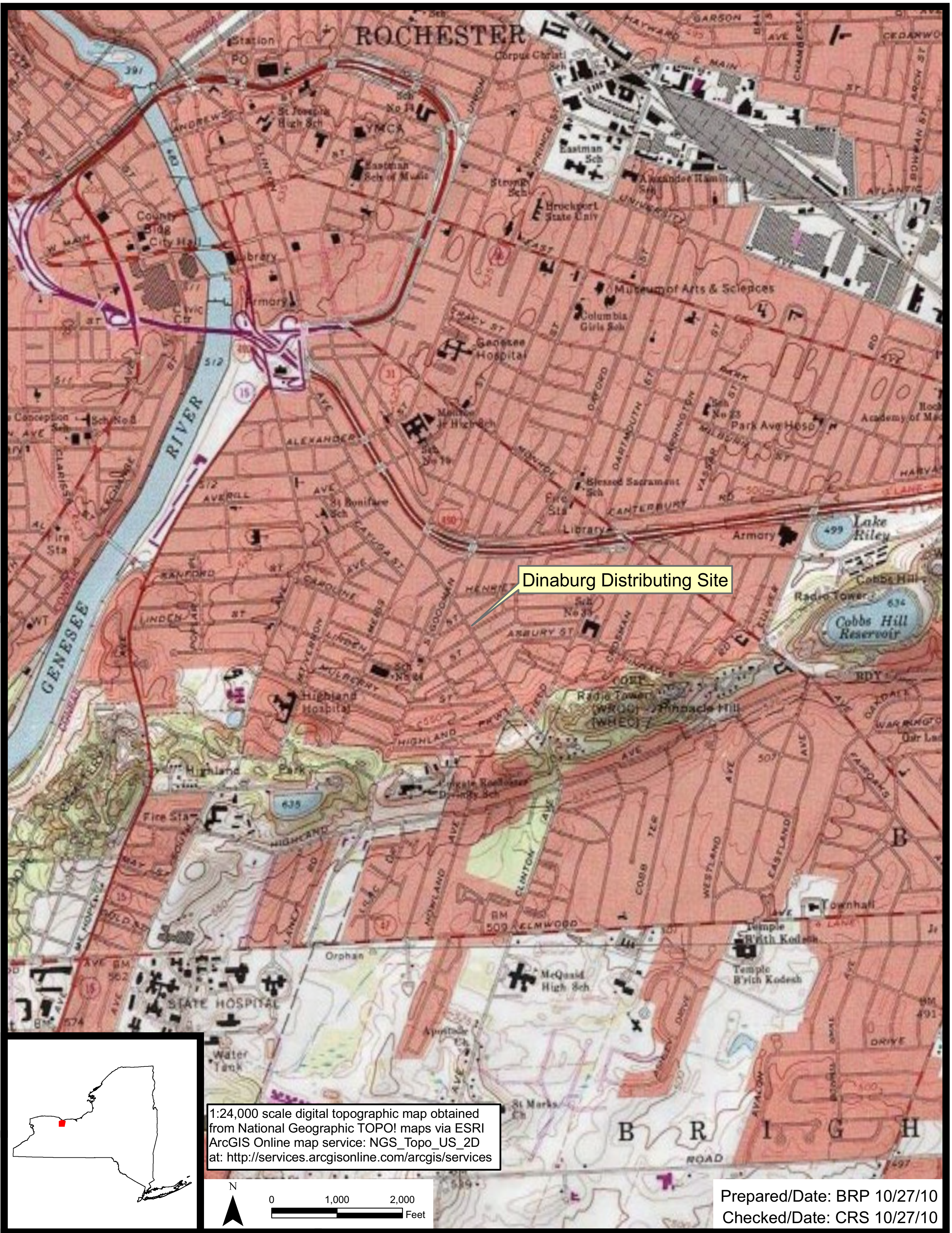

1:24,000 scale digital topographic map obtained from National Geographic TOPO! maps via ESRI ArcGIS Online map service: NGS_Topo_US_2D at: http://services.arcgisonline.com/arcgis/services

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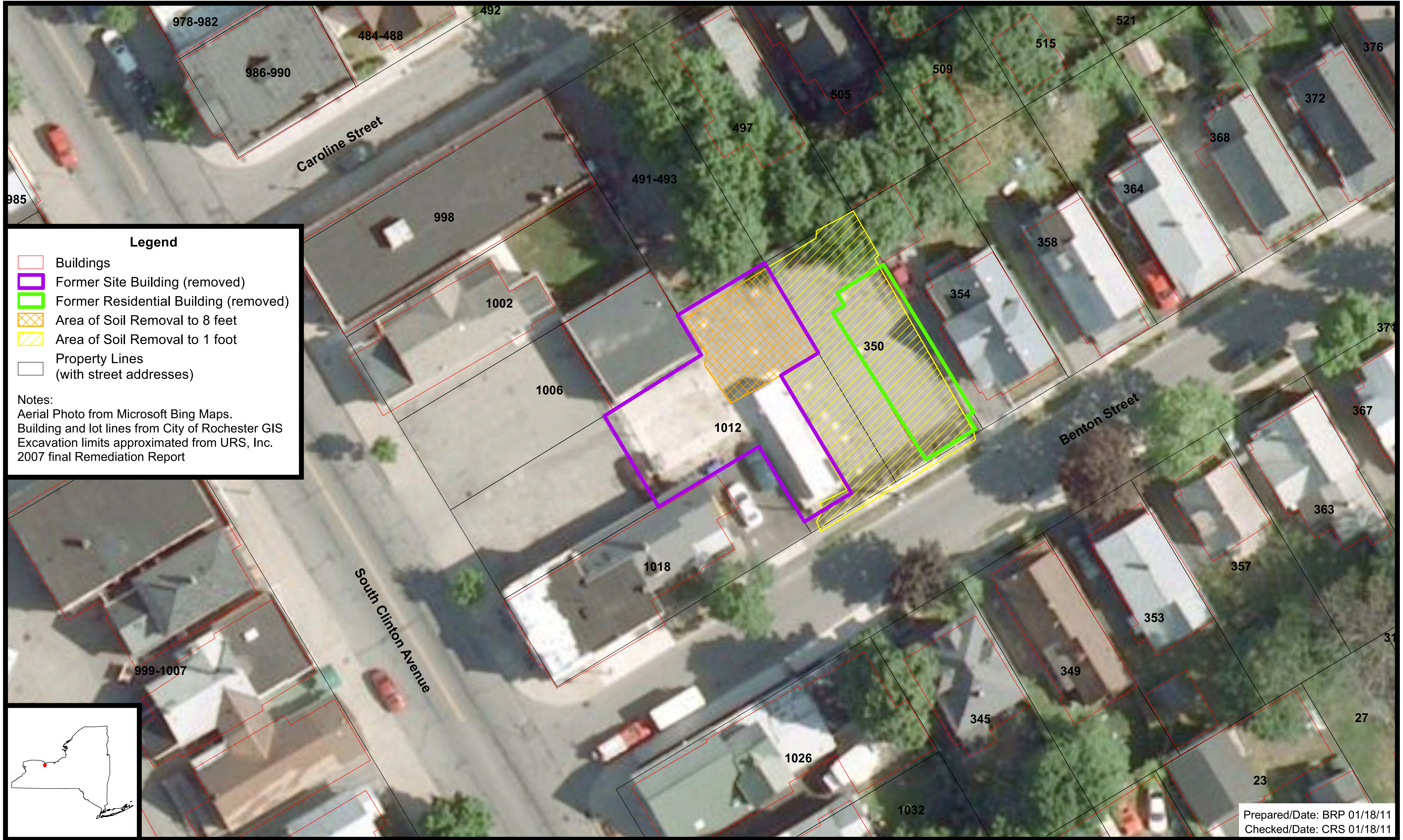
RI/FS REPORT DINABURG DISTRIBUTING ROCHESTER, NEW YORK	MACTEC	SITE LOCATION Project 3612-08-2107 Figure 1.1



Notes:
Aerial Photo from Microsoft Bing Maps.
Building and lot lines from City of Rochester GIS
Excavation limits approximated from URS, Inc.
2007 final Remediation Report

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Feet

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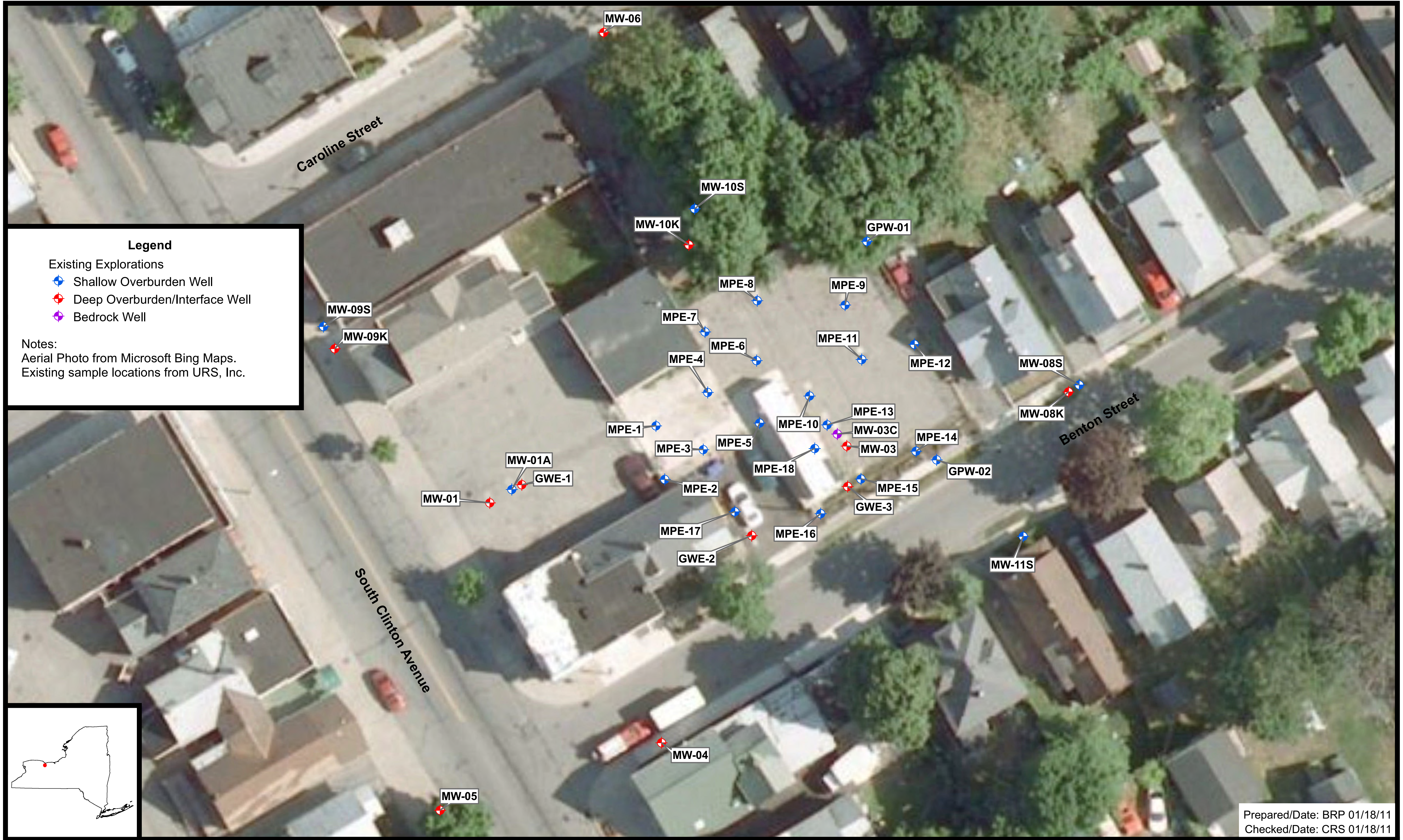
HISTORIC SITE FEATURES
AND SOIL REMOVAL AREA
Project 3612-08-2107 Figure 1.2



Legend

Existing Explorations

- 🔵 Shallow Overburden Well
- 🔴 Deep Overburden/Interface Well
- 🟣 Bedrock Well

Notes:
Aerial Photo from Microsoft Bing Maps.
Existing sample locations from URS, Inc.

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URS WELL LOCATIONS

Project 3612-08-2107

Figure 1.3

Legend

MACTEC Explorations

- ● Sewer Line/Manhole Sample
- ✚ Geoprobe Soil Boring
- ⬟ Soil Vapor Sample
- ⊕ Geoprobe Soil Boring with Microwell
- ◉ Geoprobe Water Sample
- ⊕ Monitoring Well

Existing Explorations

- ⊕ Shallow Overburden Well
- ⊕ Deep Overburden/Interface Well
- ⊕ Bedrock Well
- ➤ Sewer Lines

Notes:
Green symbols indicate MACTEC 2009 explorations.
Aerial Photo from Microsoft Bing Maps.
Locations surveyed by Popli Design Group.
Existing locations from URS, Inc.

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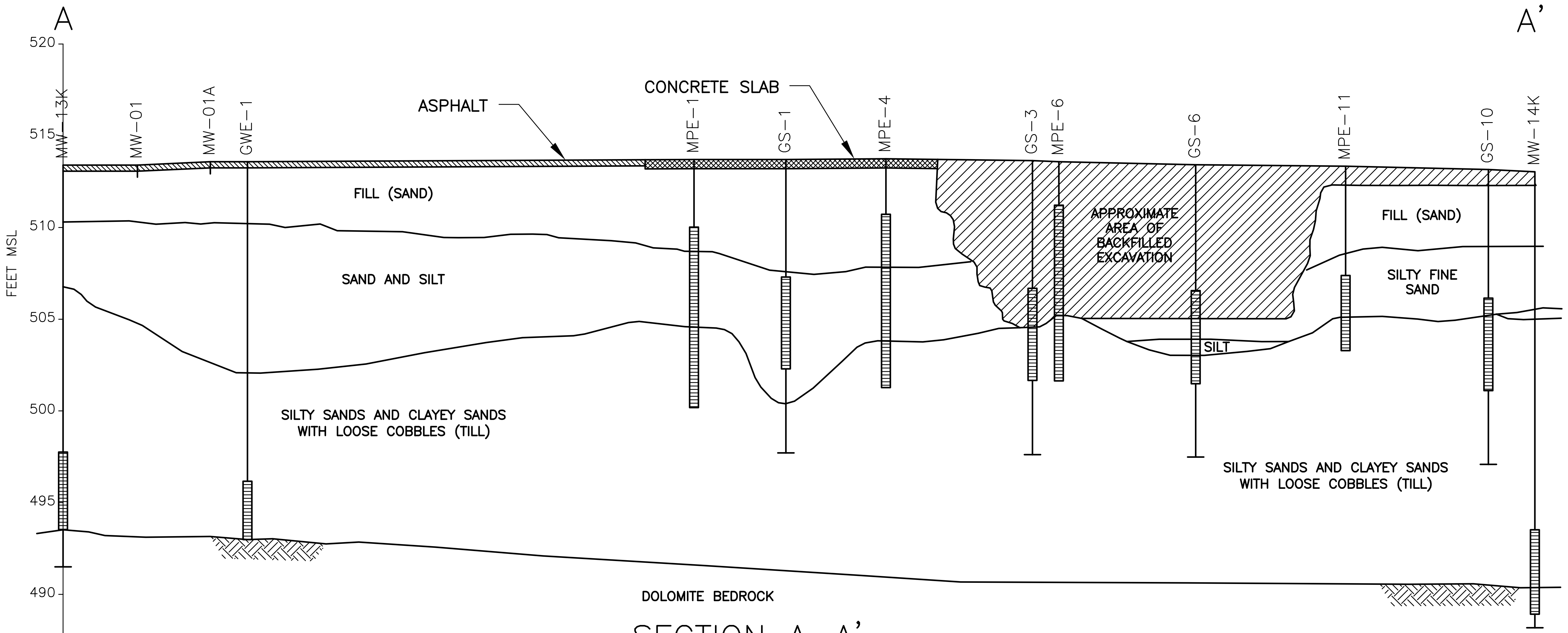
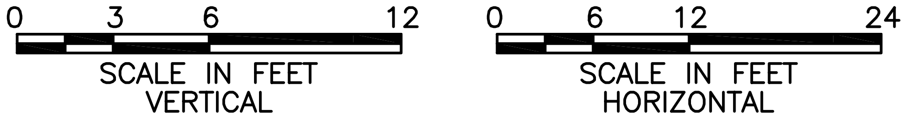
MACTEC RI EXPLORATION LOCATIONS

Project 3612-08-2107

Figure 2.1



SECTION A–A'



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CROSS SECTION A-A'

Project 3612-08-2107
Figure 3.1

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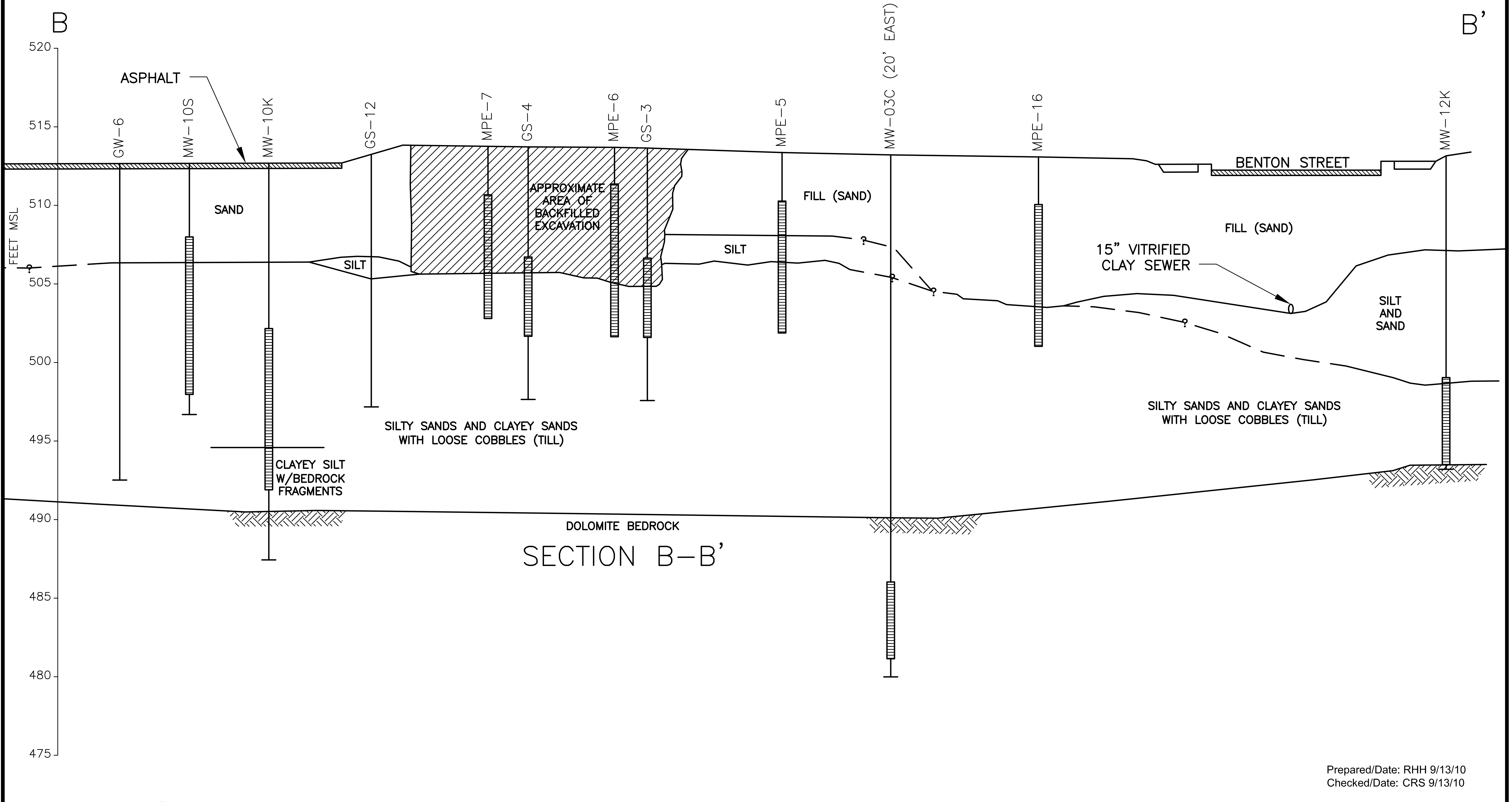

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0 3 6 12
SCALE IN FEET
VERTICAL

0 6 12 24
SCALE IN FEET
HORIZONTAL

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CROSS SECTION B-B'

Project 3612-08-2107
Figure 3.2

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Legend

⊢⊣ Cross Section Location

MACTEC Explorations

- Geoprobe Soil Boring with Microwell
- Geoprobe Soil Boring
- Monitoring Well

Existing Explorations

- Shallow Overburden Well
- Deep Overburden/Interface Well
- Bedrock Well

Notes:
Aerial Photo from Microsoft Bing Maps.
Locations surveyed by Popli Design Group.
Existing locations from URS, Inc.

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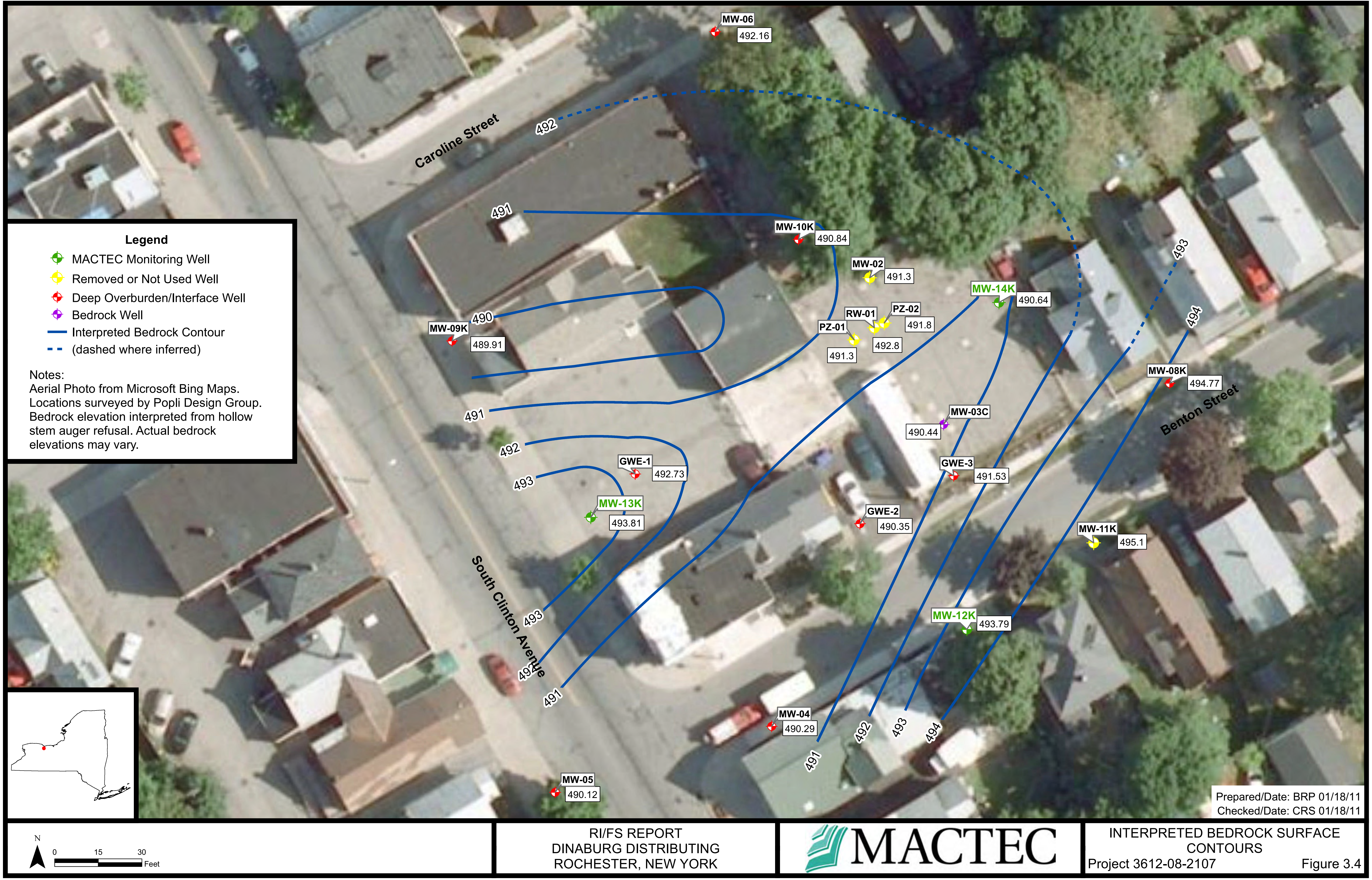
CROSS SECTION LOCATIONS

Project 3612-08-2107 Figure 3.3



Notes:
Aerial Photo from Microsoft Bing Maps.
Locations surveyed by Popli Design Group.
Bedrock elevation interpreted from hollow stem auger refusal. Actual bedrock elevations may vary.

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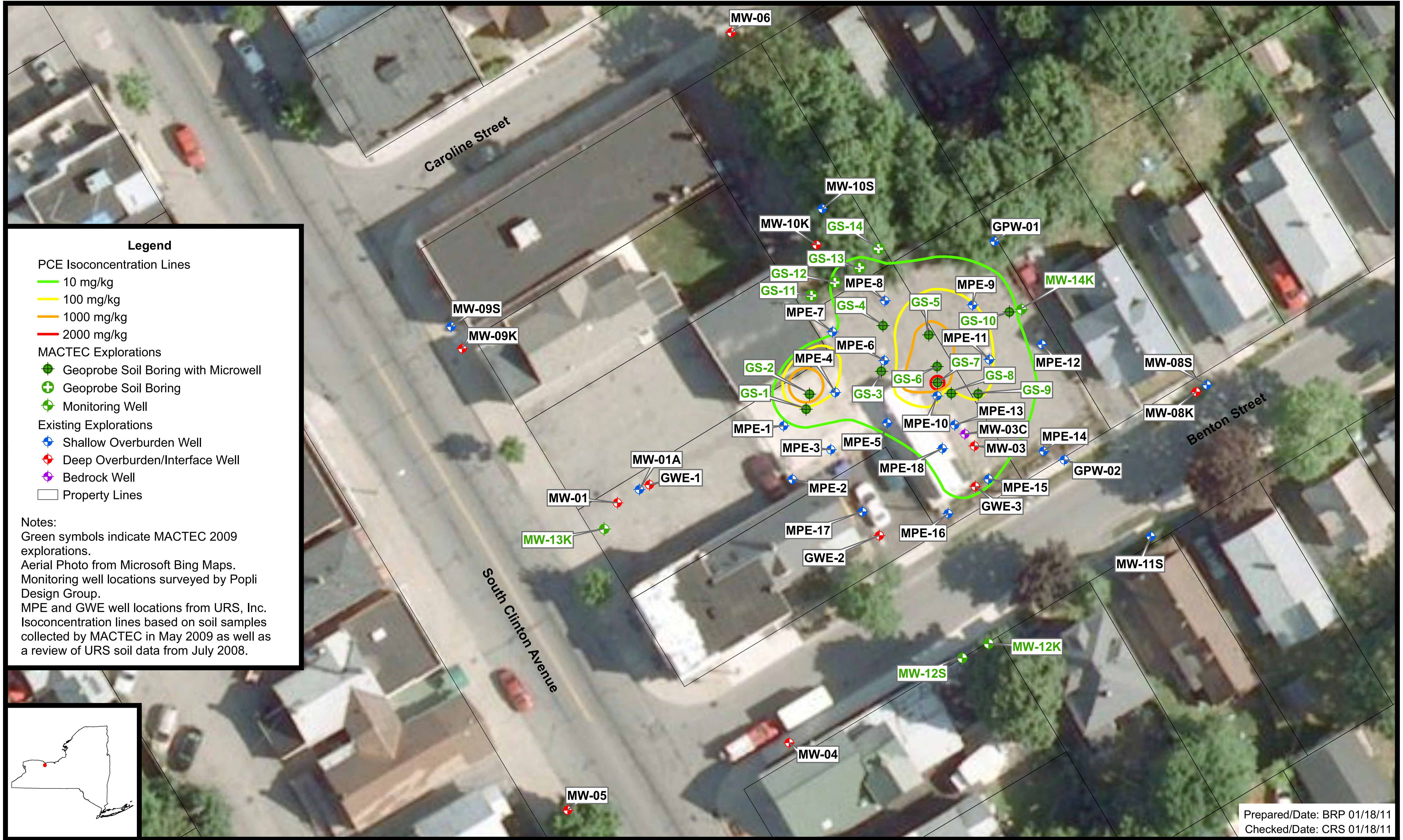
INTERPRETED BEDROCK SURFACE CONTOURS
Project 3612-08-2107
Figure 3.4



Notes:
Green symbols indicate MACTEC 2009 explorations.
Aerial Photo from Microsoft Bing Maps.
Monitoring well locations surveyed by Popli Design Group.
MPE and GWE well locations from URS, Inc.
Isoconcentration lines based on soil samples collected by MACTEC in May 2009 as well as a review of URS soil data from July 2008.

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Feet

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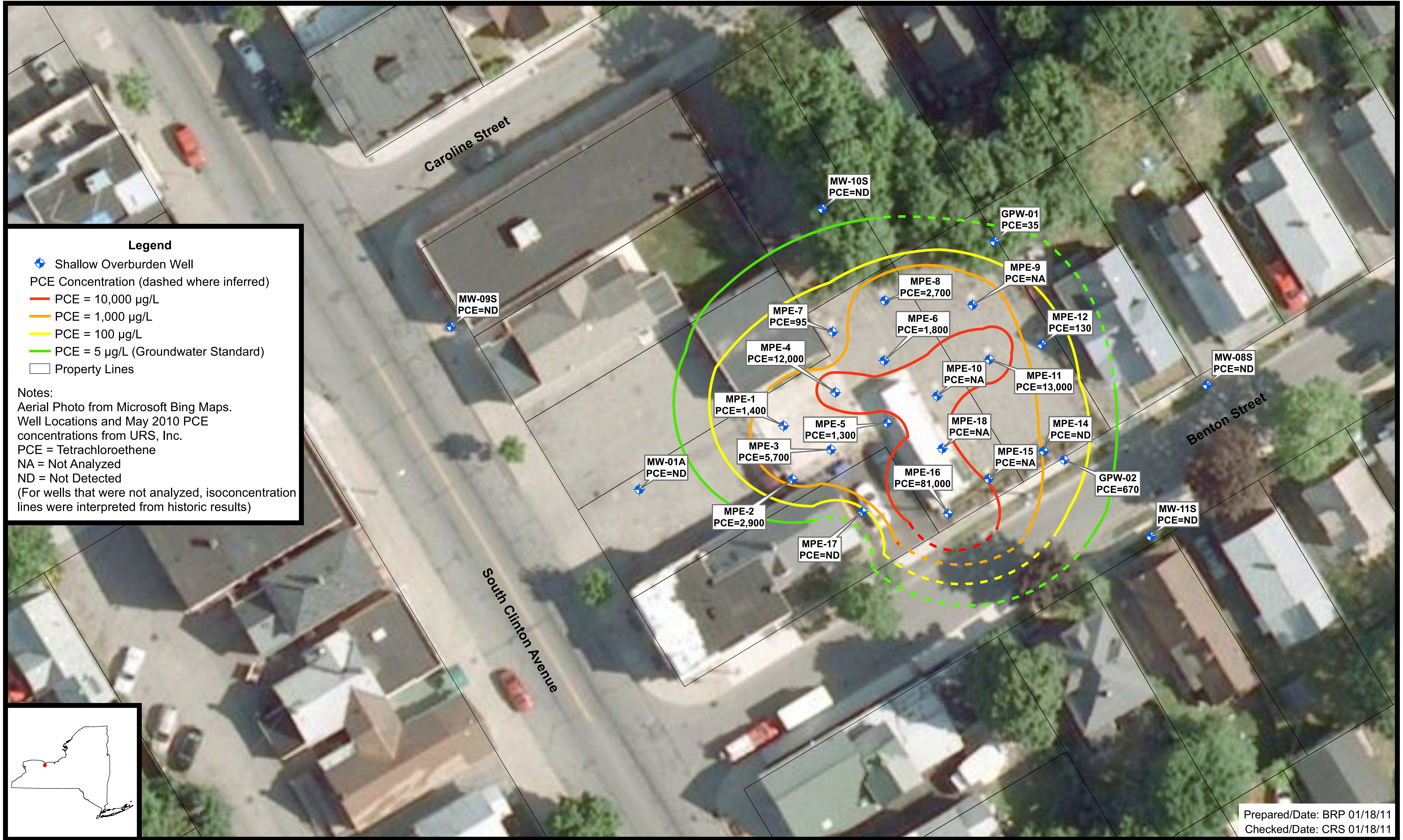
ESTIMATED PCE CONCENTRATIONS
IN SOIL - 2009
Project 3612-08-2107
Figure 4.1



Legend

⌖ Shallow Overburden Well

PCE Concentration (dashed where inferred)

- 🟥 PCE = 10,000 µg/L
- 🟧 PCE = 1,000 µg/L
- 🟨 PCE = 100 µg/L
- 🟩 PCE = 5 µg/L (Groundwater Standard)
- ☐ Property Lines

Notes:
Aerial Photo from Microsoft Bing Maps.
Well Locations and May 2010 PCE concentrations from URS, Inc.
PCE = Tetrachloroethene
NA = Not Analyzed
ND = Not Detected
(For wells that were not analyzed, isoconcentration lines were interpreted from historic results)

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N
0 15 30
Feet

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PCE IN SHALLOW OVERBURDEN
GROUNDWATER - MAY 2010
Project 3612-08-2107 Figure 4.2

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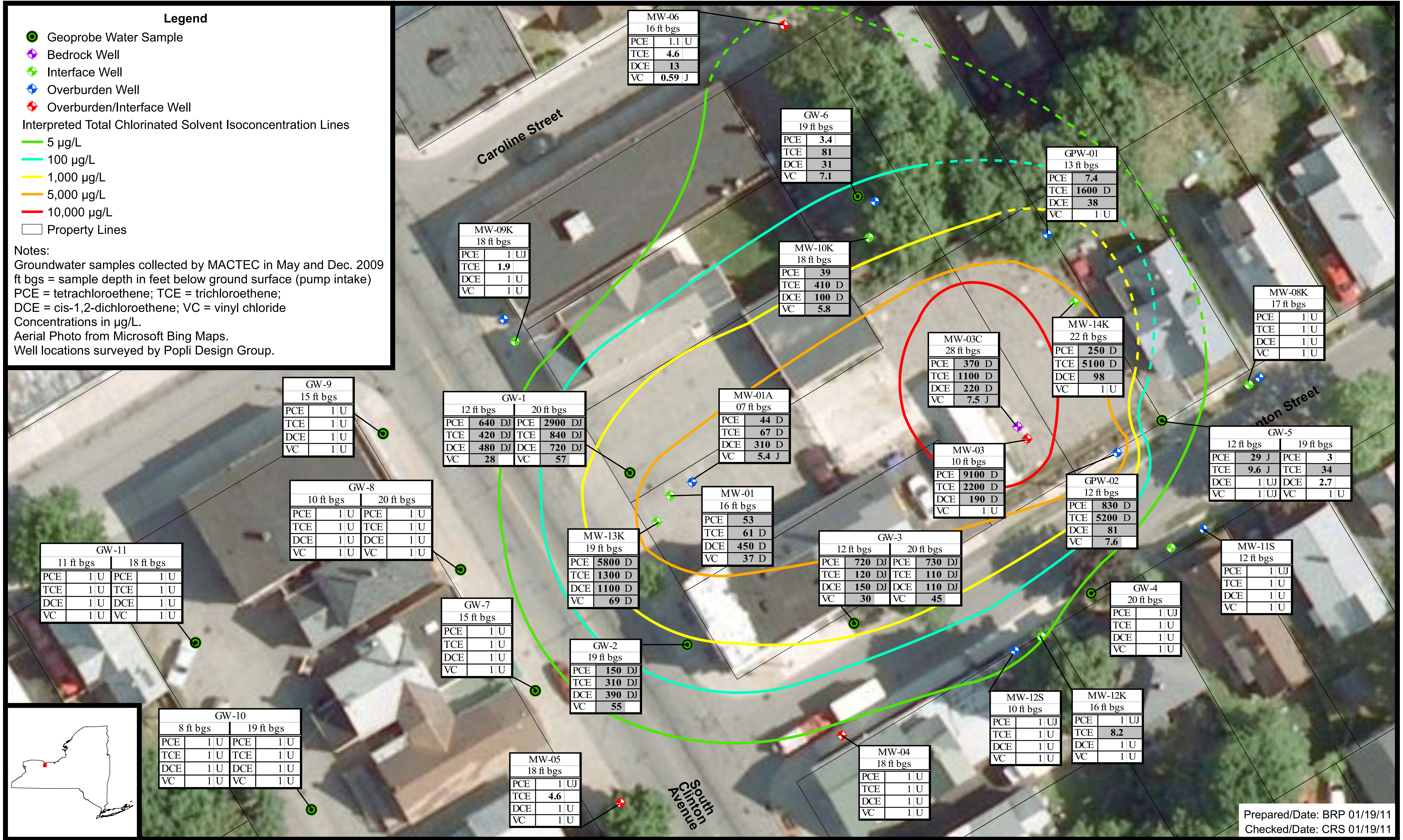

Legend

- ● Geoprobe Water Sample
- ⊕ Bedrock Well
- ⊕ Interface Well
- ⊕ Overburden Well
- ⊕ Overburden/Interface Well

Interpreted Total Chlorinated Solvent Isoconcentration Lines

- 🟩 5 µg/L
- 🟦 100 µg/L
- 🟨 1,000 µg/L
- 🟧 5,000 µg/L
- 🟥 10,000 µg/L
- ☐ Property Lines

Notes:
Groundwater samples collected by MACTEC in May and Dec. 2009
ft bgs = sample depth in feet below ground surface (pump intake)
PCE = tetrachloroethene; TCE = trichloroethene;
DCE = cis-1,2-dichloroethene; VC = vinyl chloride
Concentrations in µg/L.
Aerial Photo from Microsoft Bing Maps.
Well locations surveyed by Popli Design Group.

MW-06	
16 ft bgs	
PCE	1.1 U
TCE	4.6
DCE	13
VC	0.59 J

GW-6	
19 ft bgs	
PCE	3.4
TCE	81
DCE	31
VC	7.1

GPW-01	
13 ft bgs	
PCE	7.4
TCE	1600 D
DCE	38
VC	1 U

MW-09K	
18 ft bgs	
PCE	1 UJ
TCE	1.9
DCE	1 U
VC	1 U

MW-10K	
18 ft bgs	
PCE	39
TCE	410 D
DCE	100 D
VC	5.8

MW-08K	
17 ft bgs	
PCE	1 U
TCE	1 U
DCE	1 U
VC	1 U

MW-03C	
28 ft bgs	
PCE	370 D
TCE	1100 D
DCE	220 D
VC	7.5 J

MW-14K	
22 ft bgs	
PCE	250 D
TCE	5100 D
DCE	98
VC	1 U

GW-9	
15 ft bgs	
PCE	1 U
TCE	1 U
DCE	1 U
VC	1 U

GW-1			
12 ft bgs		20 ft bgs	
PCE	640 DJ	PCE	2900 DJ
TCE	420 DJ	TCE	840 DJ
DCE	480 DJ	DCE	720 DJ
VC	28	VC	57

MW-01A	
07 ft bgs	
PCE	44 D
TCE	67 D
DCE	310 D
VC	5.4 J

MW-03	
10 ft bgs	
PCE	9100 D
TCE	2200 D
DCE	190 D
VC	1 U

GW-5			
12 ft bgs		19 ft bgs	
PCE	29 J	PCE	3
TCE	9.6 J	TCE	34
DCE	1 UJ	DCE	2.7
VC	1 UJ	VC	1 U

GPW-02	
12 ft bgs	
PCE	830 D
TCE	5200 D
DCE	81
VC	7.6

GW-8			
10 ft bgs		20 ft bgs	
PCE	1 U	PCE	1 U
TCE	1 U	TCE	1 U
DCE	1 U	DCE	1 U
VC	1 U	VC	1 U

MW-01	
16 ft bgs	
PCE	53
TCE	61 D
DCE	450 D
VC	37 D

MW-13K	
19 ft bgs	
PCE	5800 D
TCE	1300 D
DCE	1100 D
VC	69 D

GW-3			
12 ft bgs		20 ft bgs	
PCE	720 DJ	PCE	730 DJ
TCE	120 DJ	TCE	110 DJ
DCE	150 DJ	DCE	110 DJ
VC	30	VC	45

MW-11S	
12 ft bgs	
PCE	1 UJ
TCE	1 U
DCE	1 U
VC	1 U

GW-11			
11 ft bgs		18 ft bgs	
PCE	1 U	PCE	1 U
TCE	1 U	TCE	1 U
DCE	1 U	DCE	1 U
VC	1 U	VC	1 U

GW-7	
15 ft bgs	
PCE	1 U
TCE	1 U
DCE	1 U
VC	1 U

GW-4	
20 ft bgs	
PCE	1 UJ
TCE	1 U
DCE	1 U
VC	1 U

GW-2	
19 ft bgs	
PCE	150 DJ
TCE	310 DJ
DCE	390 DJ
VC	55

MW-12S	
10 ft bgs	
PCE	1 UJ
TCE	1 U
DCE	1 U
VC	1 U

MW-12K	
16 ft bgs	
PCE	1 UJ
TCE	8.2
DCE	1 U
VC	1 U

GW-10			
8 ft bgs		19 ft bgs	
PCE	1 U	PCE	1 U
TCE	1 U	TCE	1 U
DCE	1 U	DCE	1 U
VC	1 U	VC	1 U

MW-05	
18 ft bgs	
PCE	1 UJ
TCE	4.6
DCE	1 U
VC	1 U

MW-04	
18 ft bgs	
PCE	1 U
TCE	1 U
DCE	1 U
VC	1 U

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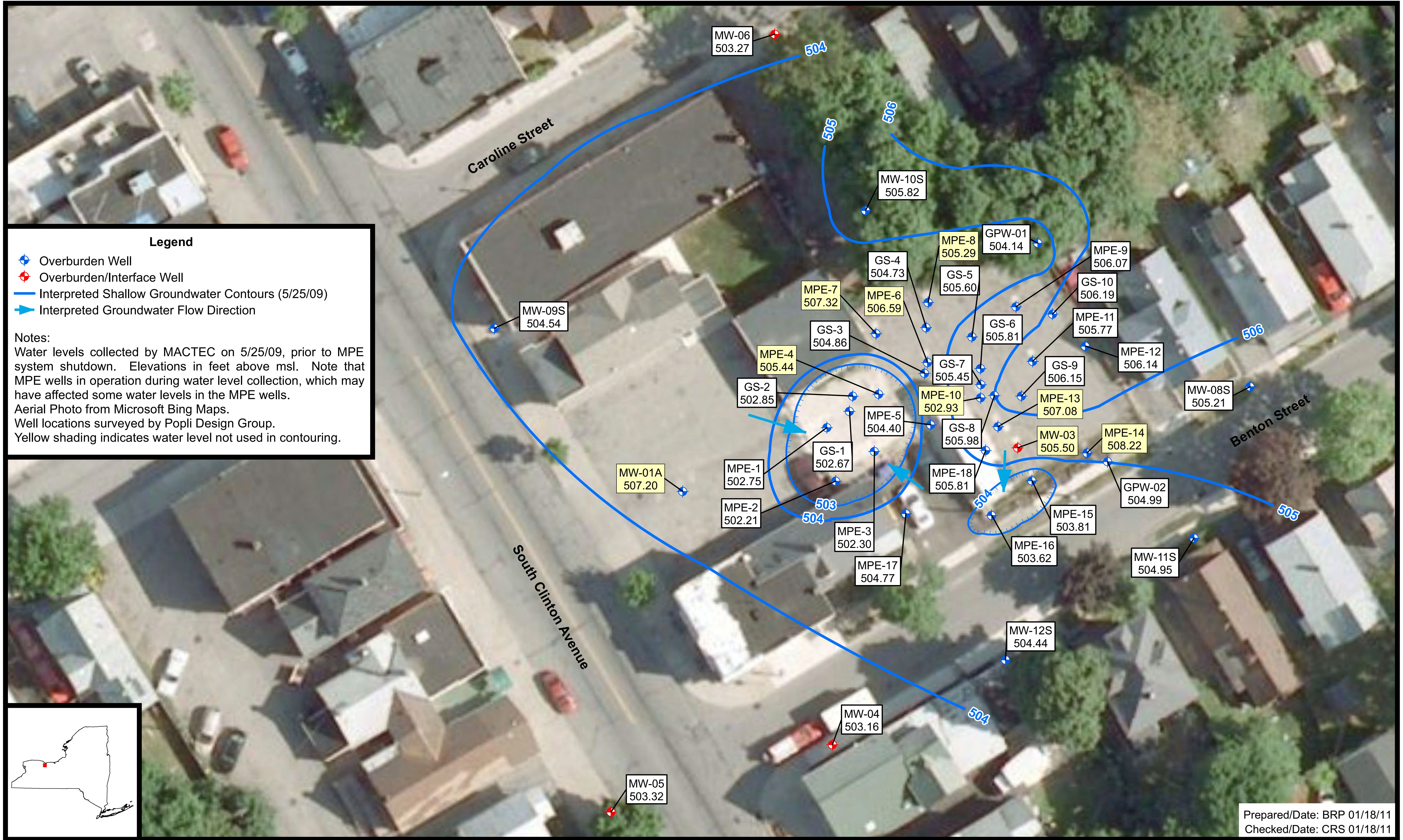
CHLORINATED SOLVENT
CONCENTRATIONS IN GROUNDWATER
Project 3612-08-2107 Figure 4.3



Legend

- ⊕ Overburden Well
- ⊕ Overburden/Interface Well
- — Interpreted Shallow Groundwater Contours (5/25/09)
- ➔ Interpreted Groundwater Flow Direction

Notes:
Water levels collected by MACTEC on 5/25/09, prior to MPE system shutdown. Elevations in feet above msl. Note that MPE wells in operation during water level collection, which may have affected some water levels in the MPE wells.
Aerial Photo from Microsoft Bing Maps.
Well locations surveyed by Popli Design Group.
Yellow shading indicates water level not used in contouring.

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N
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Feet

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SHUTDOWN EVALUATION SHALLOW WATER LEVELS
5/25/2009 (PRIOR TO MPE SHUTDOWN)
Project 3612-08-2107 Figure 4.4

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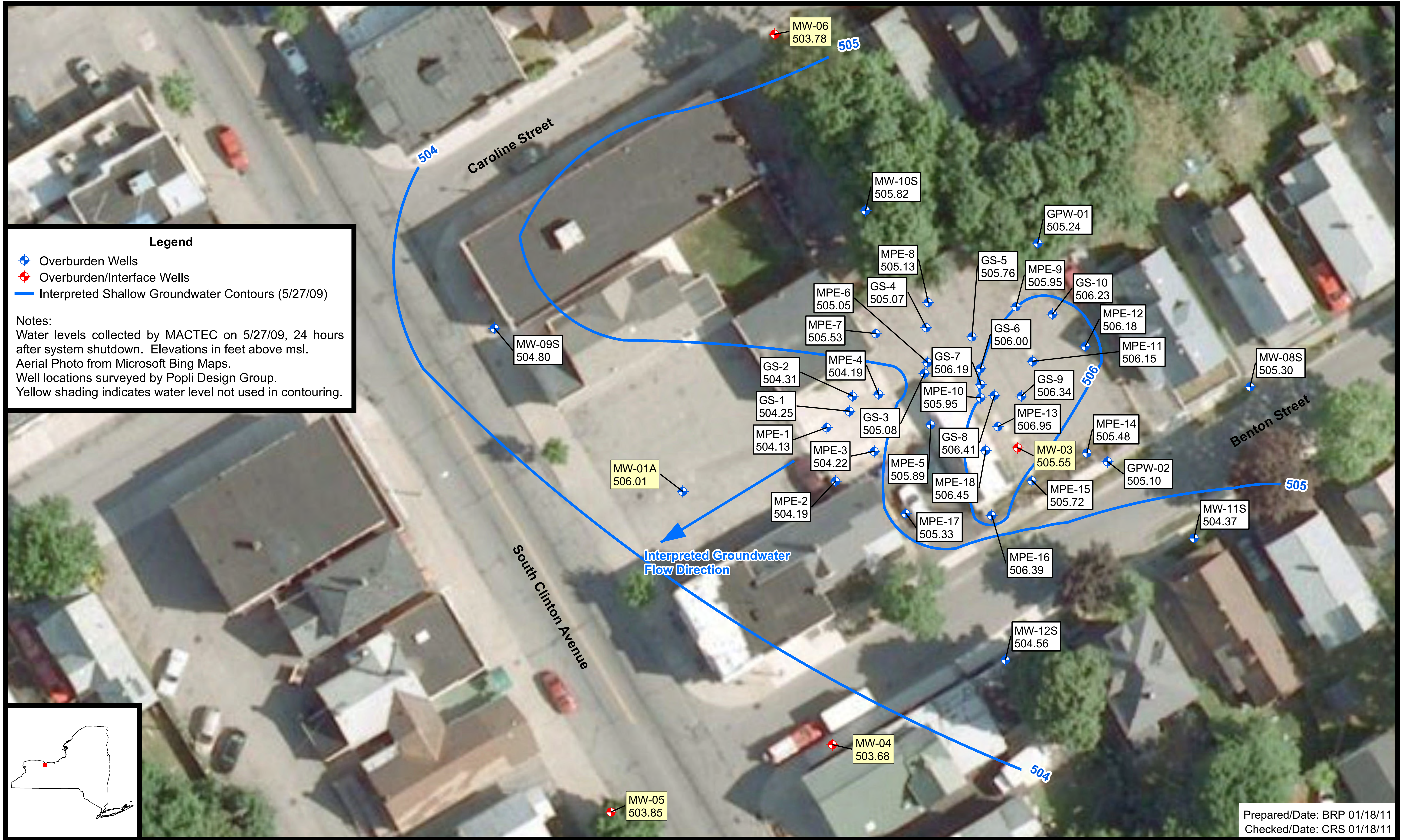

Legend

- ⊕ Overburden Wells
- ⊕ Overburden/Interface Wells
- ━ Interpreted Shallow Groundwater Contours (5/27/09)

Notes:
Water levels collected by MACTEC on 5/27/09, 24 hours after system shutdown. Elevations in feet above msl.
Aerial Photo from Microsoft Bing Maps.
Well locations surveyed by Popli Design Group.
Yellow shading indicates water level not used in contouring.

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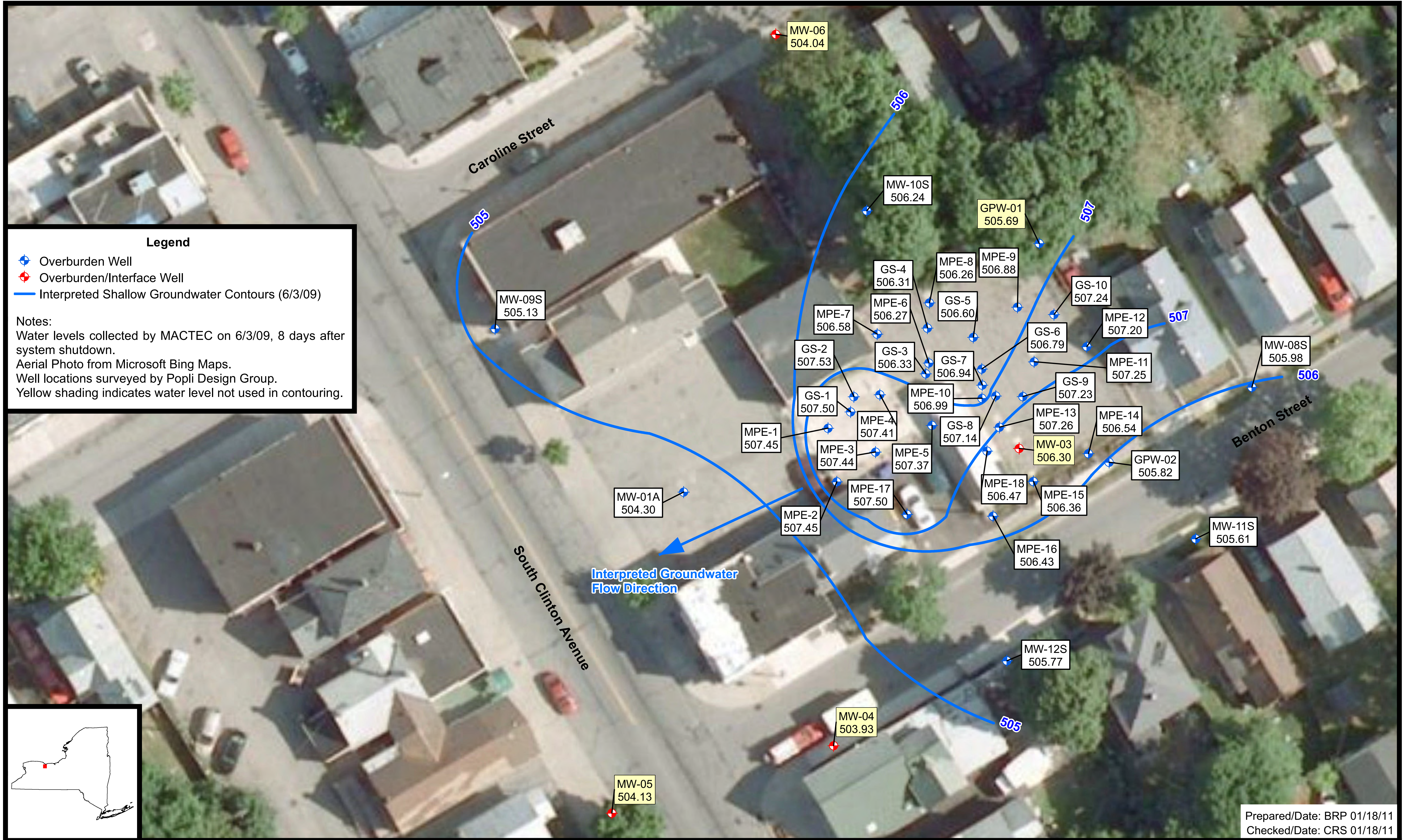
SHUTDOWN EVALUATION SHALLOW WATER LEVELS
5/27/2009 (24 HOURS AFTER SHUTDOWN)
Project 3612-08-2107 Figure 4.5



Legend

- Overburden Well
- Overburden/Interface Well
- Interpreted Shallow Groundwater Contours (6/3/09)

Notes:
Water levels collected by MACTEC on 6/3/09, 8 days after system shutdown.
Aerial Photo from Microsoft Bing Maps.
Well locations surveyed by Popli Design Group.
Yellow shading indicates water level not used in contouring.

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Feet

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SHUTDOWN EVALUATION SHALLOW WATER LEVELS
6/3/2009 (8 DAYS AFTER SHUTDOWN)
Project 3612-08-2107
Figure 4.6

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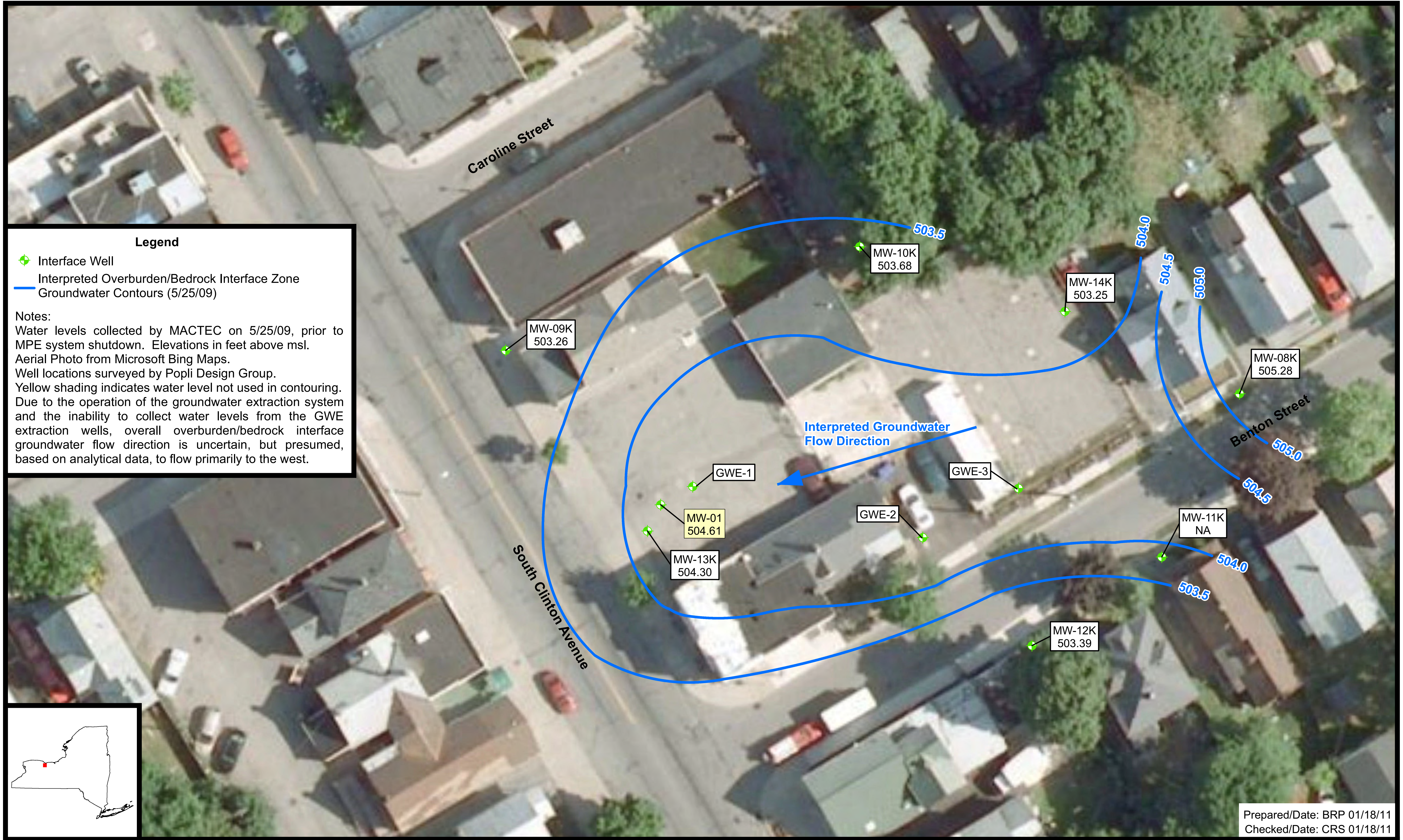

Legend

⊕	Interface Well
—	Interpreted Overburden/Bedrock Interface Zone Groundwater Contours (5/25/09)

Notes:
Water levels collected by MACTEC on 5/25/09, prior to MPE system shutdown. Elevations in feet above msl.
Aerial Photo from Microsoft Bing Maps.
Well locations surveyed by Popli Design Group.
Yellow shading indicates water level not used in contouring.
Due to the operation of the groundwater extraction system and the inability to collect water levels from the GWE extraction wells, overall overburden/bedrock interface groundwater flow direction is uncertain, but presumed, based on analytical data, to flow primarily to the west.

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0 15 30
Feet

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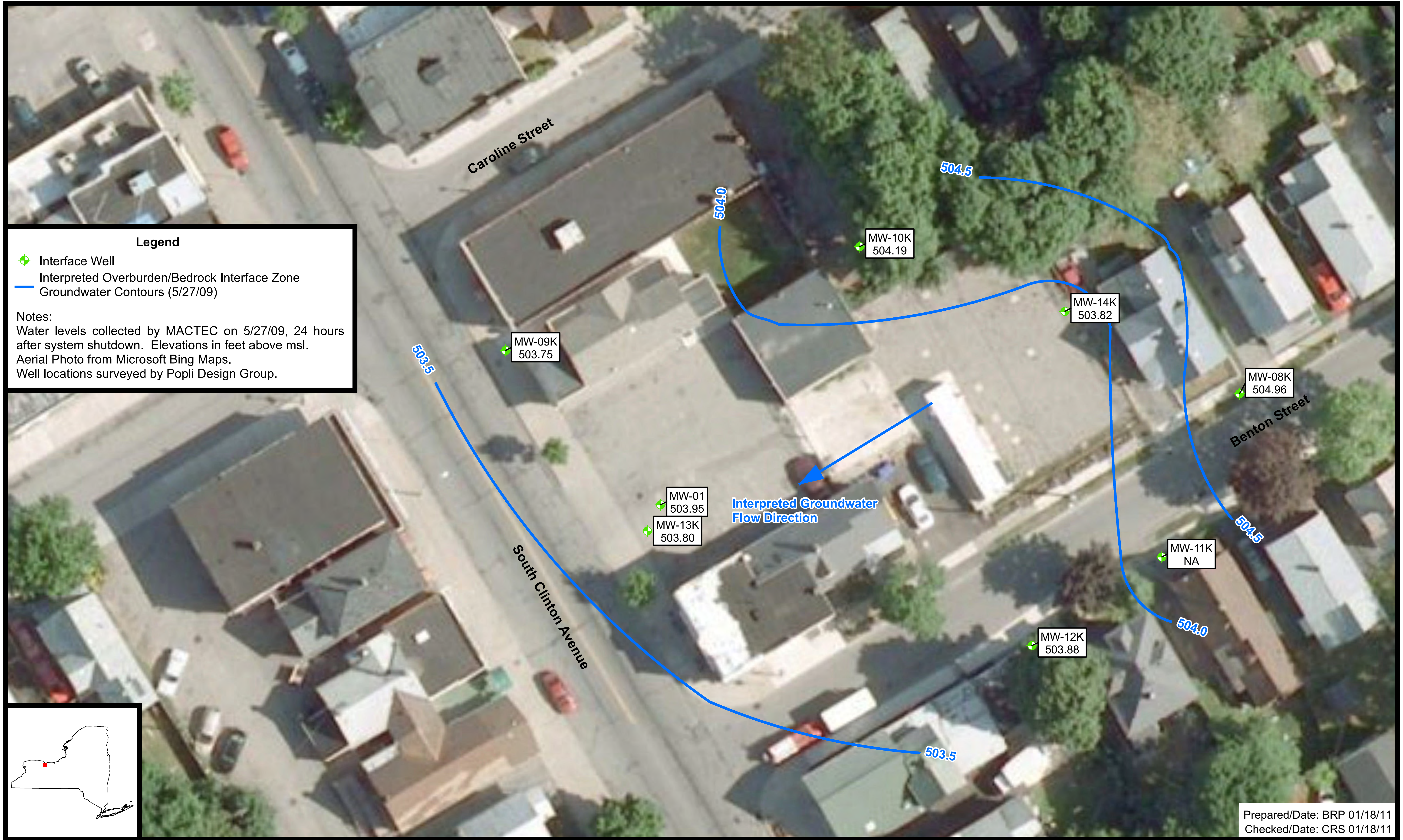
SHUTDOWN EVALUATION INTERFACE WATER LEVELS
5/25/2009 (PRIOR TO MPE SHUTDOWN)
Project 3612-08-2107

Figure 4.7



Legend

✚ Interface Well

— Interpreted Overburden/Bedrock Interface Zone Groundwater Contours (5/27/09)

Notes:
Water levels collected by MACTEC on 5/27/09, 24 hours after system shutdown. Elevations in feet above msl.
Aerial Photo from Microsoft Bing Maps.
Well locations surveyed by Popli Design Group.

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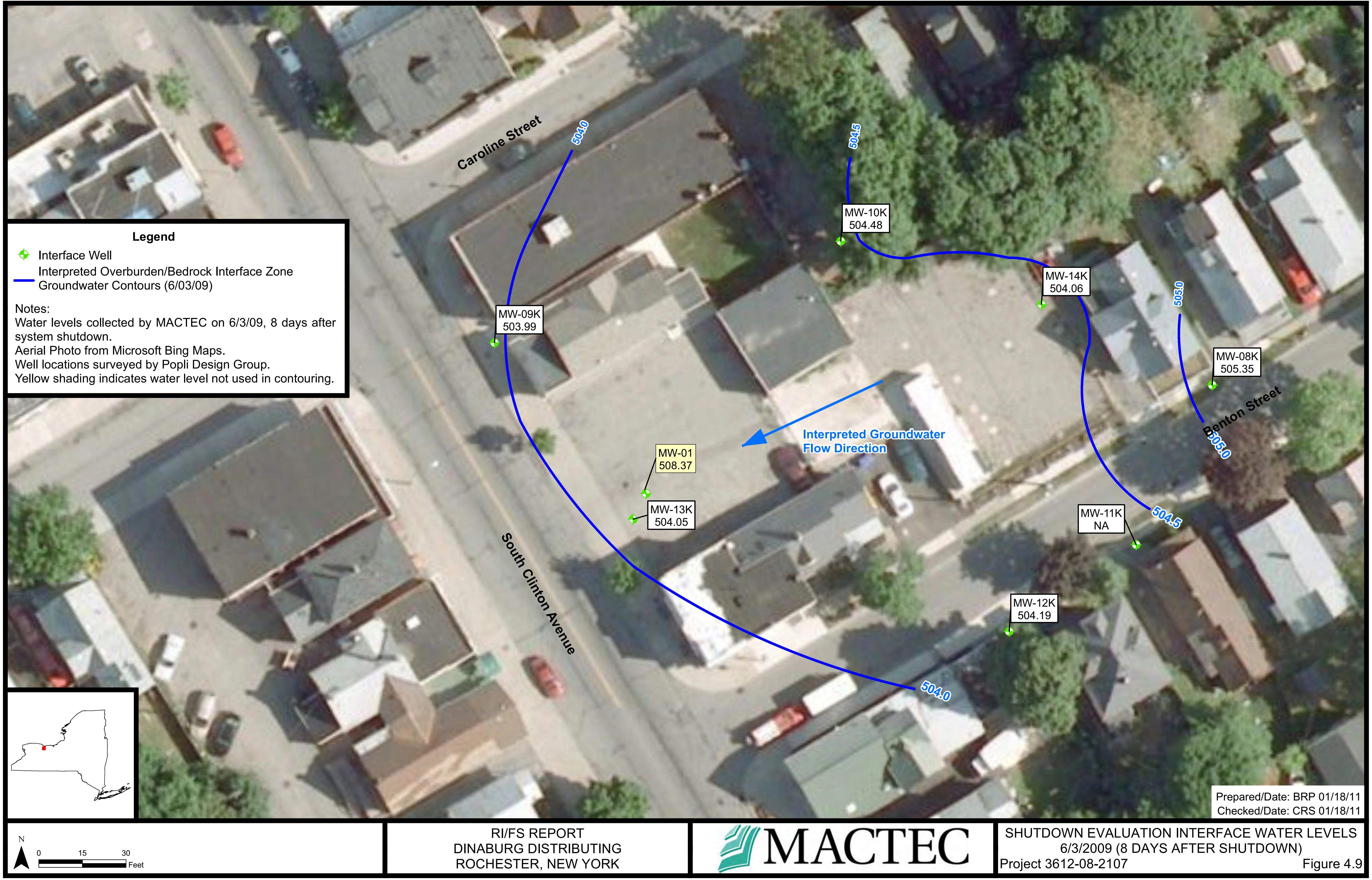
SHUTDOWN EVALUATION INTERFACE WATER LEVELS
5/27/2009 (24 HOURS AFTER SHUTDOWN)
Project 3612-08-2107 Figure 4.8



Legend

Interface Well

Interpreted Overburden/Bedrock Interface Zone Groundwater Contours (6/03/09)

Notes:
Water levels collected by MACTEC on 6/3/09, 8 days after system shutdown.
Aerial Photo from Microsoft Bing Maps.
Well locations surveyed by Popli Design Group.
Yellow shading indicates water level not used in contouring.

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SHUTDOWN EVALUATION INTERFACE WATER LEVELS
6/3/2009 (8 DAYS AFTER SHUTDOWN)
Project 3612-08-2107 Figure 4.9

TABLES

Table 3.1: Monitoring Well Construction Data

Well ID	Well Type	Northing	Easting	Ground Elevation (ft)	Measuring Point Elevation (riser, ft)	Total Depth (ft)	Depth Bedrock Encountered (ft)	Screen Length (ft)	Screened Zone
GPW-01	Monitoring Well	1145250.98	1412214.74	512.91	512.55	14.9	NA	NA	overburden
GPW-02	Monitoring Well	1145177.75	1412238.26	512.79	512.51	14.1	NA	NA	overburden
MW-01	Monitoring Well	1145163.18	1412088.14	513.43	513.06	20.4	NA	5.0	interface?
MW-01A	Monitoring Well	1145167.68	1412095.54	513.52	513.05	8.0	NA	5.0	overburden
MW-03C	Monitoring Well	1145186.36	1412204.99	513.14	512.72	32.7	22.7	5.0	bedrock
MW-03	Monitoring Well	1145182.30	1412208.19	513.34	513.10	21.2	NA	15.0	overburden/interface
MW-04	Monitoring Well	1145082.53	1412145.89	513.30	513.01	24.1	23.1	15.0	overburden/interface
MW-05	Monitoring Well	1145059.86	1412071.43	513.72	513.49	24.6	23.6	15.0	overburden/interface
MW-06	Monitoring Well	1145321.34	1412126.45	512.06	511.54	20.6	19.9	15.0	overburden/interface
MW-08K	Monitoring Well	1145200.50	1412282.75	512.57	512.24	19.2	17.8	10.0	interface
MW-08S	Monitoring Well	1145202.87	1412286.32	512.52	512.27	16.0	NA	10.0	overburden
MW-09K	Monitoring Well	1145215.07	1412036.01	513.27	513.01	22.7	23.3	10.0	interface
MW-09S	Monitoring Well	1145222.49	1412032.24	513.27	512.87	16.0	NA	10.0	overburden
MW-10K	Monitoring Well	1145249.96	1412155.07	512.84	512.49	21.8	22.0	10.0	overburden-interface?
MW-10S	Monitoring Well	1145262.12	1412157.04	512.70	512.25	16.0	NA	10.0	overburden
MW-11K	Monitoring Well	1145145.60	1412256.61	512.60	512.12	18.2	17.5	10.0	overburden-interface?
MW-11S	Monitoring Well	1145151.97	1412267.48	512.60	512.36	14.0	NA	10.0	overburden
MW-12K	Monitoring Well	1145115.83	1412212.98	513.09	512.67	19.5	19.3	5.0	interface
MW-12S	Monitoring Well	1145111.01	1412204.08	513.01	512.53	14.0	NA	5.0	overburden
MW-13K	Monitoring Well	1145154.38	1412083.68	513.41	513.13	21.5	19.2	5.0	interface
MW-14K	Monitoring Well	1145228.23	1412224.05	513.04	512.66	25.0	22.4	5.0	interface
GWE-1	Groundwater Extraction Well	1145169.39	1412098.43	513.43	512.98	20.7	20.7	3.0	interface
GWE-2	Groundwater Extraction Well	1145151.95	1412176.26	513.35	512.94	23.0	23.0	3.0	interface
GWE-3	Groundwater Extraction Well	1145168.73	1412208.74	513.52	513.27	22.0	22.0	3.0	interface
MPE-1	Multi-Phase-Extraction Well	1145189.13	1412143.94	513.91	513.40	13.5	NA	10.0	overburden
MPE-2	Multi-Phase-Extraction Well	1145171.10	1412147.41	514.02	513.42	13.5	NA	7.5	overburden
MPE-3	Multi-Phase-Extraction Well	1145181.83	1412160.55	513.86	513.41	13.5	NA	10.0	overburden
MPE-4	Multi-Phase-Extraction Well	1145200.46	1412161.40	513.76	513.39	12.5	NA	9.5	overburden
MPE-5	Multi-Phase-Extraction Well	1145190.10	1412179.15	513.82	513.43	11.5	NA	8.5	overburden
MPE-6	Multi-Phase-Extraction Well	1145211.17	1412177.81	513.63	513.22	12.0	NA	9.0	overburden
MPE-7	Multi-Phase-Extraction Well	1145220.68	1412160.77	513.86	513.30	11.0	NA	8.0	overburden
MPE-8	Multi-Phase-Extraction Well	1145231.20	1412177.91	513.91	513.48	10.0	NA	7.0	overburden
MPE-9	Multi-Phase-Extraction Well	1145229.69	1412207.77	513.64	513.14	10.0	NA	7.0	overburden

Table 3.1: Monitoring Well Construction Data

Well ID	Well Type	Northing	Easting	Ground Elevation (ft)	Measuring Point Elevation (riser, ft)	Total Depth (ft)	Depth Bedrock Encountered (ft)	Screen Length (ft)	Screened Zone
MPE-10	Multi-Phase-Extraction Well	1145199.56	1412195.89	513.54	513.12	12.0	NA	9.0	overburden
MPE-11	Multi-Phase-Extraction Well	1145211.47	1412213.41	513.35	513.02	10.0	NA	4.0	overburden
MPE-12	Multi-Phase-Extraction Well	1145216.47	1412230.87	513.24	512.90	10.0	NA	4.0	overburden
MPE-13	Multi-Phase-Extraction Well	1145189.52	1412201.53	513.21	512.89	11.5	NA	5.0	overburden
MPE-14	Multi-Phase-Extraction Well	1145180.74	1412231.49	512.69	512.23	11.0	NA	5.0	overburden
MPE-15	Multi-Phase-Extraction Well	1145171.41	1412213.05	513.30	512.97	11.0	NA	5.0	overburden
MPE-16	Multi-Phase-Extraction Well	1145159.52	1412199.50	513.60	513.31	12.0	NA	9.0	overburden
MPE-17	Multi-Phase-Extraction Well	1145160.22	1412170.78	513.47	512.97	13.5	NA	7.5	overburden
MPE-18	Multi-Phase-Extraction Well	1145181.52	1412197.70	513.55	513.12	11.0	NA	8.0	overburden
GS-1	Monitoring Well	1145194.63	1412151.61	513.75	513.38	16.0	NA	5.0	overburden
GS-2	Monitoring Well	1145199.72	1412152.72	513.85	513.59	16.0	NA	5.0	overburden
GS-3	Monitoring Well	1145207.41	1412176.89	513.70	513.49	16.0	NA	5.0	overburden
GS-4	Monitoring Well	1145222.77	1412177.42	513.67	513.43	16.0	NA	5.0	overburden
GS-5	Monitoring Well	1145219.63	1412192.82	513.61	513.38	16.0	NA	5.0	overburden
GS-6	Monitoring Well	1145209.00	1412195.65	513.51	513.22	16.0	NA	5.0	overburden
GS-7	Monitoring Well	1145203.60	1412195.81	513.54	513.25	16.0	NA	5.0	overburden
GS-8	Monitoring Well	1145199.95	1412200.38	513.53	513.37	16.0	NA	5.0	overburden
GS-9	Monitoring Well	1145199.78	1412209.46	513.45	513.23	16.0	NA	5.0	overburden
GS-10	Monitoring Well	1145227.33	1412219.93	513.11	512.90	16.0	NA	5.0	overburden

Notes:
Wells surveyed by Popli Design Group.
Well data from URS, Inc. and MACTEC well logs.
NA = not available

Table 4.1: Summary of 2009 VOC Concentrations in Soil

	Media	SOIL				SOIL				SOIL			
	Location	GS-1				GS-2				GS-3			
	Sample Date	5/6/2009				5/6/2009				5/6/2009			
	Sample ID	828103-GS10909		828103-GS11609		828103-GS21109		828103-GS21609		828103-GS31109		828103-GS31609	
	Sample Depth (ft bgs)	09		16		11		16		11		16	
	Qc Code	FS		FS		FS		FS		FS		FS	
Parameter	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	0.68	0.55	U	0.41	U	0.36	U	0.49	U	**0.86**		**0.6**	
1,1-Dichloroethane	0.27	0.55	U	0.41	U	0.36	U	0.49	U	**0.2**	J	**0.59**	
Cis-1,2-Dichloroethene	0.25	**5.2**		0.41	U	0.36	U	0.49	U	0.32	U	0.36	U
Cyclohexane	NA	0.55	U	0.41	U	**3.5**		0.49	U	0.32	U	0.36	U
Ethyl benzene	1	0.55	U	0.41	U	**2.1**		0.49	U	0.32	U	0.36	U
Isopropylbenzene	NA	0.55	U	0.41	U	**1.1**		0.49	U	0.32	U	0.36	U
Methyl cyclohexane	NA	0.55	U	0.41	U	**83**	DJ	0.49	U	0.32	U	0.36	U
Methylene chloride	0.05	0.55	U	0.41	U	0.36	U	0.49	U	0.32	U	0.36	U
Tetrachloroethene	1.3	**52**	DJ	**3.7**		**1700**	DJ	**15**		**5.6**		**0.64**	
Toluene	0.7	0.55	U	0.41	U	0.36	U	0.49	U	0.32	U	**0.16**	J
Trichloroethene	0.47	**9**		**27**	D	**3.7**		**29**	D	**8.1**		**7**	
Xylene, m/p	0.26	**0.25**	J	0.83	U	**51**	D	**0.22**	J	**0.16**	J	0.72	U
Xylene, o	0.26	0.55	U	0.41	U	**7.6**		0.49	U	0.32	U	0.36	U
Percent Moisture	NA	**14**		**8**		**9**		**9**		**12**		**9**	

Notes:
Results in milligrams per kilogram (mg/Kg)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method 8260B
ft bgs = feet below ground surface
QC Code:
FS = Field Sample
FD = Field Duplicate
Qualifiers:
U = Not detected at a concentration greater than the reporting limit
J = Estimated value
D = Result from diluted run
Criteria = Soil Cleanup Objective for unrestricted use - from 6 NYCRR Part 375
Detections are indicated in **BOLD**
Highlighted results exceed criteria

Created by: LJB 4/9/10
Checked By: CRS 11/4/10

Table 4.1: Summary of 2009 VOC Concentrations in Soil

	Media	SOIL				SOIL				SOIL					
	Location	GS-4				GS-5				GS-6					
	Sample Date	5/8/2009				5/6/2009				5/7/2009					
	Sample ID	828103-GS41109		828103-GS41609		828103-GS51109		828103-GS51509		828103-GS61009		828103-GS61009D		828103-GS61509	
	Sample Depth (ft bgs)	11		16		11		15		10		10		15	
	Qc Code	FS		FS		FS		FS		FS		FD		FS	
Parameter	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	0.68	0.56	U	0.54	UJ	0.47	U	0.34	U	0.6	U	0.6	UJ	0.54	UJ
1,1-Dichloroethane	0.27	0.56	U	**0.94**	J	0.47	U	0.34	U	0.6	U	0.6	UJ	0.54	UJ
Cis-1,2-Dichloroethene	0.25	**0.37**	J	0.54	UJ	0.47	U	0.34	U	0.6	UJ	0.6	UJ	0.54	UJ
Cyclohexane	NA	**0.54**	J	0.54	UJ	0.47	U	0.34	U	0.6	U	0.6	UJ	0.54	UJ
Ethyl benzene	1	0.56	U	0.54	UJ	0.47	U	0.34	U	0.6	U	0.6	UJ	0.54	UJ
Isopropylbenzene	NA	0.56	U	0.54	UJ	0.47	U	0.34	U	0.6	U	0.6	UJ	0.54	UJ
Methyl cyclohexane	NA	**2.6**	J	0.54	UJ	0.47	U	0.34	U	0.6	UJ	0.6	UJ	0.54	UJ
Methylene chloride	0.05	0.56	U	0.54	UJ	0.47	UJ	0.34	U	0.6	U	0.6	UJ	0.54	UJ
Tetrachloroethene	1.3	**21**	D	**84**	D	**990**	D	**340**	DJ	**1200**	D	**750**	D	**670**	D
Toluene	0.7	0.56	U	**0.26**	J	0.47	U	0.34	U	0.6	U	0.6	UJ	0.54	UJ
Trichloroethene	0.47	**3**		**35**	D	**630**	D	**370**	D	**150**	DJ	**79**	DJ	**490**	D
Xylene, m/p	0.26	1.1	U	**0.5**	J	0.94	U	0.68	U	1.2	U	1.2	UJ	1.1	UJ
Xylene, o	0.26	0.56	U	0.54	UJ	0.47	U	0.34	U	0.6	U	0.6	UJ	0.54	UJ
Percent Moisture	NA	**11**		**7**		**9**		**10**		**16**		**16**		**8**	

Notes:
Results in milligrams per kilogram (mg/Kg)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method 8260B
ft bgs = feet below ground surface
QC Code:
  FS = Field Sample
  FD = Field Duplicate
Qualifiers:
  U = Not detected at a concentration greater than the reporting limit
  J = Estimated value
  D = Result from diluted run
Criteria = Soil Cleanup Objective for unrestricted use - from 6 NYCRR Part 375
Detections are indicated in **BOLD**
Highlighted results exceed criteria

Table 4.1: Summary of 2009 VOC Concentrations in Soil

	Media	SOIL				SOIL				SOIL			
	Location	GS-7				GS-8				GS-9			
	Sample Date	5/8/2009				5/7/2009				5/8/2009			
	Sample ID	828103-GS71209		828103-GS71609		828103-GS81109		828103-GS81509		828103-GS91209		828103-GS91509	
	Sample Depth (ft bgs)	12		16		11		15		12		15	
	Qc Code	FS		FS		FS		FS		FS		FS	
Parameter	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	0.68	0.55	U	0.55	UJ	27	U	58	U	54	U	0.56	U
1,1-Dichloroethane	0.27	0.55	U	0.55	UJ	27	UJ	58	UJ	54	UJ	0.56	U
Cis-1,2-Dichloroethene	0.25	0.55	UJ	0.55	UJ	27	UJ	58	UJ	54	UJ	0.56	UJ
Cyclohexane	NA	0.55	U	0.55	UJ	27	U	58	U	54	U	0.56	U
Ethyl benzene	1	0.55	U	0.55	UJ	27	U	58	U	54	U	0.56	U
Isopropylbenzene	NA	0.55	U	0.55	UJ	27	U	58	U	54	U	0.56	U
Methyl cyclohexane	NA	0.55	UJ	270	U	27	U	58	U	54	U	0.56	UJ
Methylene chloride	0.05	0.55	U	0.55	UJ	27	U	58	U	54	U	0.56	U
Tetrachloroethene	1.3	**110**	D	**1200**	D	**51**	D	**64**	D	**93**	D	**43**	D
Toluene	0.7	0.55	U	**0.29**	J	27	U	58	U	54	U	0.56	U
Trichloroethene	0.47	**160**	D	**1400**	D	**12**	DJ	**26**	DJ	**110**	D	**160**	D
Xylene, m/p	0.26	1.1	U	**0.25**	J	55	U	120	U	110	U	1.1	U
Xylene, o	0.26	0.55	U	**0.34**	J	27	U	58	U	54	U	0.56	U
Percent Moisture	NA	**9**		**9**		**9**		**14**		**8**		**10**	

Notes:
Results in milligrams per kilogram (mg/Kg)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method 8260B
ft bgs = feet below ground surface
QC Code:
  FS = Field Sample
  FD = Field Duplicate
Qualifiers:
  U = Not detected at a concentration greater than the reporting limit
  J = Estimated value
  D = Result from diluted run
Criteria = Soil Cleanup Objective for unrestricted use - from 6 NYCRR Part 375
Detections are indicated in **BOLD**
Highlighted results exceed criteria

Table 4.1: Summary of 2009 VOC Concentrations in Soil

	Media	SOIL				SOIL				SOIL			
	Location	GS-10				GS-11				GS-12			
	Sample Date	5/8/2009				5/5/2009				5/5/2009			
	Sample ID	828103-GS101209		828103-GS101509		828103-GS111009		828103-GS111609		828103-GS121109		828103-GS121309	
	Sample Depth (ft bgs)	12		15		10		16		11		13	
	Qc Code	FS		FS		FS		FS		FS		FS	
Parameter	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	0.68	0.55	U	0.54	UJ	0.31	U	0.36	U	0.35	U	0.33	U
1,1-Dichloroethane	0.27	0.55	U	0.54	UJ	0.31	U	0.36	U	0.35	U	0.33	U
Cis-1,2-Dichloroethene	0.25	0.55	UJ	0.54	UJ	0.31	U	0.36	U	0.35	U	0.33	U
Cyclohexane	NA	0.55	U	0.54	UJ	0.31	U	0.36	U	0.35	U	0.33	U
Ethyl benzene	1	0.55	U	0.54	UJ	0.31	U	0.36	U	0.35	U	0.33	U
Isopropylbenzene	NA	0.55	U	0.54	U	0.31	U	0.36	U	0.35	U	0.33	U
Methyl cyclohexane	NA	0.55	UJ	0.54	UJ	0.31	U	0.36	U	0.35	U	0.33	U
Methylene chloride	0.05	0.55	U	0.54	UJ	0.31	U	0.36	U	0.35	U	0.33	U
Tetrachloroethene	1.3	**12**	D	**15**	DJ	**0.63**		0.36	U	**7.2**		**30**	DJ
Toluene	0.7	0.55	U	0.54	UJ	0.31	U	0.36	U	0.35	U	0.33	U
Trichloroethene	0.47	**15**		**15**	J	**0.44**	J	0.36	UJ	**1.1**	J	**3**	J
Xylene, m/p	0.26	1.1	U	1.1	UJ	0.61	U	0.72	U	0.71	U	0.66	U
Xylene, o	0.26	0.55	U	0.54	UJ	0.31	U	0.36	U	0.35	U	0.33	U
Percent Moisture	NA	**9**		**8**		**6**		**7**		**9**		**7**	

Notes:
Results in milligrams per kilogram (mg/Kg)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method 8260B
ft bgs = feet below ground surface
QC Code:
- FS = Field Sample
- FD = Field Duplicate

Qualifiers:
- U = Not detected at a concentration greater than the reporting limit
- J = Estimated value
- D = Result from diluted run

Criteria = Soil Cleanup Objective for unrestricted use - from 6 NYCRR Part 375
Detections are indicated in **BOLD**
Highlighted results exceed criteria

Created by: LJB 4/9/10
Checked By: CRS 11/4/10

Table 4.1: Summary of 2009 VOC Concentrations in Soil

Media		SOIL						SOIL				SOIL	
Location		GS-13						GS-14				MW-13K	
Sample Date		5/5/2009						5/5/2009				5/5/2009	
Sample ID		828103-GS131209		828103-GS131609		828103-GS132109		828103-GS141209		828103-GS141409		828103-MW131509	
Sample Depth (ft bgs)		12		16		21		12		14		15	
Qc Code		FS		FS		FS		FS		FS		FS	
Parameter	**Criteria**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	0.68	0.37	U	0.38	U	0.34	U	0.44	U	0.41	U	0.25	U
1,1-Dichloroethane	0.27	0.37	U	0.38	U	0.34	U	0.44	U	0.41	U	0.25	U
Cis-1,2-Dichloroethene	0.25	**0.36**	J	**0.51**		**0.2**	J	0.44	U	0.41	U	**0.24**	J
Cyclohexane	NA	0.37	U	0.38	U	0.34	U	0.44	U	0.41	U	0.25	U
Ethyl benzene	1	0.37	U	0.38	U	0.34	U	0.44	U	0.41	U	0.25	U
Isopropylbenzene	NA	0.37	U	0.38	U	0.34	U	0.44	U	0.41	U	0.25	U
Methyl cyclohexane	NA	0.37	U	0.38	U	0.34	U	0.44	U	0.41	U	0.25	U
Methylene chloride	0.05	0.37	U	0.38	U	0.34	U	0.44	U	0.41	U	0.25	U
Tetrachloroethene	1.3	**30**	DJ	**9.5**		**1.1**		0.44	U	0.41	U	**10**	D
Toluene	0.7	0.37	U	0.38	U	0.34	U	0.44	U	0.41	U	0.25	U
Trichloroethene	0.47	**3.3**	J	**26**	D	**16**	D	**5.8**	J	**5.7**	J	**2.5**	J
Xylene, m/p	0.26	0.74	U	0.77	U	0.68	U	0.87	U	0.82	U	0.49	U
Xylene, o	0.26	0.37	U	0.38	U	0.34	U	0.44	U	0.41	U	0.25	U
Percent Moisture	NA	**8**		**10**		**11**		**8**		**8**		**9**	

Notes:
Results in milligrams per kilogram (mg/Kg)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method 8260B
ft bgs = feet below ground surface
QC Code:
  FS = Field Sample
  FD = Field Duplicate
Qualifiers:
  U = Not detected at a concentration greater than the reporting limit
  J = Estimated value
  D = Result from diluted run
Criteria = Soil Cleanup Objective for unrestricted use - from 6 NYCRR Part 375
Detections are indicated in **BOLD**
Highlighted results exceed criteria

Table 4.2: Summary of 2009 Soil PID Readings

Date	5/6/2009		5/6/2009		5/6/2009		5/8/2009		5/6/2009		5/7/2009		5/8/2009		5/7/2009	
Boring ID	**GS-1**		**GS-2**		**GS-3**		**GS-4**		**GS-5**		**GS-6**		**GS-7**		**GS-8**	
Depth (feet bgs)	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value
0 - 1	NM		0		0		0		0		4		1.2		0	
1 - 2	NM		0		0		0.6		0		7		1.2		18.2	
2 - 3	NM		0		3.7		1.1		0		0		0		20.2	
3 - 4	NM		0		3.7		0		0		0		0		0	
4 - 5	NM		0		0		0		0		0		0		0	
5 - 6	NM		0		0		0		0		0		0		0	
6 - 7	NM		0		0		0		0		6		0		68	
7 - 8	NM		146		0		0		6.8		6		22		68	
8 - 9	NM		0		0		114		2000		64		6.7		8	
9 - 10	300	66.45	0		385		21.6		2000		2000	1350	50		186	
10 - 11	NM		2000	1852	385	14.92	638	27.53	2000	1620	2000		100		186	63
11 - 12	NM		2000		985		95		2000		2000		337	270	22	
12 - 13	0		50		20		300		2000		2000		337		28	
13 - 14	0		50		20		300		2000		2000		106		28	
14 - 15	20	30.7	75		20		300		2000	710	2000	1160	2000		343	90
15 - 16	10		75	44.22	20	8.99	321	120.7	2000		433		2000	2600.88	48	
16 - 17																
17 - 18																
18 - 19																
19 - 20																
20 - 21																
21 - 22																

Notes:
bgs = below ground surface
PID = Thermo Electronics 580 B Photoionization Detector
PID readings collected over soil sleeve
ppm = parts per million (0 reading indicates less than instrument quantitation limit of 0.1 ppm)
Lab Value = Total VOCs detected by USEPA Method 8260B
NM = Not Measured
Horizontal lines indicate approximate discrete sample sections (either Geoprobe or split spoon)

🟨 = PPM value between 0.5 and 99
🟧 = PPM value between 99 and 200
🟧 = PPM value between 200 and 500
🟥 = PPM value greater than 500
(Max PID reading is 2000 ppm)

Created By: LJB 6/30/2010
Checked by: CRS 10/30/2010

Table 4.2: Summary of 2009 Soil PID Readings

Date	5/8/2009		5/8/2009		5/5/2009		5/5/2009		5/5/2009		5/5/2009		5/4/2009	5/5/2009		5/7/2009
Boring ID	**GS-9**		**GS-10**		**GS-11**		**GS-12**		**GS-13**		**GS-14**		**MW-12K**	**MW-13K**		**MW-14K**
Depth (feet bgs)	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Lab Value	Field PID (ppm)	Field PID (ppm)	Lab Value	Field PID (ppm)
0 - 1	0		0		0		0		0		0		0.1	0		0
1 - 2	2.2		0		0		0		0		0		0.1	0.3		0
2 - 3	1.9		0		1		0		0		0		0.1	0.3		0
3 - 4	0		0		0		0		0		0		0.1	3.2		0
4 - 5	0		0		0		0		0		0		0.1	3.4		NM
5 - 6	0		0		0		0		0		0		0.1	3.2		NM
6 - 7	5.6		6.7		0		0		0		0		0.2	0		0
7 - 8	64		6.7		0		0		0		0		NM	0		0
8 - 9	430		2.6		0		0		0		0		NM	0.2		3.2
9 - 10	220		22		0		0		0		0		NM	4.4		22
10 - 11	480		74		40	1.99	6	8.33	17		30		0	340		NM
11 - 12	104	203	26	27	40		6		17	33.66	45	5.8	0	NM		NM
12 - 13	400		9.9		0		10		4		45		NM	NM		NM
13 - 14	533		9.9		0		61	33	4		45	5.7	NM	NM		NM
14 - 15	2000	203	68	30	0	0	61		145		45		NM	55	12.74	28
15 - 16	733		26		0		61		145	36.01	45		0.1	32		180
16 - 17									65				0	NM		NM
17 - 18									70				NM	NM		NM
18 - 19									89				NM	NM		NM
19 - 20									20				Bedrock	Bedrock		19
20 - 21									45	17.3						100
21 - 22									bedrock?							Bedrock

Notes:
bgs = below ground surface
PID = Thermo Electronics 580 B Photoionization Detector
PID readings collected over soil sleeve
ppm = parts per million (0 reading indicates less than instrument quantitation limit of 0.1 ppm)
Lab Value = Total VOCs detected by USEPA Method 8260B
NM = Not Measured
Horizontal lines indicate approximate discrete sample sections (either Geoprobe or split spoon)

🟨 = PPM value between 0.5 and 99
🟧 = PPM value between 99 and 200
🟧 = PPM value between 200 and 500
🟥 = PPM value greater than 500
(Max PID reading is 2000 ppm)

Created By: LJB 6/30/2010
Checked by: CRS 10/30/2010

Table 4.3: Historical Occurrence of PCE and TCE in Groundwater

Well ID	**GPW-01**		**GPW-02**		**MW-1**		**MW-01A**		**MW-2***		**MW-3****		**MW-3C****	
Sample Date	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**
February-95	-	-	-	-	**3,480**	**2,114**	-	-	**83,989**	**22,890**	**160,503**	**14,163**	-	-
October-97	-	-	-	-	**16,000**	**18,000**	-	-	**93,000**	**33,000**	**99,000**	**21,000**	**300**	**570**
Nov-Dec-2000	**3,500**	**2**	**44,000**	**16,000**	**8,400**	**20,000**	**11**	**36**	**110,000**	**69,000**	**16,000**	**33,000**	**2,000**	**900**
February-06	**3,800**	**360**	**56,000**	**14,000**	**9,300**	**21,000**	**510**	**1,000**	-	-	**950**	**910**	**14,000**	**28,000**
March-06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April-06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May-06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June-06	**3,000**	ND	**6,700**	**2,000**	**2,000**	**4,100**	**58**	**160**	-	-	**400**	**580**	**12,000**	**17,000**
November-06	**1,500**	**110**	**2,800**	**920**	**1**	**2**	**11**	**37**	-	-	**77**	**110**	**4,100**	**9,400**
February-07	**500**	**5**	**13,000**	**6,600**	ND	ND	-	-	-	-	**100**	**71**	**5,200**	**8,700**
May-07	**110**	**5**	**1,600**	**540**	**3**	**1**	**120**	**300**	-	-	**390**	**340**	**2,000**	**6,900**
August-07	**1,400**	**4**	-	-	**27**	**90**	**68**	**220**	-	-	**240**	**200**	**1,600**	-
November-07	**1,800**	**28**	**5,800**	**1,500**	**3**	ND	**260**	**580**	-	-	**190**	**170**	**4,100**	**8,900**
February-08	**120**	ND	-	-	ND	ND	**32**	**150**	-	-	**260**	**180**	**1,200**	**5,800**
May-08	**120**	**12**	**1,600**	**630**	ND	ND	**200**	**620**	-	-	**200**	**110**	**1,800**	**6,400**
August-08	**1,500**	**27**	**3,400**	**1,700**	**2**	**1**	**320**	**460**	-	-	**160**	**96**	**1,400**	**5,200**
February-09	**220**	**2**	**1,800**	**600**	**3**	**1**	**140**	**330**	-	-	**170**	**78**	**1,000**	**3,200**
May-09†	**1,600**	**7**	**5,200**	**830**	**61**	**53**	**67**	**44**	-	-	**2,200**	**9,100**	**1,100**	**370**
May-10	**410**	**35**	**2,400**	**670**	**490**	**5,000**	ND	ND	-	-	**480**	**100**	**130**	**1,600**

Notes:
Results shown are only the reported detected values. Results from historic URS analytical reports, with the exception of †.
ND = not detected above reporting limit.
NA = results not available
Results do not include all data collected to date (some dates may be missing).
Results do not include validation flags identifying estimated values or other qualifiers.
Detections are indicated in **BOLD**
Highlighted results exceed NYSDEC groundwater standards
——— = start up of treatment system, February 22, 2006

- = Indicates no sample taken
* = MW-2 was decommissioned in 2006.
** = MW-3 and MW-3C appear to be misidentified at some point between 2000 and Feb. 2006, with this mislabeling assumed to be carried through all URS data (May 2009 RI locations and results for MW-3 and MW-3C were based on well depth).
*** = MW-11K was damaged after May 2007 and has not been replaced.
† = Results for the MACTEC May 2009 sampling event do not include all sampling locations.
Indicates highest concentration per well

Prepared by: LJB 4/26/10
Checked by: CRS 11/4/10

Table 4.3: Historical Occurrence of PCE and TCE in Groundwater

Well ID	**MW-4**		**MW-5**		**MW-6**		**MW-08K**		**MW-08S**		**MW-09K**		**MW-09S**	
Sample Date	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**
February-95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October-97	ND	ND	ND	ND	**380**	**970**	-	-	-	-	-	-	-	-
Nov-Dec-2000	ND	ND	ND	ND	**94**	**390**	**4**	**5**	ND	ND	**14**	**15**	ND	ND
February-06	ND	ND	ND	ND	**76**	**15**	ND	ND	ND	ND	ND	ND	ND	ND
March-06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April-06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May-06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June-06	ND	**3**	ND	ND	**17**	**4**	ND	ND	ND	ND	ND	ND	ND	ND
November-06	ND	ND	ND	ND	**17**	**13**	**71**	**45**	ND	ND	ND	ND	ND	ND
February-07	ND	ND	ND	ND	**18**	**18**	ND	ND	ND	ND	ND	ND	ND	ND
May-07	ND	ND	ND	ND	**14**	**13**	ND	ND	ND	ND	ND	ND	ND	ND
August-07	ND	ND	ND	ND	**13**	**3**	ND	ND	ND	**1**	ND	ND	ND	ND
November-07	ND	ND	ND	ND	**12**	ND	ND	ND	ND	ND	ND	ND	ND	ND
February-08	ND	ND	ND	ND	**2**	ND	ND	ND	ND	ND	ND	ND	ND	ND
May-08	ND	ND	ND	ND	**4**	**5**	ND	ND	ND	ND	ND	ND	ND	ND
August-08	ND	ND	ND	ND	**12**	**1**	ND	ND	ND	ND	ND	ND	ND	ND
February-09	ND	ND	ND	ND	**2**	**2**	**1**	**1**	ND	ND	**1**	**1**	**1**	ND
May-09†	ND	ND	**5**	ND	**5**	**1**	ND	ND	-	-	**2**	ND	-	-
May-10	ND	ND	ND	ND	**2**	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Detections are indicated in **BOLD**
Highlighted results exceed NYSDEC groundwater standards
______ = start up of treatment system, February 22, 2006

- = Indicates no sample taken
* = MW-2 was decommissioned in 2006.
** = MW-3 and MW-3C appear to be misidentified at some point between 2000 and Feb. 2006, with this mislabeling assumed to be carried through all URS data (May 2009 RI locations and results for MW-3 and MW-3C were based on well depth).
*** = MW-11K was damaged after May 2007 and has not been replaced.
† = Results for the MACTEC May 2009 sampling event do not include all sampling locations.
Indicates highest concentration per well

Table 4.3: Historical Occurrence of PCE and TCE in Groundwater

Well ID	**MW-10K**		**MW-10S**		**MW-11K*****		**MW-11S**		**GWE-01**		**GWE-02**		**GWE-03**	
Sample Date	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**
February-95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nov-Dec-2000	**60**	**22**	**99**	**12**	**2**	**1**	**3**	**4**	-	-	-	-	-	-
February-06	**1,000**	ND	**80**	ND	ND	ND	ND	ND	-	-	-	-	-	-
March-06	-	-	-	-	-	-	-	-	**1,400**	**3,300**	**1,100**	**3,000**	**3,100**	**1,200**
April-06	-	-	-	-	-	-	-	-	**580**	**2,400**	**310**	**730**	**1,600**	**630**
May-06	-	-	-	-	-	-	-	-	**870**	**2,400**	**160**	**450**	**970**	**430**
June-06	**930**	ND	**88**	**8**	-	-	ND	ND	**600**	**1,500**	**190**	**410**	**910**	**290**
November-06	**770**	ND	**43**	**6**	-	-	ND	ND	**1,000**	**2,300**	**160**	**300**	**810**	**280**
February-07	**1,200**	**1**	**77**	**11**	-	-	ND	ND	-	-	**120**	**240**	**470**	**150**
May-07	**860**	ND	**27**	**5**	ND	ND	ND	ND	**810**	**2,900**	**32,000**	**17,000**	**680**	**200**
August-07	**670**	**130**	**64**	**7**	-	-	ND	ND	**500**	**1,000**	**5,400**	**1,300**	**3,200**	**1,400**
November-07	**750**	ND	**77**	ND	-	-	ND	ND	**3,100**	**3,300**	**330**	**410**	**2,300**	**1,400**
February-08	**400**	ND	ND	ND	-	-	ND	ND	**630**	**1,100**	**580**	**620**	**2,900**	**410**
May-08	**890**	ND	**4**	**2**	-	-	ND	ND	**800**	**2,400**	**6,400**	**11,000**	**1,700**	**640**
August-08	**440**	ND	**63**	**8**	-	-	ND	ND	NA	NA	NA	NA	NA	NA
February-09	**1,000**	ND	**4**	**1**	-	-	**3**	**1**	**1,900**	**850**	**1,400**	**650**	**2,300**	**420**
May-09†	**410**	**39**	-	-	-	-	ND	ND	-	-	-	-	-	-
May-10	**770**	ND	**7**	ND	-	-	ND	ND	**3,000**	**5,500**	-	-	-	-

Notes:
Results shown are only the reported detected values. Results from historic URS analytical reports, with the exception of †.
ND = not detected above reporting limit.
NA = results not available
Results do not include all data collected to date (some dates may be missing).
Results do not include validation flags identifying estimated values or other qualifiers.
Detections are indicated in **BOLD**
Highlighted results exceed NYSDEC groundwater standards
—— = start up of treatment system, February 22, 2006

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* = MW-2 was decommissioned in 2006.
** = MW-3 and MW-3C appear to be misidentified at some point between 2000 and Feb. 2006, with this mislabeling assumed to be carried through all URS data (May 2009 RI locations and results for MW-3 and MW-3C were based on well depth).
*** = MW-11K was damaged after May 2007 and has not been replaced.
† = Results for the MACTEC May 2009 sampling event do not include all sampling locations.
Indicates highest concentration per well

Table 4.3: Historical Occurrence of PCE and TCE in Groundwater

Well ID	**MPE-01**		**MPE-02**		**MPE-03**		**MPE-04**		**MPE-05**		**MPE-06**		**MPE-07**	
Sample Date	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**
February-95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nov-Dec-2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February-06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March-06	**17,000**	**8,300**	**1,900**	**17,000**	**2,700**	**2,300**	**79,000**	**73,000**	**4,900**	**3,400**	**9,300**	**20,000**	**15,000**	**1,500**
April-06	**9,500**	**2,800**	**610**	**3,600**	**960**	**6,400**	**360**	**460**	**780**	**920**	**1,300**	**2,100**	**17,000**	**4,500**
May-06	**11,000**	**4,300**	**1,000**	**5,800**	**4,200**	**3,700**	**19,000**	**29,000**	**1,300**	**2,800**	**490**	**550**	**16,000**	**11,000**
June-06	**10,000**	**3,200**	**1,300**	**4,100**	**2,500**	**2,000**	**1,800**	**2,900**	**1,100**	**2,000**	**860**	**680**	**14,000**	**12,000**
November-06	**3,700**	**1,700**	**1,200**	**1,800**	**23,000**	**11,000**	**23,000**	**26,000**	**670**	**1,000**	**1,200**	**660**	-	-
February-07	**3,400**	**2,300**	**490**	**830**	**4,100**	**3,000**	**20,000**	**21,000**	**150**	**420**	-	-	-	-
May-07	**1,800**	**580**	**650**	**3,800**	**780**	**2,400**	-	-	**310**	**830**	**2,800**	**2,300**	-	-
August-07	**690**	**170**	**360**	**3,000**	**420**	**1,300**	**2,400**	**780**	**180**	**540**	**550**	**370**	-	-
November-07	**4,900**	**1,200**	**130**	**750**	**2,600**	**1,700**	**7,500**	**11,000**	**390**	**1,100**	**1,500**	**970**	-	-
February-08	**190**	**69**	**30**	**780**	**450**	**950**	**7,700**	**12,000**	**28**	**75**	**340**	**200**	-	-
May-08	**940**	**1,500**	**480**	**580**	**1,500**	**1,300**	**680**	**1,100**	**610**	**1,300**	**870**	**560**	-	-
August-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
February-09	**3,200**	**1,100**	**420**	**1,600**	**970**	**810**	**7,400**	**12,000**	**450**	**860**	**1,900**	**2,500**	-	-
May-09†	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May-10	**3,600**	**1,400**	**400**	**2,900**	**3,700**	**5,700**	**9,900**	**12,000**	**530**	**1,300**	**3,700**	**1,800**	**130**	**95**

Notes:
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NA = results not available
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Results do not include validation flags identifying estimated values or other qualifiers.
Detections are indicated in **BOLD**
Highlighted results exceed NYSDEC groundwater standards
—— = start up of treatment system, February 22, 2006

- = Indicates no sample taken
* = MW-2 was decommissioned in 2006.
** = MW-3 and MW-3C appear to be misidentified at some point between 2000 and Feb. 2006, with this mislabeling assumed to be carried through all URS data (May 2009 RI locations and results for MW-3 and MW-3C were based on well depth).
*** = MW-11K was damaged after May 2007 and has not been replaced.
† = Results for the MACTEC May 2009 sampling event do not include all sampling locations.
Indicates highest concentration per well

Table 4.3: Historical Occurrence of PCE and TCE in Groundwater

Well ID	**MPE-08**		**MPE-09**		**MPE-10**		**MPE-11**		**MPE-12**		**MPE-13**		**MPE-14**	
Sample Date	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**
February-95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nov-Dec-2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February-06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March-06	**5,300**	**9,000**	**12,000**	**7,700**	**50,000**	**43,000**	**570,000**	**160,000**	**1,300**	**1,300**	**3,100**	**11,000**	**2,000**	**830**
April-06	**770**	**1,000**	**38,000**	**22,000**	**20,000**	**12,000**	**330,000**	**87,000**	**1,000**	**1,000**	**2,800**	**8,100**	**920**	**320**
May-06	**210**	**150**	**13,000**	**7,600**	**55,000**	**59,000**	**130,000**	**150,000**	**7,700**	**16,000**	**5,000**	**11,000**	**3,700**	**1,500**
June-06	**260**	**230**	**16,000**	**6,900**	**65,000**	**60,000**	**76,000**	**29,000**	**850**	**600**	**2,000**	**3,600**	**88**	**38**
November-06	**1,300**	**800**	**3,900**	**1,800**	**34,000**	**19,000**	**7,900**	**4,300**	**270**	**390**	**1,200**	**2,300**	**220**	**190**
February-07	**480**	**260**	**11,000**	**5,200**	**68,000**	**29,000**	**8,900**	**4,400**	**93**	**160**	**7,800**	**12,000**	**250**	**120**
May-07	**170**	**220**	**6,300**	**2,900**	-	-	**36,000**	**17,000**	**200**	**250**	**4,600**	**5,900**	**710**	**280**
August-07	**100**	**120**	-	-	**62,000**	**32,000**	**140,000**	**40,000**	-	-	**12,000**	**15,000**	**1,800**	**1,200**
November-07	**1,600**	**780**	**4,500**	**720**	**96,000**	**54,000**	**60,000**	**71,000**	**6**	**6**	**8,900**	**10,000**	**160**	**73**
February-08	**200**	**190**	**7,300**	**4,100**	**37,000**	**15,000**	**7,900**	**4,100**	**8**	**9**	**120**	**190**	**350**	**210**
May-08	**490**	**510**	**13,000**	**3,900**	**170,000**	**64,000**	**2,300**	**1,300**	**130**	**170**	**1,100**	**2,000**	**2,400**	**1,000**
August-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
February-09	**1,900**	**1,100**	**6,300**	**1,800**	**90,000**	**24,000**	**33,000**	**15,000**	**140**	**140**	**2,800**	**1,700**	**1,100**	**420**
May-09†	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May-10	**2,600**	**2,700**	-	-	-	-	**25,000**	**13,000**	**65**	**130**	**2,500**	**4,100**	ND	ND

Notes:
Results shown are only the reported detected values. Results from historic URS analytical reports, with the exception of †.
ND = not detected above reporting limit.
NA = results not available
Results do not include all data collected to date (some dates may be missing).
Results do not include validation flags identifying estimated values or other qualifiers.
Detections are indicated in **BOLD**
Highlighted results exceed NYSDEC groundwater standards
——— = start up of treatment system, February 22, 2006

\- = Indicates no sample taken
* = MW-2 was decommissioned in 2006.
** = MW-3 and MW-3C appear to be misidentified at some point between 2000 and Feb. 2006, with this mislabeling assumed to be carried through all URS data (May 2009 RI locations and results for MW-3 and MW-3C were based on well depth).
*** = MW-11K was damaged after May 2007 and has not been replaced.
† = Results for the MACTEC May 2009 sampling event do not include all sampling locations.
Indicates highest concentration per well

Table 4.3: Historical Occurrence of PCE and TCE in Groundwater

Well ID	MPE-15		MPE-16		MPE-17		MPE-18	
Sample Date	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**	**TCE (µg/L)**	**PCE (µg/L)**
February-95	-	-	-	-	-	-	-	-
October-97	-	-	-	-	-	-	-	-
Nov-Dec-2000	-	-	-	-	-	-	-	-
February-06	-	-	-	-	-	-	-	-
March-06	**1,500**	**18,000**	**21,000**	**180,000**	**2,700**	**2,200**	**30,000**	**110,000**
April-06	**4,000**	**11,000**	**6,900**	**55,000**	**440**	**200**	**8,700**	**16,000**
May-06	**2,600**	**14,000**	**10,000**	**96,000**	**260**	**600**	**5,000**	**17,000**
June-06	**2,600**	**11,000**	**7,500**	**60,000**	**130**	**370**	**1,200**	**2,300**
November-06	**780**	**400**	**9,600**	**120,000**	**12**	**36**	**15,000**	**7,600**
February-07	**560**	**980**	**6,200**	**10,000**	**100**	**210**	**22,000**	**17,000**
May-07	**740**	**3,600**	**9,400**	**98,000**	-	-	-	-
August-07	**1,700**	**6,300**	**5,800**	**44,000**	**45**	ND	-	-
November-07	**1,200**	**4,500**	**7,200**	**52,000**	**92**	**180**	**1,900**	**2,300**
February-08	**110**	**320**	**2,400**	**20,000**	**1,600**	**1,400**	**1,300**	**3,500**
May-08	**3,800**	**9,300**	**12,000**	**220,000**	**3,900**	**1,900**	**5,100**	**19,000**
August-08	NA	NA	NA	NA	NA	NA	NA	NA
February-09	**42**	**100**	**5,600**	**51,000**	**990**	**1,300**	**450**	**1,600**
May-09[†]	-	-	-	-	-	-	-	-
May-10	-	-	**4,800**	**81,000**	ND	ND	-	-

Notes:
Results shown are only the reported detected values. Results from historic URS analytical reports, with the exception of †.
ND = not detected above reporting limit.
NA = results not available
Results do not include all data collected to date (some dates may be missing).
Results do not include validation flags identifying estimated values or other qualifiers.
Detections are indicated in **BOLD**
Highlighted results exceed NYSDEC groundwater standards
= start up of treatment system, February 22, 2006

- = Indicates no sample taken
* = MW-2 was decommissioned in 2006.
** = MW-3 and MW-3C appear to be misidentified at some point between 2000 and Feb. 2006, with this mislabeling assu
to be carried through all URS data (May 2009 RI locations and results for MW-3 and MW-3C were based on well dept
*** = MW-11K was damaged after May 2007 and has not been replaced.
† = Results for the MACTEC May 2009 sampling event do not include all sampling locations.
Indicates highest concentration per well

Table 4.4: Summary of 2009 VOC Concentrations in Groundwater

	Location	GPW-01		GPW-02		GW-1		GW-1		GW-2		GW-3		GW-3	
	Sample Date	5/25/2009		5/25/2009		5/4/2009		5/4/2009		5/5/2009		5/4/2009		5/4/2009	
	Sample Depth	13		12		12		20		19		12		20	
	Sample ID	828103GPW0101309		828103GPW0201209		828103-GW101209		828103-GW102009		828103-GW201909		828103-GW301209		828103-GW302009	
	Qc Code	FS		FS		FS		FS		FS		FS		FS	
Parameter	**GW Standard**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	5	1	U	1	U	**49**		**41**		**1**	U	**1**	U	**1**	U
1,1-Dichloroethane	5	1	U	1	U	**11**		**27**		**15**		**1.2**		**0.99**	J
1,1-Dichloroethene	5	1	U	1	U	**4.6**		**8.1**		**5.3**		**3.2**		**3.6**	
1,2,4-Trichlorobenzene	5	1	U	1	U	**0.82**	J	1	U	1	U	1	U	1	U
2-Butanone	50*	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	NA	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	50*	5	U	5	U	5	U	**11**		5	U	5	U	5	U
Benzene	1	1	U	1	U	1	U	**0.99**	J	**1.4**		1	U	1	U
Carbon disulfide	60*	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	7	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloromethane	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cis-1,2-Dichloroethene	5	**38**		**81**		**480**	DJ	**720**	DJ	**390**	DJ	**150**	DJ	**110**	DJ
Cyclohexane	NA	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Dichlorodifluoromethane	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Ethyl benzene	5	1	U	1	U	1	U	**1.1**		1	U	1	U	1	U
Isopropylbenzene	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methyl Tertbutyl Ether	10*	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	5	**7.4**		**830**	D	**640**	DJ	**2900**	DJ	**150**	DJ	**720**	DJ	**730**	DJ
Toluene	5	1	U	1	U	1	U	**2.7**		**0.77**	J	1	U	1	U
trans-1,2-Dichloroethene	5	**2.6**		**1.2**		**5.1**		**19**		**3.1**		**0.73**	J	**1**	
Trichloroethene	5	**1600**	D	**5200**	D	**420**	DJ	**840**	DJ	**310**	DJ	**120**	DJ	**110**	DJ
Vinyl chloride	2	1	U	**7.6**		**28**		**57**		**55**		**30**		**45**	
Xylene, m/p	5	2	U	2	U	2	U	**1.6**	J	2	U	2	U	2	U
Xylene, o	5	1	U	1	U	1	U	**2.5**		1	U	1	U	1	U

Notes:

Results in microgram per liter (µg/L)

Only detected compounds shown.

Samples analyzed for VOCs by EPA Method 8260B

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Criteria = Values from Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance values and Groundwater Effluent Limitations (NYSDEC, 1998). Number shown is standard unless *.

Detections are indicated in **BOLD**

Highlighted results exceed criteria

Table 4.4: Summary of 2009 VOC Concentrations in Groundwater

Location		GW-4		GW-5		GW-5		GW-6		GW-7		GW-8		GW-8	
Sample Date		5/5/2009		5/4/2009		5/4/2009		5/5/2009		12/9/2009		12/10/2009		12/9/2009	
Sample Depth		20		12		19		19		15		10		20	
Sample ID		828103-GW402009		828103-GW501209		828103-GW501909		828103-GW601909		828103-GW071509		828103-GW081009		828103-GW082009	
Qc Code		FS		FS		FS		FS		FS		FS		FS	
Parameter	**GW Standard**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	5	1	U	1	UJ	1	U	**1**	U	1	U	1	U	1	U
1,1-Dichloroethane	5	1	U	1	UJ	1	U	**2.2**		1	U	1	U	1	U
1,1-Dichloroethene	5	1	U	1	UJ	1	U	**3.1**		1	U	1	U	1	U
1,2,4-Trichlorobenzene	5	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
2-Butanone	50*	5	U	5	UJ	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	NA	5	U	5	UJ	5	U	5	U	5	U	5	U	5	U
Acetone	50*	5	U	5	UJ	5	U	5	U	5	UJ	**12**	J	5	UJ
Benzene	1	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	60*	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
Chloroform	7	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
Chloromethane	5	1	U	**3.3**	J	1	U	1	U	1	U	1	U	1	U
Cis-1,2-Dichloroethene	5	1	U	1	UJ	**2.7**		**31**		1	U	1	U	1	U
Cyclohexane	NA	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
Dichlorodifluoromethane	5	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
Ethyl benzene	5	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
Isopropylbenzene	5	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
Methyl Tertbutyl Ether	10*	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
Methylene chloride	5	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	5	1	UJ	**29**	J	**3**		**3.4**		1	U	1	U	1	U
Toluene	5	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	5	1	U	1	UJ	1	U	**1.3**		1	U	1	U	1	U
Trichloroethene	5	1	U	**9.6**	J	**34**		**81**		1	U	1	U	1	U
Vinyl chloride	2	1	U	1	UJ	1	U	**7.1**		1	U	1	U	1	U
Xylene, m/p	5	2	U	2	UJ	2	U	2	U	2	U	2	U	2	U
Xylene, o	5	1	U	1	UJ	1	U	1	U	1	U	1	U	1	U

Notes:

Results in microgram per liter (µg/L)

Only detected compounds shown.

Samples analyzed for VOCs by EPA Method 8260B

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Detections are indicated in **BOLD**

Highlighted results exceed criteria

Table 4.4: Summary of 2009 VOC Concentrations in Groundwater

Location		GW-9		GW-10		GW-10		GW-11		GW-11		MW-01		MW-01A	
Sample Date		12/9/2009		12/9/2009		12/9/2009		12/9/2009		12/9/2009		5/26/2009		5/26/2009	
Sample Depth		15		8		19		11		18		15		7	
Sample ID		828103-GW091509		828103-GW100809		828103-GW101909		828103-GW111109		828103-GW111809		828103-MW0101509		28103-MW01A0070	
Qc Code		FS		FS		FS		FS		FS		FS		FS	
Parameter	**GW Standard**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	5	1	U	1	U	1	U	1	U	1	U	**1**	UJ	1	UJ
1,1-Dichloroethane	5	1	U	1	U	1	U	1	U	1	U	**4**		1	U
1,1-Dichloroethene	5	1	U	1	U	1	U	1	U	1	U	**2.5**	J	1	U
1,2,4-Trichlorobenzene	5	1	U	1	UJ	1	U	1	UJ	1	U	1	U	1	U
2-Butanone	50*	5	U	**10**		5	U	**18**		5	U	5	U	5	U
4-Methyl-2-pentanone	NA	5	U	5	U	5	U	**7.6**		5	U	5	U	5	U
Acetone	50*	5	UJ	**32**		5	UJ	**59**		5	UJ	5	U	5	U
Benzene	1	1	U	**0.9**	J	1	U	**0.72**	J	1	U	1	U	1	U
Carbon disulfide	60*	1	U	1	U	1	U	**0.86**	J	1	U	1	U	1	U
Chloroform	7	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloromethane	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cis-1,2-Dichloroethene	5	1	U	1	U	1	U	1	U	1	U	**450**	D	**310**	D
Cyclohexane	NA	1	U	**1.2**		1	U	1	U	1	U	1	U	1	U
Dichlorodifluoromethane	5	1	U	1	UJ	1	U	1	UJ	1	U	1	U	1	U
Ethyl benzene	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Isopropylbenzene	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methyl Tertbutyl Ether	10*	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	5	1	U	1	UJ	1	U	1	UJ	1	U	1	U	1	U
Tetrachloroethene	5	1	U	1	U	1	U	1	U	1	U	**53**		**44**	D
Toluene	5	1	U	**1.4**		1	U	**0.5**	J	1	U	1	U	1	U
trans-1,2-Dichloroethene	5	1	U	1	U	1	U	1	U	1	U	**7**		**2.3**	
Trichloroethene	5	1	U	1	U	1	U	1	U	1	U	**61**	D	**67**	D
Vinyl chloride	2	1	U	1	U	1	U	1	U	1	U	**37**	D	**5.4**	J
Xylene, m/p	5	2	U	**1.6**	J	2	U	2	U	2	U	2	U	2	U
Xylene, o	5	1	U	**0.5**	J	1	U	1	U	1	U	1	U	1	U

Notes:

Results in microgram per liter (µg/L)

Only detected compounds shown.

Samples analyzed for VOCs by EPA Method 8260B

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Number shown is standard unless *.

Detections are indicated in **BOLD**

Highlighted results exceed criteria

Table 4.4: Summary of 2009 VOC Concentrations in Groundwater

	Location	MW-03		MW-03C		MW-04		MW-05		MW-06		MW-08K		MW-09K	
	Sample Date	5/26/2009		5/26/2009		5/25/2009		5/25/2009		5/25/2009		5/26/2009		5/25/2009	
	Sample Depth	10		28		18		18		16		17		18	
	Sample ID	828103-MW0301009		28103-MW03C0280		828103-MW0401809		828103-MW0501809		828103-MW0601609		28103-MW08K0170		28103-MW09K0180	
	Qc Code	FS		FS		FS		FS		FS		FS		FS	
Parameter	**GW Standard**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	5	**47**	J	**1**	UJ	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	5	**3.5**		**32**	J	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	5	**16**	J	**1.8**	J	1	U	1	U	1	U	1	U	1	U
1,2,4-Trichlorobenzene	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2-Butanone	50*	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	NA	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	50*	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	1	1	U	**0.82**	J	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	60*	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	7	**0.74**	J	1	U	1	U	1	U	1	U	1	U	1	U
Chloromethane	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cis-1,2-Dichloroethene	5	**190**	D	**220**	D	1	U	1	U	**13**		1	U	1	U
Cyclohexane	NA	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Dichlorodifluoromethane	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Ethyl benzene	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Isopropylbenzene	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methyl Tertbutyl Ether	10*	1	U	1	U	**1.3**		1	U	1	U	1	U	1	U
Methylene chloride	5	1	U	1	U	**0.52**	J	1	U	1	U	1	U	1	U
Tetrachloroethene	5	**9100**	D	**370**	D	1	U	1	UJ	1.1	U	1	U	1	UJ
Toluene	5	**1.1**		1	U	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	5	**4.3**		**1.1**	J	1	U	1	U	1	U	1	U	1	U
Trichloroethene	5	**2200**	D	**1100**	D	1	U	**4.6**		**4.6**		1	U	**1.9**	
Vinyl chloride	2	1	U	**7.5**	J	1	U	1	U	**0.59**	J	1	U	1	U
Xylene, m/p	5	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Xylene, o	5	**1.9**		1	U	1	U	1	U	1	U	1	U	1	U

Notes:
Results in microgram per liter (μg/L)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method 8260B
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D = Result from diluted run
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Number shown is standard unless *.
Detections are indicated in **BOLD**
Highlighted results exceed criteria

Created by: LJB 4/26/10
Checked By: CRS 11/4/10

Table 4.4: Summary of 2009 VOC Concentrations in Groundwater

	Location	MW-10K		MW-11S		MW-12K		MW-12K		MW-12S		MW-13K		MW-14K	
	Sample Date	5/26/2009		5/26/2009		5/26/2009		5/26/2009		5/25/2009		5/26/2009		5/26/2009	
	Sample Depth	18		12		16		16		10		16		16	
	Sample ID	28103-MW10K0180		828103-MW11S0120		28103-MW12K0160		28103-MW12K01609		828103-MW12S0100		28103-MW13K0160		828103-MW14K0190	
	Qc Code	FS		FS		FS		FD		FS		FS		FS	
Parameter	**GW Standard**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	5	**1**	U	1	U	1	U	1	U	1	U	**59**	J	1	U
1,1-Dichloroethane	5	**3.9**		1	U	1	U	1	U	1	U	**47**	J	1	U
1,1-Dichloroethene	5	1	U	1	U	1	U	1	U	1	U	**38**	J	1	U
1,2,4-Trichlorobenzene	5	1	U	1	U	1	U	1	U	1	U	4	U	1	U
2-Butanone	50*	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	NA	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	50*	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	1	**0.61**	J	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	60*	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	7	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloromethane	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cis-1,2-Dichloroethene	5	**100**	D	1	U	1	U	1	U	1	U	**1100**	D	**98**	
Cyclohexane	NA	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Dichlorodifluoromethane	5	1	U	1	U	1	U	1	U	1	U	**2.6**	J	1	U
Ethyl benzene	5	1	U	1	U	1	U	1	U	1	U	**7**	J	1	U
Isopropylbenzene	5	1	U	1	U	1	U	1	U	1	U	**4**	J	1	U
Methyl Tertbutyl Ether	10*	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	5	**39**		1	UJ	1	UJ	1	UJ	1	UJ	**5800**	D	**250**	D
Toluene	5	1	U	1	U	1	U	1	U	1	U	**2**	J	1	U
trans-1,2-Dichloroethene	5	**1.6**		1	U	1	U	1	U	1	U	**25**	J	**1.8**	
Trichloroethene	5	**410**	D	1	U	**8.2**		**6.9**		1	U	**1300**	D	**5100**	D
Vinyl chloride	2	**5.8**		1	U	1	U	1	U	1	U	**69**	D	1	U
Xylene, m/p	5	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Xylene, o	5	1	U	1	U	1	U	1	U	1	U	**13**	J	1	U

Notes:
Results in microgram per liter (µg/L)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method 8260B
QC Code:
FS = Field Sample
FD = Field Duplicate
Qualifiers:
U = Not detected at a concentration greater than the reporting limit
J = Estimated value
D = Result from diluted run
Criteria = Values from Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance values and Groundwater Effluent Limitations (NYSDEC, 199
Number shown is standard unless *.
Detections are indicated in **BOLD**
Highlighted results exceed criteria

Created by: LJB 4/26/10
Checked By: CRS 11/4/10

Table 4.5: 2009 Monitored Natural Attenuation Parameters

		Location	MW-01		MW-01A		MW-03		MW-03C		MW-04	
		Sample Date	5/26/2009		5/26/2009		5/26/2009		5/26/2009		5/25/2009	
		Sample ID	828103-MW0101509		828103-MW01A00709		828103-MW0301009		828103-MW03C02809		828103-MW0401809	
		QC Code	FS		FS		FS		FS		FS	
Parameter	**Analysis Method**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Iron	SW6010	µg/L	**3860**		--		**95**		**1190**		**59.2**	
Manganese	SW6010	µg/L	**248**		--		**44.1**		**45.1**		**31.9**	
Ethane	RSK175	µg/L	5	U	5	U	5	U	5	U	5	U
Ethene	RSK175	µg/L	5	U	5	U	5	U	5	U	5	U
Methane	RSK175	µg/L	**18.8**		5	U	5	U	5	U	5	U
Sulfide	9034	mg/L	1	UJ	--		1	UJ	1	UJ	1	UJ
Chloride	E300	mg/L	**91**	D	**62**	D	**35**	D	**210**	D	**66**	D
Nitrate as N	E300	mg/L	0.1	UJ	**0.378**	J	**10**	J	0.1	UJ	**0.266**	J
Nitrite as N	E300	mg/L	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
Sulfate	E300	mg/L	**44**		**18**		**96**	D	**160**	D	**100**	D
Alkalinity, Total	SM2320 B(Alk)	mg/L	**270**		**270**		**210**		**440**		**350**	
Carbon Dioxide	SM2320 B(CO2)	mg/L	**100**		**100**		**93**		**200**		**200**	
Total Organic Carbon	SM5310B	mg/L	**8.32**		**4.37**		**4**		**1.67**		**1.5**	
ORP	Field Measurement		**-120**		**-140**		**140**		**-20**		**40**	
DO	Field Measurement		**3.8**		**2.1**		**1.3**		**<0.1**		**<0.1**	
pH	Field Measurement		**7.8**		**7.7**		**8.0**		**7.1**		**7.6**	
MNA Scoring			**16**		**16**		**6**		**19**		**6**	

Notes:
µg/L= microgram per liter
mg/L= milligram per liter
-- = Not Analyzed
QC Code:
FS = Field Sample
FD = Field Duplicate
Qualifiers:
U = Not detected at a concentration greater than the reporting limit
J = Estimated value
D = Result from diluted run
Detections are indicated in **BOLD**

Table 4.5: 2009 Monitored Natural Attenuation Parameters

		Location	MW-06		MW-08K		MW-09K		MW-10K		MW-11S	
		Sample Date	5/25/2009		5/26/2009		5/25/2009		5/26/2009		5/26/2009	
		Sample ID	828103-MW0601609		828103-MW08K01709		828103-MW09K01809		828103-MW10K01809		828103-MW11S01209	
		QC Code	FS		FS		FS		FS		FS	
Parameter	**Analysis Method**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Iron	SW6010	µg/L	50	U	50	U	**949**		**1710**		50	U
Manganese	SW6010	µg/L	**28.6**		**24.8**		**47.9**		**58.6**		10	U
Ethane	RSK175	µg/L	5	U	5	U	5	U	5	U	5	U
Ethene	RSK175	µg/L	5	U	5	U	5	U	5	U	5	U
Methane	RSK175	µg/L	5	U	5	U	5	U	5	U	5	U
Sulfide	9034	mg/L	1	UJ	1	UJ	1	UJ	**1.6**	J	1	UJ
Chloride	E300	mg/L	**490**	D	**57**	D	**340**	D	**61**	D	**100**	D
Nitrate as N	E300	mg/L	**0.788**	J	**4.25**		0.1	UJ	0.1	U	**9.21**	
Nitrite as N	E300	mg/L	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U
Sulfate	E300	mg/L	**150**	D	**44**		**140**	D	**130**	D	**43**	
Alkalinity, Total	SM2320 B(Alk)	mg/L	**550**		**300**		**420**		**590**		**240**	
Carbon Dioxide	SM2320 B(CO2)	mg/L	**200**		**100**		**200**		**300**		**100**	
Total Organic Carbon	SM5310B	mg/L	**6.02**		**1.5**		**2.24**		**2.69**		**2.61**	
ORP	Field Measurement		**80**				**-40**		**-30**		**190**	
DO	Field Measurement		**2.0**				**<0.1**		**0.3**		**1.6**	
pH	Field Measurement		**7.5**				**7.4**		**7.0**		**7.4**	
MNA Scoring			**4**				**8**		**19**		**9**	

Notes:
µg/L= microgram per liter
mg/L= milligram per liter
-- = Not Analyzed
QC Code:
  FS = Field Sample
  FD = Field Duplicate
Qualifiers:
  U = Not detected at a concentration greater than the reporting limit
  J = Estimated value
  D = Result from diluted run
Detections are indicated in **BOLD**

Table 4.5: 2009 Monitored Natural Attenuation Parameters

		Location	MW-12K		MW-12K		MW-12S		MW-13K		MW-14K	
		Sample Date	5/26/2009		5/26/2009		5/25/2009		5/26/2009		5/26/2009	
		Sample ID	828103-MW12K01609		828103-MW12K01609D		828103-MW12S01009		828103-MW13K01609		828103-MW14K01909	
		QC Code	FS		FD		FS		FS		FS	
Parameter	**Analysis Method**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Iron	SW6010	µg/L	**89.6**		**86.9**		50	U	**838**		**481**	
Manganese	SW6010	µg/L	**118**		**111**		**77.5**		**75**		**37.6**	
Ethane	RSK175	µg/L	5	U	5	U	5	U	5	U	5	U
Ethene	RSK175	µg/L	5	U	5	U	5	U	5	U	5	U
Methane	RSK175	µg/L	5	U	5	U	5	U	**7.8**		5	U
Sulfide	9034	mg/L	**1.6**	J			1	UJ	**1.6**	J	**1.6**	J
Chloride	E300	mg/L	**18**	D	**22**	D	**41**	D	**340**	D	**130**	D
Nitrate as N	E300	mg/L	**0.285**		**0.291**		**0.257**	J	0.1	U	0.1	U
Nitrite as N	E300	mg/L	0.05	U	0.05	U	0.05	UJ	0.05	U	0.05	U
Sulfate	E300	mg/L	**77**	D	**82**	D	**210**	D	**100**	D	**120**	D
Alkalinity, Total	SM2320 B(Alk)	mg/L	**440**		**440**		**440**		**470**		**360**	
Carbon Dioxide	SM2320 B(CO2)	mg/L	**200**		**200**		**200**		**200**		**200**	
Total Organic Carbon	SM5310B	mg/L	**1.91**		**1.75**		**2.18**		**2.64**		**1.49**	
ORP	Field Measurement		**80**				**180**		**-30**		-50	
DO	Field Measurement		**2.0**				**3.0**		**0.3**		**<0.1**	
pH	Field Measurement		**7.3**				**7.4**		**7.4**		**7.6**	
MNA Scoring			**5**				**2**		**19**		**15**	

Notes:
µg/L= microgram per liter
mg/L= milligram per liter
-- = Not Analyzed
QC Code:
  FS = Field Sample
  FD = Field Duplicate
Qualifiers:
  U = Not detected at a concentration
    greater than the reporting limit
  J = Estimated value
  D = Result from diluted run
Detections are indicated in **BOLD**

Created by: LJB 4/26/10
Checked By: CRS 11/4/10

Table 4.6: Summary of 2009 VOC Concentrations in Sewer Water Samples

	Location	SL-1		SL-2		SL-3		SL-4		SL-5		SL-6	
	Sample Date	5/27/2009		5/27/2009		5/27/2009		5/27/2009		5/27/2009		5/27/2009	
	Sample ID	828103-SL101209		828103-SL201309		828103-SL301309		828103-SL400609		828103-SL500809		828103-SL601109	
	QC Code	FS		FS		FS		FS		FS		FS	
Parameter	**Criteria (µg/L)**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,2,4-Trichlorobenzene	5	**0.8**	J	1	U	1	U	1	U	1	U	1	U
1,4-Dichlorobenzene	3	1	U	1	U	1	U	**2.2**		**0.5**	J	1	U
Acetic acid, methyl ester	NA	1	U	1	U	1	U	**13**		**5**		**3.7**	
Acetone	50*	**23**		**27**		**35**		**5.3**		**34**		**14**	
Bromodichloromethane	50*	**0.52**	J	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	60*	**0.71**	J	1	U	1	U	**0.54**	J	1	U	1	U
Chloroform	7	**2**		**2**		**1.5**		**0.8**	J	1	U	**0.87**	J
Cis-1,2-Dichloroethene	5	1	U	**1.1**		**1.4**		1	U	1	U	**27**	
Methylene chloride	5	**1**	J	**0.88**	J	**0.93**	J	1	U	1	U	1	U
Tetrachloroethene	5	1	U	**2.8**		**4.2**		1	U	1	U	**73**	
Toluene	5	**3.2**		**2.2**		**2.2**		**30**		**10**		**5.1**	
Trichloroethene	5	1	U	**1.4**		**2.1**		1	U	1	U	**42**	
Vinyl chloride	2	1	U	1	U	1	U	1	U	1	U	**1.3**	

Notes:
Results in microgram per liter (µg/L)
Only detected compounds shown.
Samples analyzed for VOCs by EPA Method 8260B
QC Code:
  FS = Field Sample
  FD = Field Duplicate
Qualifiers:
  U = Not detected at a concentration greater than the reporting limit
  J = Estimated value
NS = No Standard

Criteria = Values from Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance values and Groundwater Effluent Limitations (NYSDEC, 1998). Number shown is standard unless *.
Detections are indicated in **BOLD**
Highlighted results exceed criteria

Created by: LJB 4/26/10
Checked By: CRS 11/4/10

Table 4.7: 2009 Sewer Sample Location Data

Sewer Sample ID	Location	Depth to Bottom of Channel	Flow Direction	Size	Type	Year Built
SL-1	Clinton Avenue	12.5	North to SL-2	36-inch	Brick in Concrete	1895
SL-2	Clinton Avenue	12.9	North to SL-3	36-inch	Brick in Concrete	1895
SL-3	Clinton Avenue	13.0	North	36-inch	Brick in Concrete	1895
SL-4	Caroline Street	6.2	East	12-inch	Vitrifide Clay	1892
SL-5	Benton Street	8.2	West to SL-6	15-inch	Vitrifide Clay in Concrete	1898
SL-6	Benton Street	11.0	West to S. Clinton	15-inch	Vitrifide Clay in Concrete	1898

Notes:
Depth measured in feet below top of rim on 5/27/09.
(measurement is to bottom of flow channel)

Prepared by: CRS 12-23-08
Checked by: JWP 12-29-08

Table 4.8: Summary of 2009 VOC Concentrations in Soil Vapor

Location	SV-01		SV-01		SV-02		SV-03		SV-04	
Sample Date	5/7/2009		5/7/2009		5/6/2009		5/6/2009		5/7/2009	
Sample ID	828103-GV10809		828103-GV10809D		828103-GV20709		828103-GV30709		828103-GV40109	
Qc Code	FS		FD		FS		FS		FS	
Parameter	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
1,1,1-Trichloroethane	0.54	U	0.54	U	0.54	U	0.54	U	**9.4**	
1,1,2-Trichloro-1,2,2-Trifluoro	0.76	U	0.76	U	0.76	U	0.76	U	**1.1**	
1,1-Dichloroethane	0.4	U	0.4	U	0.4	U	0.4	U	**1.9**	
1,2,4-Trichlorobenzene	**0.89**		**0.88**		**0.91**		0.74	U	**1.9**	
1,2,4-Trimethylbenzene	**1.5**		**1.7**		**2.2**		**1.7**		**25**	
1,2-Dichlorobenzene	0.6	U	0.6	U	0.6	U	0.6	U	**0.76**	
1,3,5-Trimethylbenzene	**0.56**		**0.54**		**0.8**		**0.67**		**9.8**	
2-Butanone	**12**	J	**21**	J	**78**		**17**		**12**	
2-Hexanone	**2.6**		**3**		**13**		**4.9**		0.4	U
2-Propanol	**7.3**		**4.6**		**7.7**		**4.2**		**18**	
4-Ethyltoluene	0.5	U	0.5	U	**0.55**		0.5	U	**2.9**	
4-Methyl-2-pentanone	**0.58**		0.4	U	**2.9**		**2.3**		**3.4**	
Acetone	**76**	J	**160**	J	**350**	J	**66**	J	**370**	J
Benzene	**0.93**		**1.2**		**5.8**		**52**		**14**	
Carbon disulfide	**0.82**		0.32	U	**3.7**		**1.5**		**3.3**	
Chloroethane	0.26	U	0.26	U	**0.85**		0.26	U	0.26	U
Chloroform	0.48	U	0.48	U	0.48	U	0.48	U	**1.9**	
Chloromethane	**1.4**		**1.5**		**2.6**		**1.4**		**0.34**	
Cis-1,2-Dichloroethene	0.4	U	0.4	U	0.4	U	**3.4**		**5.4**	
Cyclohexane	0.34	U	0.34	U	**15**		0.34	U	**42**	
Dichlorodifluoromethane	**2.3**		**2.1**		**2.2**		**2.2**		**2.1**	
Ethanol	**18**	J	**20**	J	**36**	J	**13**	J	**86**	J
Ethyl benzene	**0.58**		**0.84**		**1.1**		**2.1**		**11**	
Heptane	**0.66**		**0.58**		**9.2**		**3.7**		**97**	
Hexane	**2.4**		**2.8**		**38**		**5.5**		**120**	
Styrene	0.42	U	0.42	U	0.42	U	0.42	U	**0.54**	
Tetrachloroethene	**5.5**	J	**3**	J	0.68	U	**240**		**5500**	
Toluene	**2.4**		**3.6**		**5.6**		**9.7**		**45**	
trans-1,2-Dichloroethene	0.4	U	0.4	U	0.4	U	**0.63**		0.4	U
Trichloroethene	**0.9**		0.54	U	0.54	U	**130**		**3500**	
Trichlorofluoromethane	**1.5**		**1.3**		**1.3**		**1.2**		**1.5**	
Xylene, m/p	**1.5**		**2.3**		**2.3**		**4.5**		**43**	
Xylene, o	**0.57**		**0.95**		**0.76**		**1.5**		**14**	

Notes:

Only Detected Compounds Shown (detections are bolded)
Samples analyzed for VOCs by USEPA Method TO-15.
Results in microgram per cubic meter (µg/m3)
QC Code:
  FS = Field Sample
Qualifiers:
  U = Not detected at a concentration greater than the RL
  J = Estimated value
Location ID = Sample location name (First two Digits)
  SV = Soil Vapor

Table 4.9: MPE System Vacuum Measurements

	Comments	Background Readings (System off 24+ hours)	MPE-10 on only		MPE-4 on only		MPE-6 on w/ MPE-4 on		MPE-4 off with MPE-10 and MPE-6 on		SVE System Fully Operational (GWE system off)
			Initial	Initial + 30 sec.	Initial	Initial + 20 min.	Initial	Initial + 3 min.	Initial	Initial + 15 min.	SVE System Fully Operational (GWE system off)
Exploration ID	Units **Exploration Type**	Vacuum (inches H_2O)	Vacuum (inches H_2O)	Vacuum (inches H_2O)	Vacuum (inches H_2O)	Vacuum (inches H_2O)	Vacuum (inches H_2O)	Vacuum (inches H_2O)	Vacuum (inches H_2O)	Vacuum (inches H_2O)	Vacuum (inches H_2O)
GS-1	Geoprobe Microwell	-	-	-	0.058	0.076	-	-	-	-	-0.133
GS-2	Geoprobe Microwell	-	-	-	-0.046	0.140	-	-	-	-	0.299
GS-3	Geoprobe Microwell	-	-	-	-0.421	-0.423	-1.090	-1.086	-	-	-2.790
GS-4	Geoprobe Microwell	-	-	-	-	-	-	-	-0.308	-0.306	-3.080
GS-5	Geoprobe Microwell	-	-	-	-	-	-	-	-0.464	-0.460	-3.020
GS-6	Geoprobe Microwell	0.128	-0.250	-0.260	-	-	-	-	-0.474	-0.555	-1.560
GS-7	Geoprobe Microwell	0.228	-0.555	-0.570	-	-	-	-	-0.677	-0.679	-1.997
GS-8	Geoprobe Microwell	0.136	-0.477	-0.482	-	-	-	-	-	-	-1.620
GS-9	Geoprobe Microwell	0.196	0.346	0.470	-	-	-	-	-	-	0.261
GS-10	Geoprobe Microwell	-	-	-	-	-	-	-	-	-	0.217
MPE-1	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	-0.019
MPE-2	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	-0.026
MPE-3	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0
MPE-4	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0
MPE-5	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	-0.566
MPE-6	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0
MPE-7	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0
MPE-8	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0
MPE-9	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	-0.075
MPE-10	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.000
MPE-11	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	-1.120
MPE-12	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	-0.020
MPE-13	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0
MPE-14	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0
MPE-15	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0
MPE-16	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0
MPE-17	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	-
MPE-18	Multiphase Extraction Well	-	-	-	-	-	-	-	-	-	15.0

Notes:
Measurements collected using a TSI VelociCalc meter.
Barometric pressure at time of measurement = 29.37 inches Hg.
- = Indicates Vacuum Was Not Measured At This Location
FR = First Reading

Table 4.10: Groundwater Elevation Summary - MPE System Evaluation

Well ID	Ground Elevation (ft)	Measuring Point Elevation (riser, ft)	Total Depth (ft)	Screen Length (ft)	Depth to Bedrock (ft bgs)	Screened Zone	5/25/2009 Event			5/27/2009 Event						6/3/2009 Event		
										24 hrs after shutdown			31 hrs after shutdown; SVE on			(8 days after shutdown)		
							Initial Water Levels (ft bmp)	Water Elevation (ft)	Water Elevation bgs (ft)	Water Levels (ft bmp)	Water Elevation (ft)	Water Elevation bgs (ft)	Water Levels (ft bmp)	Water Elevation (ft)	Water Elevation bgs (ft)	Water Levels (ft bmp)	Water Elevation (ft)	Water Elevation bgs (ft)
GPW-01	512.91	512.55	14.85	NA	NA	overburden	8.41	504.14	8.77	7.31	505.24	7.67	7.27	505.28	7.63	6.86	505.69	7.22
GPW-02	512.79	512.51	14.05	NA	NA	overburden	7.52	504.99	7.80	7.41	505.10	7.69	7.55	504.96	7.83	6.69	505.82	6.97
MW-01	513.43	513.06	20.40	5.0	NA	interface?	8.45	504.61	8.82	9.11	503.95	9.48	9.09	503.97	9.46	4.69	508.37	5.06
MW-01A	513.52	513.05	8.00	5.0	NA	overburden	5.85	507.20	6.32	7.04	506.01	7.51	7.4*	505.65	7.87	8.75	504.30	9.22
MW-03C	513.14	512.72	32.70	5.0	22.7	bedrock	13.79	498.93	14.21	13.56	499.16	13.98	13.55	499.17	13.97	13.52	499.20	13.94
MW-03	513.34	513.10	21.20	15.0	NA	overburden/interface	7.60	505.50	7.84	7.55	505.55	7.79	7.64	505.46	7.88	6.80	506.30	7.04
MW-04	513.30	513.01	24.10	15.0	23.1	overburden/interface	9.85	503.16	10.14	9.33	503.68	9.62	9.32	503.69	9.61	9.08	503.93	9.37
MW-05	513.72	513.49	24.60	15.0	23.6	overburden/interface	10.17	503.32	10.40	9.64	503.85	9.87	9.61	503.88	9.84	9.36	504.13	9.59
MW-06	512.06	511.54	20.60	15.0	19.9	overburden/interface	8.27	503.27	8.79	7.76	503.78	8.28	7.72	503.82	8.24	7.50	504.04	8.02
MW-08K	512.57	512.24	19.20	10.0	17.8	interface	6.96	505.28	7.29	7.28	504.96	7.61	7.32	504.92	7.65	6.89	505.35	7.22
MW-08S	512.52	512.27	16.00	10.0	NA	overburden	7.06	505.21	7.31	6.97	505.30	7.22	6.95	505.32	7.20	6.29	505.98	6.54
MW-09K	513.27	513.01	22.70	10.0	23.3	interface	9.75	503.26	10.01	9.26	503.75	9.52	9.24	503.77	9.50	9.02	503.99	9.28
MW-09S	513.27	512.87	16.00	10.0	NA	overburden	8.33	504.54	8.73	8.07	504.80	8.47	8.03	504.84	8.43	7.74	505.13	8.14
MW-10K	512.84	512.49	21.80	10.0	22.0	overburden-interface?	8.81	503.68	9.16	8.30	504.19	8.65	8.26	504.23	8.61	8.01	504.48	8.36
MW-10S	512.70	512.25	16.00	10.0	NA	overburden	6.43	505.82	6.88	6.43	505.82	6.88	6.44	505.81	6.89	6.01	506.24	6.46
MW-11K	512.60	512.12	18.20	10.0	17.5	overburden-interface?	--	--	--	--	--	--	--	--	--	--	--	--
MW-11S	512.60	512.36	14.00	10.0	NA	overburden	7.41	504.95	7.65	7.99	504.37	8.23	7.55	504.81	7.79	6.75	505.61	6.99
MW-12K	513.09	512.67	19.50	5.0	19.3	interface	9.28	503.39	9.70	8.79	503.88	9.21	8.78	503.89	9.20	8.48	504.19	8.90
MW-12S	513.01	512.53	14.00	10.0	NA	overburden	8.09	504.44	8.57	7.97	504.56	8.45	7.95	504.58	8.43	6.76	505.77	7.24
MW-13K	513.41	513.13	21.50	5.0	19.6	interface	8.83	504.30	9.11	9.33	503.80	9.61	9.30	503.83	9.58	9.08	504.05	9.36
MW-14K	513.04	512.66	25.00	5.0	22.4	interface	9.41	503.25	9.79	8.84	503.82	9.22	8.84	503.82	9.22	8.60	504.06	8.98
MPE-1	513.91	513.40	13.50	10.0	20.7	overburden	10.65	502.75	11.16	9.27	504.13	9.78	9.17	504.23	9.68	5.95	507.45	6.46
MPE-2	514.02	513.42	13.50	7.5	NA	overburden	11.21	502.21	11.81	9.23	504.19	9.83	9.16	504.26	9.76	5.97	507.45	6.57
MPE-3	513.86	513.41	13.50	10.0	22.0	overburden	11.11	502.30	11.56	9.19	504.22	9.64	9.09	504.32	9.54	5.97	507.44	6.42
MPE-4	513.76	513.39	12.50	9.5	NA	overburden	7.95	505.44	8.32	9.20	504.19	9.57	7.33	506.06	7.70	5.98	507.41	6.35
MPE-5	513.82	513.43	11.50	8.5	NA	overburden	9.03	504.40	9.42	7.54	505.89	7.93	7.61	505.82	8.00	6.06	507.37	6.45
MPE-6	513.63	513.22	12.00	9.0	NA	overburden	6.63	506.59	7.04	8.17	505.05	8.58	6.56	506.66	6.97	6.95	506.27	7.36
MPE-7	513.86	513.30	11.00	8.0	NA	overburden	5.98	507.32	6.54	7.77	505.53	8.33	6.65	506.65	7.21	6.72	506.58	7.28
MPE-8	513.91	513.48	10.00	7.0	NA	overburden	8.19	505.29	8.62	8.35	505.13	8.78	7.55	505.93	7.98	7.22	506.26	7.65
MPE-9	513.64	513.14	10.00	7.0	NA	overburden	7.07	506.07	7.57	7.19	505.95	7.69	7.17	505.97	7.67	6.26	506.88	6.76
MPE-10	513.54	513.12	12.00	9.0	NA	overburden	10.19	502.93	10.61	7.17	505.95	7.59	5.55	507.57	5.97	6.13	506.99	6.55
MPE-11	513.35	513.02	10.00	4.0	NA	overburden	7.25	505.77	7.58	6.87	506.15	7.20	6.75	506.27	7.08	5.77	507.25	6.10
MPE-12	513.24	512.90	10.00	4.0	NA	overburden	6.76	506.14	7.10	6.72	506.18	7.06	6.75	506.15	7.09	5.70	507.20	6.04
MPE-13	513.21	512.89	11.50	5.0	NA	overburden	5.81	507.08	6.13	5.94	506.95	6.26	**	508.99	4.22	5.63	507.26	5.95
MPE-14	512.69	512.23	11.00	5.0	NA	overburden	4.01	508.22	4.47	6.75	505.48	7.21	**	NA	NA	5.69	506.54	6.15
MPE-15	513.30	512.97	11.00	5.0	NA	overburden	9.16	503.81	9.49	7.25	505.72	7.58	**	508.47	4.83	6.61	506.36	6.94

Table 4.10: Groundwater Elevation Summary - MPE System Evaluation

Well ID	Ground Elevation (ft)	Measuring Point Elevation (riser, ft)	Total Depth (ft)	Screen Length (ft)	Depth to Bedrock (ft bgs)	Screened Zone	5/25/2009 Event			5/27/2009 Event						6/3/2009 Event		
										24 hrs after shutdown			31 hrs after shutdown; SVE on			(8 days after shutdown)		
							Initial Water Levels (ft bmp)	Water Elevation (ft)	Water Elevation bgs (ft)	Water Levels (ft bmp)	Water Elevation (ft)	Water Elevation bgs (ft)	Water Levels (ft bmp)	Water Elevation (ft)	Water Elevation bgs (ft)	Water Levels (ft bmp)	Water Elevation (ft)	Water Elevation bgs (ft)
MPE-16	513.60	513.31	12.00	9.0	NA	overburden	9.69	503.62	9.98	6.92	506.39	7.21	**	508.01	5.59	6.88	506.43	7.17
MPE-17	513.47	512.97	13.50	7.5	NA	overburden	8.20	504.77	8.70	7.64	505.33	8.14	7.52	505.45	8.02	5.47	507.50	5.97
MPE-18	513.55	513.12	11.00	8.0	NA	overburden	7.31	505.81	7.74	6.67	506.45	7.10	5.45	507.67	5.88	6.65	506.47	7.08
GS-1	513.75	513.38	16.00	5.0	NA	overburden	10.71	502.67	11.08	9.13	504.25	9.50	9.02	504.36	9.39	5.88	507.50	6.25
GS-2	513.85	513.59	16.00	5.0	NA	overburden	10.74	502.85	11.00	9.28	504.31	9.54	9.20	504.39	9.46	6.06	507.53	6.32
GS-3	513.70	513.49	16.00	5.0	NA	overburden	8.63	504.86	8.84	8.41	505.08	8.62	8.49	505.00	8.70	7.16	506.33	7.37
GS-4	513.67	513.43	16.00	5.0	NA	overburden	8.70	504.73	8.94	8.36	505.07	8.60	8.45	504.98	8.69	7.12	506.31	7.36
GS-5	513.61	513.38	16.00	5.0	NA	overburden	7.78	505.60	8.01	7.62	505.76	7.85	7.56	505.82	7.79	6.78	506.60	7.01
GS-6	513.51	513.22	16.00	5.0	NA	overburden	7.41	505.81	7.70	7.22	506.00	7.51	7.35	505.87	7.64	6.43	506.79	6.72
GS-7	513.54	513.25	16.00	5.0	NA	overburden	7.80	505.45	8.09	7.06	506.19	7.35	7.48	505.77	7.77	6.31	506.94	6.60
GS-8	513.53	513.37	16.00	5.0	NA	overburden	7.39	505.98	7.55	6.96	506.41	7.12	7.28	506.09	7.44	6.23	507.14	6.39
GS-9	513.45	513.23	16.00	5.0	NA	overburden	7.08	506.15	7.30	6.89	506.34	7.11	7.03	506.20	7.25	6.00	507.23	6.22
GS-10	513.11	512.90	16.00	5.0	NA	overburden	6.71	506.19	6.92	6.67	506.23	6.88	6.66	506.24	6.87	5.66	507.24	5.87

Notes:
Wells surveyed by Popli Design Group.
Well data from URS, Inc. and MACTEC well logs.
NA = not available
Water levels collected by MACTEC.
bmp = below measuring point
bgs = below ground surface
ft = feet
-- = blockage encountered in well, unable to obtain measurement
MPE Wells 6, 12, and 13 not operating prior to system shutdown

Prepared by: LJB 4/26/10
Checked by: CRS 11/4/10

Table 8.1 - Nature and Extent of Soil Contamination

Detected Constituents	**Concentration Range Detected (ppm)[a]**	**Unrestricted SCG[b] (ppm)**	**Frequency Exceeding Unrestricted SCG**	**Residential SCG[c] (ppm)**	**Frequency Exceeding Residential SCG**	**Commercial SCG[d] (ppm)**	**Frequency Exceeding Commercial SCG**	**Protection of Groundwater SCG[e] (ppm)**	**Frequency Exceeding Protection of Groundwater SCG**
VOCs									
1,1,1-Trichloroethane	0.6 - 0.86	0.68	1 / 30	100	0 / 30	500	0 / 30	0.68	1 / 30
1,1-Dichloroethane	0.2 - 0.94	0.27	2 / 30	19	0 / 30	240	0 / 30	0.27	2 / 30
Cis-1,2-Dichloroethene	0.2 - 5.2	0.25	4 / 30	59	0 / 30	500	0 / 30	0.25	4 / 30
Cyclohexane	0.54 - 3.5	NS	NA / 30	NS	NA / 30	NS	NA / 30	NS	NA / 30
Ethyl benzene	2.1 - 2.1	1	1 / 30	30	0 / 30	390	0 / 30	1	1 / 30
Isopropylbenzene	1.1 - 1.1	NS	NA / 30	NS	NA / 30	NS	NA / 30	NS	NA / 30
Methyl cyclohexane	2.6 - 83	NS	NA / 30	NS	NA / 30	NS	NA / 30	NS	NA / 30
Tetrachloroethene	0.63 - 1700	1.3	24 / 30	5.5	23 / 30	150	6 / 30	1.3	24 / 30
Toluene	0.16 - 0.29	0.7	0 / 30	100	0 / 30	500	0 / 30	0.7	0 / 30
Trichloroethene	0.44 - 1400	0.47	28 / 30	10	17 / 30	200	4 / 30	0.47	28 / 30
Xylene, m/p	0.16 - 51	0.26	2 / 30	100	0 / 30	500	0 / 30	1.6	1 / 30
Xylene, o	0.34 - 7.6	0.26	2 / 30	100	0 / 30	500	0 / 30	1.6	1 / 30

[a] ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

[b] SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

[c] SCG: Part 375-6.8(b), Residential Soil Cleanup Objectives.

[d] SCG: Part 375-6.8(b), Commercial Soil Cleanup Objectives.

[e] SCG: Part 375-6.8(b), Restricted (Protection of groundwater) Soil Cleanup Objectives.

NS: No Standard

NA: Not Applicable

Soil Samples Collected by MACTEC in May 2009.

Prepared by / Date: KJC 1/10/11
Checked by / Date: BPN 1/10/11

Table 8.2 – Nature and Extent of Groundwater Contamination

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Volatile Organic Compounds			
1,1,1-Trichloroethane	1.4 - 6300	5	16 / 65
1,1,2-Trichloroethane	2.8 - 2.8	1	1 / 65
1,1-Dichloroethane	0.99 - 1100	5	14 / 65
1,1-Dichloroethene	1.4 - 240	5	13 / 65
1,2,4-Trichlorobenzene	0.82 - 0.82	5	0 / 65
1,2-Dichloroethane	1.4 - 1.4	0.6	1 / 65
2-Butanone	5.1 - 2600	50	2 / 50
4-Methyl-2-pentanone	3.9 - 7.6	NS	0 / 65
Acetone	9 - 530	50	2 / 40
Benzene	0.61 - 7	1	8 / 65
Carbon disulfide	0.86 - 0.86	60	0 / 65
Carbon Tetrachloride	1.5 - 1.5	5	0 / 65
Chloroethane	2.6 - 2.6	5	0 / 65
Chloroform	0.74 - 0.74	7	0 / 65
Chloromethane	3.3 - 3.3	5	0 / 65
Cis-1,2-Dichloroethene	1.7 - 1100	5	36 / 65
Cyclohexane	1.2 - 38	NS	0 / 65
Dichlorodifluoromethane	2.6 - 2.6	5	0 / 65
Ethyl benzene	1.1 - 23	5	3 / 65
Isopropylbenzene	1.8 - 4	5	0 / 65
Methyl Tertbutyl Ether	1.3 - 3.1	10	0 / 65
Methylcyclohexane	27 - 27	NS	0 / 65
Methylene chloride	0.52 - 0.52	5	0 / 65
Tetrachloroethene	3 - 81000	5	33 / 65
Toluene	0.5 - 96	5	2 / 65
trans-1,2-Dichloroethene	0.73 - 25	5	4 / 65
Trichloroethene	1.9 - 25000	5	38 / 65
Vinyl chloride	0.59 - 360	2	14 / 65
Xylene, m/p	1.6 - 1.6	5	0 / 34
Xylene, o	0.5 - 13	5	1 / 34
Xylene, total	31 - 140	5	2 / 31
Metals, Dissolved			
Iron	59.2 - 3860	300	6 / 13
Manganese	24.8 - 248	300	0 / 13

[a] ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.

[b] SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Includes groundwater samples collected from May 2009 through May 2010 by MACTEC and URS.

Prepared by / Date: KJC 12/10/10
Checked by / Date: CRS 1/11/11

Table 9.1: Identification and Screening of Remedial Technologies

Environmental Media	General Response Action	Remedial Technology	Process Option	Applicability to		Screening Status	Comments
				Site-Limiting Characteristics	Waste-Limiting Characteristics		
Soil	No Action			Not Applicable	Not Applicable	Retained.	Retained to be carried through detailed analysis of alternatives for comparison to alternatives that satisfy RAOs.
	Access Restrictions	Land Use Restrictions		Would require coordination and approval from the current owner and affected adjacent property owners.	Would provide human exposure control. Would not reduce toxicity, mobility, or volume of contaminants.	Retained.	Viable as a component of remedial actions which do not involve remediation allowing for unrestricted use.
		Fencing		Would require coordination and approval from the current owner and possibly affected adjacent property owners.	Would provide unauthorized site entry and human exposure control. Would not reduce toxicity, mobility, or volume of contaminants.	Retained.	Viable as a component of remedial actions which do not involve remediation allowing for unrestricted use.
	Removal / Off Site Disposal	Excavation	Solids Excavation	Source area contamination extends beneath an occupied building and is near adjacent residences. Also, excavation of soils below the water table would require additional technology to dewater the soils and dispose of the water.	Would not prevent potential further leaching from soil left underneath building.	Retained.	Retained for discrete source removal.
		Disposal On-site	Not Applicable	The site is not appropriate for on-site disposal given its proximity to residences; only excavated soils treated ex-situ may be suitable for on-site disposal as backfill.	None.	Eliminated.	
		Disposal Off-site	Not Applicable	None.	None.	Retained.	
	In-Situ Treatment	Biological Treatment	Enhanced Biodegradation	Materials injected to enhance biodegradation generally rely upon groundwater for release and distribution. Hence, biological treatment would not address contaminants in the vadose zone soil. Injections would limited in the saturated zone by the tight glacial soils.	Would not effectively treat relatively high concentrations of contaminants or suspected presence of contamination as a non-aqueous phase liquid.	Retained.	Viable as a component of treatment of saturated zone soils in conjuction with groundwater. Retained as a component of remedial actions that address source area contamination and contamination as non-aqueous phase liquid.
		Physical Treatment	Vapor Extraction	Remaining contamination is generally below the water table. Also, tight glacial soils would limit vapor extraction.	None.	Retained.	This technology is currently used at the site and remains a viable option for treatment of VOCs in soil. Would also address soil vapor contamination.
			Solidification/ Stabilization	Implementation would be impacted by building on adjacent property and site utilities.	Would not effectively treat VOCs, which could still leach.	Eliminated.	
		Thermal Treatment	Electrical Resistance Heating	There appear to be no site limiting characteristics for this general response action.	Requires capture of VOC off-gases.	Retained	
		Chemical Treatment	Oxidation/Reduction	Injection of chemicals may be limited by poor hydraulic conductivity due to the characteristics of the site soils (tight glacial deposits).	None.	Retained	Retained only as a component of remedial actions that includes soil mixing to distribute chemical oxidant.
	Ex-situ Treatment	Thermal Treatment	On-site Incineration	The Site is not appropriate for on-site ex-situ treatment due to proximity to residential areas.	None.	Retained for off-site only.	Off-site treatment refers to treatment at a properly licensed treatment facility.
			On-site Thermal Desorption	The Site is not appropriate for on-site ex-situ treatment due to proximity to residential areas.	None.	Retained for off-site only.	Off-site treatment refers to treatment at a properly licensed treatment facility.
		Chemical Treatment	Oxidation/Reduction	The Site is not appropriate for on-site ex-situ treatment due to proximity to residential areas.	None.	Retained for off-site only.	Off-site treatment refers to treatment at a properly licensed treatment facility.
		Physical Treatment	Soil Washing	The Site is not appropriate for on-site ex-situ treatment due to proximity to residential areas.	Typically used for SVOC, fuel, and heavy metal contaminated soils.	Retained for off-site only.	Off-site treatment refers to treatment at a properly licensed treatment facility.

Prepared by: BPN 12/7/10
Checked by: RTB 12/10/10

Table 9.1: Identification and Screening of Remedial Technologies

Environmental Media	General Response Action	Remedial Technology	Process Option	Applicability to		Screening Status	Comments
				Site-Limiting Characteristics	Waste-Limiting Characteristics		
			Solidification Stabilization	The Site is not appropriate for on-site ex-situ treatment due to proximity to residential areas.	Would not effectively treat VOCs, which could still leach.	Retained for off-site only.	Off-site treatment refers to treatment at a properly licensed treatment facility.
	Containment	Capping	Soil Cover	Site is currently paved.	Would provide human exposure control. Would not prevent leaching of soil contaminants to groundwater.	Eliminated.	
			Low Permeability Cover System	Contamination in the saturated zone would not be remedied and therefore this technology would not reduce leaching to the groundwater.	Would reduce leaching of soil contaminants in the vadose zone to groundwater, but not reduce volatilization of soil contaminants.	Eliminated.	
		Vertical Barriers	Slurry wall, sheet piling	Implementation would be limited by utilities and proximity to adjacent off-site buildings. Available slurry wall placement locations are not ideal.	Would reduce off-site migration of contaminated groundwater, but would not address leaching of soil contaminants to groundwater, and volatilization of contaminants.	Eliminated.	Viable as a component of remedial actions to reduce migration of groundwater contaminants.
		Surface Controls	Diversion / collection, grading, soil stabilization	Contamination in the saturated zone would not be remedied and therefore this technology would not reduce leaching to the groundwater.	None.	Eliminated.	
Groundwater	No Action			Not Applicable	Not Applicable	Retained.	Retained to be carried through detailed analysis of alternatives for comparison to alternatives that satisfy RAOs.
	Access Restrictions and Long Term Monitoring	Land Use Restrictions		Would require coordination and approval with current owner.	Would not reduce toxicity, mobility, or volume of contaminants.	Retained.	Viable as a component of remedial actions which do not involve remediation allowing for unrestricted use.
	In-Situ Treatment	Biological Treatment	Enhanced Biodegradation	Injections would limited in the saturated zone by the tight glacial soils.	Would not effectively treat relatively high concentrations of contaminants or suspected presence of contamination as a non-aqueous phase liquid.	Retained.	Viable in conjunction with other remedial actions.
		Physical Treatment	Permeable Reactive Barrier	Limited by adjacent buildings and relatively flat hydraulic gradient (i.e., contaminant migration in multiple directions).	None.	Eliminated.	Viable as a component of remedial actions to reduce migration of groundwater contaminants.
			Air Sparging	This technology would require the capture and treatment of generated vapors and would also be limited by tight glacial soils.	Removes VOC contaminants from the soil in the saturated zone, but may require additional technology to treat off-gases.	Eliminated.	Viable as a component of remedial actions that utilize the existing MPE system's soil vapor extraction elements.
		Thermal Treatment	Electrical Resistance Heating	May not be cost-effective for the extensive horizontal extents of contamination (i.e. more probe points required to heat media).	Requires capture of VOC off-gases.	Retained.	
		Chemical Treatment	Oxidation/Reduction	Oxidation/Reduction may be limited by poor conductivity due to the characteristics of the site soils (glacial deposits).	None.	Retained.	Retained only as a component of remedial actions that includes soil mixing to distribute chemical oxidant.
	Ex-situ Treatment	Onsite Treatment	Granular Activated Carbon	None.	None.	Retained.	This technology was previously used at the Site for off-gas treatment but remains a viable option if it should be required again.
			Air Stripping	None.	None.	Retained.	This technology is currently used at the site and remains a viable option for treatment of VOCs in groundwater.

Table 9.1: Identification and Screening of Remedial Technologies

Environmental Media	General Response Action	Remedial Technology	Process Option	Applicability to Site-Limiting Characteristics	Applicability to Waste-Limiting Characteristics	Screening Status	Comments
		Offsite Treatment and Diposal	Discharge to POTW after treatment.	None.	None.	Retained.	This technology is currently used at the Site and remains a viable discharge option for offsite treatment and disposal of groundwater.
			Discharge to surface water after treatment.	No proximate surface water receiving bodies.	None.	Eliminated.	
			Reinjection after treatment.	Limited by the high water table and tight glacial soils.	None.	Eliminated.	
	Containment	Capping	Low Permeability Cover System	Would not prevent upgradient groundwater from passing through the saturated zone soil contamination or off-site migration of groundawter contamination.	None.	Eliminated.	
		Vertical Barriers	Slurry wall, sheet piling	This technology would require the wall to be keyed into the bedrock and would be limited by adjacent buildings, utilities and relatively flat hydraulic gradient (i.e., contaminant migration in multiple directions).	None.	Eliminated.	Viable as a component of remedial actions to reduce the mirgration of contamination in conjunction with a permeable reactive barrier.
		Surface Controls	Diversion/collection, grading, soil stabilization	Surface controls alone would not prevent leaching of VOC soil contamination to groundwater and prevent infiltration of precipitation.	None.	Eliminated.	
		Collection	Extraction Wells / Monitoring Wells	None.	None.	Retained.	This technology is currently used at the site and remains a viable option for collection of groundwater for treatment.
			Collection Trench	Limited by adjacent buildings and relatively flat hydraulic gradient (i.e., contaminant migration in multiple directions).	None.	Eliminated.	
Soil vapor	No Action			Not Applicable	Not Applicable	Retained.	Retained to be carried through detailed analysis of alternatives for comparison to alternatives that satisfy RAOs.
	Access Restrictions			Would require coordination and approval from the current owner and affected adjacent property owners.	Would not reduce toxicity, mobility, or volume of contaminants.	Eliminated.	
	Engineering Controls	Sub-slab depressurization system		Would require coordination and approval from the current owner and affected adjacent property owners.	None.	Retained.	Viable as a component of remedial actions which do not continue to utilize the existing MPE system for soil vapor extraction.

Prepared by: BPN 12/7/10
Checked by: RTB 12/10/10

Table 10.1: Preliminary Screening of Remedial Alternatives

Remedial Alternative	Effectiveness	Implementability	Cost	Comments
Alternative 1: No Action	Not evaluated.	Not evaluated.	No cost.	Retained as a baseline for comparison.
Alternative 2: No Further Action: Continued Multi-phase Extraction	Institutional controls would control exposure to subsurface soil contamination. The existing multi-phase extraction system would not be modified. This alternative would not effectively treat residual contamination that remains untreated by the current system.	This alternative uses the existing remedial system, and thus would not be difficult to implement.	Costs associated with this alternative are moderate. The primary cost items include long term operations, maintenance, and monitoring of the system.	Retained.
Alternative 3: Restoration to Pre-Disposal or Unrestricted Conditions	This alternative would address all contamination on site by excavating all soils above clean-up objectives, dewatering to bedrock and treating bedrock groundwater through in-situ chemical oxidation. No annual operation, maintenance or monitoring activities would be required on site.	Technical issues with implementing this alternative primarily include the proximity of adjacent buildings and the existing MPE system piping and wells and the ability to treat bedrock groundwater in-situ.	Costs associated with this alternative are high. The primary cost items include excavation and off-site disposal of the excavated soil.	Retained per DER-10 as an alternative that allows for unrestricted use of the site.
Alternative 4: Enhanced Multi-phase Extraction	In the long term, this alternative would effectively reduce VOC concentrations in soil above and below the water table as well as groundwater. Institutional controls would control exposure to subsurface soil contamination.	This alternative would require installation of additional multi-phase extraction points to address residual areas of contamination.	Costs associated with this alternative are moderate. The primary cost items include long term operations, maintenance, and monitoring of the system and system enhancement.	Retained.
Alternative 5: In-Situ Source Treatment - Chemical Oxidation with Soil Mixing	This alternative would oxidize VOC groundwater contaminants. The actual VOC contaminants (i.e., chlorinated, fuel-related, etc.) treated would depend upon the reagent applied. VOC contaminant degredation would be evaluated during bench-scale analyses.	In-situ chemical oxidation can be implemented using readily available technologies. Depending on the chemical used, its dosage, and ability for chemical distribution, this alternative can provide relatively quick results. Technical issues with implementing this alternative derive from the tight site soils; the tight soils would require soil mixing which would be limited by the proximity of adjacent buildings and the existing MPE system.	Costs associated with this alternative are moderate. The primary cost items include the mechanical mixing of the chemical oxidant and contaminated soils.	Retained only as a component of discrete soil source area treatment; could be used for partial source area treatment.
Alternative 6: Discrete Soil Source Excavation and Off-Site Disposal and In-Situ Enhanced Biodegradation with Groundwater Monitoring	This alternative would effectively remove the accessible source of on-site soil and groundwater contamination and reduce both on- and off-site groundwater contamination by excavation of source area soils. In-situ enhanced biodegredation of on-site saturated soil and groundwater would address residual contamination subsequent to source removal.	Technical issues with implementing this alternative include the proximity of adjacent buildings and the existing MPE system piping and wells, the ability to inject amendments into the tight soils, and obtaining multiple access agreements to conduct enhanced biodegradation at multiple properties.	Costs associated with this alternative are high. The primary cost items include excavation and off-site disposal of the excavated soil.	Retained.
Alternative 7: In-Situ Electrical Resistance Heating	This alternative would effectively meet RAOs for soil, groundwater, and soil vapor in the area of treatment by volatilizing and extracting VOC contaminants through electrical resistanace heating.	Implementation of this alternative would only be limited by the ability to install and operate the system.	Costs associated with this alternative are high. Cost considerations include utility costs associated with electrical heating systems.	Retained.

Table 11.1: Applicable Location- and Action-Specific Standards, Criteria, and Guidance

Requirement	**Consideration in the Remedial Response Process**
29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response	Applicable to implementation of Health and Safety implementation, enforcement, and emergency response.
6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes (November 1998)	Applicable to the characterization, handling, transportation, and treatment/disposal of soils to be removed from the Site.
6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998)	Applicable to the handling, transportation, and treatment/disposal of soils to be removed from the Site.
6 NYCRR Part 375 - Environmental Remediation Programs (as amended December 2006)	Applicable to the development and implementation of remedial programs.
6 NYCRR Part 376 - Land Disposal Restrictions	Applicable to disposal of hazardous wastes. Identifies those wastes that are restricted from land disposal.
6 NYCRR Part 750 through 758 - Implementation of NPDES Program in NYS ("SPDES Regulations")	Applicable to construction in and adjacent to water bodies and discharge of treated wastewater.
DER-10 Technical Guidance for Site Investigation and Remediation	Applicable to the development and implementation of remedial programs.
Citizen Participation in New York's Hazardous Waste Site Remediation Program: A Guidebook (June 1998)	Applicable to the development and implementation of remedial programs.
TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations	Applicable to discharge of treated wastewater.
Solidification/Stabilization and its Application to Waste Materials	Applicable to disposal of wastes generated during implementation of remedial program.
Air Guide 1 – Guidelines for the Control of Air Toxic Ambient Air Contaminants	Applicable to the control of toxic ambient air contaminants.

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Table 11.2: Cost Summary for Alternative 2 - No Further Action: Continued Multiphase Extraction

ITEM		COST
DIRECT CAPITAL COSTS		
Institutional Controls	$	27,000
Direct Cost Subtotal	$	27,000
INDIRECT CAPITAL COSTS		
Project Management (@ 10 Percent)	$	3,000
Remedial Design (none included)	$	-
Construction Management (none included)	$	-
Contingency (@ 25 Percent)	$	7,000
Indirect Cost Subtotal	$	10,000
TOTAL CAPITAL COSTS	**$**	**37,000**
ANNUAL OPERATION AND MAINTENANCE COSTS*		
OM&M of the Existing MPE System (years 1-10)	$	173,000
Quarterly Monitoring (years 11-12)	$	42,000
Semi-annual Monitoring (years 13-14)	$	21,000
Annual Monitoring (years 15-30)	$	11,000
PERIODIC COSTS*		
Periodic Inspections and Reporting (Years 1-30)	$	5,000
PRESENT WORTH OF ANNUAL AND PERIODIC COSTS (30 yrs)	**$**	**1,559,000**
TOTAL PRESENT WORTH OF ALTERNATIVE 2 (30 yrs)	**$**	**1,596,000**
TOTAL NON-DISCOUNTED COST OF ALTERNATIVE 2 (30 yrs)	**$**	**2,088,000**

NOTES:
Costs have been rounded to the nearest thousand.
* Costs include additional 10 percent for technical support and 25 percent contingency for unforeseen project complexities including insurance, taxes, and licensing costs.
Costs based on annual inspection and reporting.

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Checked by: MJS 1/14/11

Table 11.3: Cost Summary for Alternative 3 – Restoration to Unrestricted Conditions

ITEM	COST	
DIRECT CAPITAL COSTS		
Pre-Design Investigation	$	78,000
Mobilization and Temporary Facilities and Controls	$	138,000
Excavation and Off-site Disposal of Site Soil	$	2,246,000
In-Situ Chemical Oxidation	$	233,000
Site Restoration	$	168,000
Direct Cost Subtotal	$	2,863,000
INDIRECT CAPITAL COSTS		
Project Management (@ 5 Percent)	$	144,000
Remedial Design (@ 8 Percent)	$	230,000
Construction Management (@ 6 Percent)	$	172,000
Contingency (@ 25 Percent)	$	716,000
Indirect Cost Subtotal	$	1,262,000
TOTAL CAPITAL COSTS	**$**	**4,125,000**
ANNUAL OPERATION AND MAINTENANCE COSTS*		
Quarterly Monitoring (years 1-2)	$	-
Semi-annual Monitoring (years 3-4)	$	-
Annual Monitoring (years 5-30)	$	-
Annual Performance Reporting (years 1-30)	$	-
PRESENT WORTH OF ANNUAL AND PERIODIC COSTS (30 yrs)	**$**	**-**
TOTAL PRESENT WORTH OF ALTERNATIVE 3 (30 yrs)	**$**	**4,125,000**
TOTAL NON-DISCOUNTED COST OF ALTERNATIVE 3 (30 yrs)	**$**	**4,125,000**

NOTES:

Costs have been rounded to the nearest thousand.

* Costs include additional 10 percent for bid contingency and 25 percent for scope contingency unforeseen project complexities including insurance, taxes, and licensing costs (USEPA 2000).

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Table 11.4: Cost Summary for Alternative 4 - Enhanced Multiphase Extraction

ITEM		**COST**
DIRECT CAPITAL COSTS		
Institutional Controls	$	27,000
Pre-Design Investigation	$	7,000
Expansion of existing MPE system	$	70,000
Direct Cost Subtotal	$	104,000
INDIRECT CAPITAL COSTS		
Project Management (@ 10 Percent)	$	10,000
Remedial Design (@ 20 Percent)	$	21,000
Construction Management (@15 Percent)	$	16,000
Contingency (@ 25 Percent)	$	26,000
Indirect Cost Subtotal	$	73,000
TOTAL CAPITAL COSTS	**$**	**177,000**
ANNUAL OPERATION AND MAINTENANCE COSTS*		
OM&M of the Upgraded MPE System (years 1-5)	$	230,000
Quarterly Monitoring (Years 6-7)	$	42,000
Semi-Annual Monitoring (Years 8-9)	$	21,000
Annual Monitoring (Years 10-30)	$	11,000
PERIODIC COSTS*		
Periodic Inspections and Reporting (Years 1-30)	$	5,000
PRESENT WORTH OF ANNUAL AND PERIODIC COSTS (30 yrs)	**$**	**1,235,000**
TOTAL PRESENT WORTH OF ALTERNATIVE 4 (30 yrs)	**$**	**1,412,000**
TOTAL NON-DISCOUNTED COST OF ALTERNATIVE 4 (30 yrs)	**$**	**1,687,000**

NOTES:
Costs have been rounded to the nearest thousand.
* Costs include additional 10 percent for technical support and 25 percent contingency for unforeseen project complexities including insurance, taxes, and licensing costs.
Costs based on annual inspection and reporting.

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Table 11.5: Cost Summary for Alternative 5 - In-Situ Source Treatment - Chemical Oxidation with Soil Mixing

ITEM	COST
DIRECT CAPITAL COSTS	
- Pre-Design Investigation	$ 78,000
- Institutional Controls	$ 27,000
- Mobilization and Temporary Facilities and Controls	$ 112,000
- In-Situ Soil Mixing	$ 503,000
- Site Restoration	$ 23,000
- Direct Cost Subtotal	$ 743,000
INDIRECT CAPITAL COSTS	
- Project Management (@ 6 Percent)	$ 45,000
- Remedial Design (@ 12 Percent)	$ 89,000
- Construction Management (@ 8 Percent)	$ 59,000
- Contingency (@ 25 Percent)	$ 186,000
- Indirect Cost Subtotal	$ 379,000
TOTAL CAPITAL COSTS	**$ 1,122,000**
OPERATION AND MAINTENANCE COSTS*	
- Quarterly Monitoring (years 1-2)	$ 42,000
- Semi-annual Monitoring (years 3-4)	$ 21,000
- Annual Monitoring (years 5-30)	$ 11,000
PERIODIC COSTS*	
- Periodic Institutional Control Inspections and Reporting	$ 5,000
PRESENT WORTH OF ANNUAL AND PERIODIC COSTS (30 yrs)	**$ 251,000**
TOTAL PRESENT WORTH OF ALTERNATIVE 5 (30 yrs)	**$ 1,373,000**
TOTAL NON-DISCOUNTED COST OF ALTERNATIVE 5 (30 yrs)	**$ 1,520,000**

NOTES:
Costs have been rounded to the nearest thousand.
* Costs include additional 10 percent for technical support and 25 percent contingency for unforeseen project complexities including insurance, taxes, and licensing costs. Costs based on annual inspection and reporting.

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Table 11.6: Cost Summary for Alternative 6 – Discrete Soil Source Excavation and Off-Site Disposal and In-Situ Enhanced Biodegradation with Groundwater Monitoring

ITEM		**COST**
DIRECT CAPITAL COSTS		
Pre-Design Investigation	$	78,000
Institutional Controls	$	27,000
Mobilization and Temporary Facilities and Controls	$	65,000
Excavation and Off-site Disposal of Source Area Soil	$	1,106,000
In-Situ Enhanced Biodegradation	$	57,000
Site Restoration	$	53,000
Direct Cost Subtotal	$	1,386,000
INDIRECT CAPITAL COSTS		
Project Management (@ 6 Percent)	$	84,000
Remedial Design (@ 12 Percent)	$	167,000
Construction Management (@ 8 Percent)	$	111,000
Contingency (@ 25 Percent)	$	334,000
Indirect Cost Subtotal	$	696,000
TOTAL CAPITAL COSTS	**$**	**2,100,000**
ANNUAL OPERATION AND MAINTENANCE COSTS*		
Follow-up Amendment Injection (Year 1 or 2)	$	13,000
Quarterly Monitoring (years 1-2)	$	42,000
Semi-annual Monitoring (years 3-4)	$	21,000
Annual Monitoring (years 5-30)	$	11,000
Annual Performance Reporting (years 1-30)	$	5,000
PRESENT WORTH OF ANNUAL AND PERIODIC COSTS (30 yrs)	**$**	**260,000**
TOTAL PRESENT WORTH OF ALTERNATIVE 6 (30 yrs)	**$**	**2,360,000**
TOTAL NON-DISCOUNTED COST OF ALTERNATIVE 6 (30 yrs)	**$**	**2,508,000**

NOTES:

Costs have been rounded to the nearest thousand.

* Costs include additional 10 percent for bid contingency and 25 percent for scope contingency unforeseen project complexities including insurance, taxes, and licensing costs (USEPA 2000).

Costs based on annual inspection and reporting.

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Table 11.7: Cost Summary for Alternative 7 - In-Situ Electrical Resistance Heating

ITEM	COST
DIRECT CAPITAL COSTS	
- Electrical Resistance Heating	$ 1,345,300
- Direct Cost Subtotal	$ 1,345,300
INDIRECT CAPITAL COSTS	
- Project Management (@ 6 Percent)	$ 81,000
- Remedial Design (@ 12 Percent)	$ -
- Construction Management (@ 8 Percent)	$ 108,000
- Contingency (@ 25 Percent)	$ 336,000
- Indirect Cost Subtotal	$ 525,000
TOTAL CAPITAL COSTS	**$ 1,900,000**
OPERATION AND MAINTENANCE COSTS*	
- Quarterly Monitoring (years 1-2)	$ 42,000
- Semi-annual Monitoring (years 3-4)	$ 21,000
- Annual Monitoring (years 5-10)	$ 11,000
PERIODIC COSTS*	
- None	-
PRESENT WORTH OF ANNUAL AND PERIODIC COSTS (30 yrs)	**$ 120,000**
TOTAL PRESENT WORTH OF ALTERNATIVE 7 (30 yrs)	**$ 2,020,000**
TOTAL NON-DISCOUNTED COST OF ALTERNATIVE 7 (30 yrs)	**$ 2,032,000**

NOTES:
Costs have been rounded to the nearest thousand.
Remedial Design costs not included at percentage of capital costs since vendor quote includes design.
* Costs include additional 10 percent for technical support and 25 percent contingency for unforeseen project complexities including insurance, taxes, and licensing costs. Costs based on annual inspection and reporting.

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Table 12.1: Summary of Remedial Alternative Costs

Item	Description	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
1	Capital Costs	$ -	$ 37,000	$ 4,125,000	$ 177,000	$ 1,122,000	$ 2,100,000	$ 1,900,000
2	Present Worth of Annual and Periodic Costs	$ -	$ 1,559,000	$ -	$ 1,235,000	$ 251,000	$ 260,000	$ 120,000
3	**Total Present Worth (Item 1 plus 2)**	**$ -**	**$ 1,596,000**	**$ 4,125,000**	**$ 1,412,000**	**$ 1,373,000**	**$ 2,360,000**	**$ 2,020,000**
4	Annual Costs Years 1 and 2	$ -	$ 173,000	$ -	$ 230,000	$ 42,000	$ 42,000	$ 42,000
5	Annual Costs Years 3 and 4	$ -	$ 173,000	$ -	$ 230,000	$ 21,000	$ 21,000	$ 21,000
6	Annual Costs Years 5 through 30	$ -	See Note 4	$ -	See Note 5	$ 11,000	$ 11,000	$ 11,000
7	Periodic Costs (see Note 1)	$ -	$ 5,000	$ -	$ 5,000	$ 5,000	$ 5,000	$ -
8	Remedial Timeframe (yrs) (Note 3)	>30	30	30	30	30	30	30

Notes:
1. Present Worth costs shown above are based upon the assumed Remedial Timeframe.
2. Annual and Periodic Costs (Item 2, 4 - 7) presented are non-discounted (future) costs.
3. Estimated costs presented in this table are intended to be within the target accuracy range of minus 30 to plus 50 percent of actual cost.
4. Annual Costs for Alternative 2 are $173,000 through year 10, $46,000 for years 11-12, $23,000 for years 13-14, and $12,000 for years 15-30
5. Annual Costs for Alternative 4 are $230,000 through year 5, $46,000 for years 6-7, $23,000 for years 8-9, and $12,000 for years 10-30

Alternative Descriptions:
1 = No Action
2 = No Further Action: Continued Multiphase Extraction
3 = Restoration to Pre-Disposal Conditions
4 = Enhanced Multiphase Extraction
5 = In-Situ Source Treatment - Chemical Oxidation with Soil Mixing
6 = Discrete Soil Source Excavation and Off-Site Disposal and In-Situ Enhanced Biodegradation with Groundwater Monitoring
7 = In-Situ Electrical Resistance Heating

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Table 12.2: Comparative Analysis of Remedial Alternatives

Remedial Alternative	Alternative 1: No Action	Alternative 2: No Further Action: Continued Multiphase Extraction	Alternative 3: Restoration to Pre-Disposal or Unrestricted Conditions	Alternative 4: Enhanced Multiphase Extraction
Compliance with New York State SCGs	Alternative 1 would not meet chemical-specific SCGs because it would not address soil contamination in excess of the 6 NYCRR Part 375 Remedial Program SCOs (NYSDEC, 2006) and groundwater contamination in excess of 6 NYCRR Parts 700-706 Water Quality Standards (NYSDEC, 1998).	Alternative 2 would have a low potential to treat the entire source area and treat the residual source area. Therefore, this alternative would not meet Chemical-specific SCGs for vadose and saturated zone VOC soil contamination and VOC groundwater contamination.	Alternative 3 would meet Chemical-specific SCGs for soil and groundwater by removing soil contamination in excess of the Protection of Groundwater SCGs, extracting overburden and interface groundwater in excess of water quality standards and treating bedrock groundwater in excess of water quality standards. Implementation of excavation, transportation, and treatment and/or disposal would be implemented in accordance with Action- and Location-specific SCGs.	Alternative 4 includes enhancement and subsequent operation of the existing MPE System to address the remaining soil contamination at the Site in excess of the SCOs. The operation, maintenance, and monitoring of the MPE System would continue to be conducted in accordance with applicable action-specific SCGs, which include "Air Guide 1 – Guidelines for the Control of Air Toxic Ambient Air Contaminants". There are no location-specific SCGs which apply to this alternative.
Overall Protection of Human Health and the Environment	Alternative 1 would not would not protect public health and the environment through eliminating, reducing, or controlling existing or potential exposure pathways through removal, treatment, engineering controls, or institutional controls. This remedial alternative would not achieve the RAOs for soil, groundwater or soil vapor.	Alternative 2 would protect public health and the environment through reducing and controlling existing or potential exposure pathways through institutional controls and the operation of the existing MPE System to remove soil contamination at the Site. However, as previously stated, the current operation of the existing MPE System may not be capable of addressing all soil and groundwater contamination present at the Site in excess of the SCOs.	Alternative 3 would protect public health and the environment through eliminating both the source of soil, groundwater and soil vapor contamination and residual contamination. Existing engineering controls are in place to address the existing soil vapor to indoor air pathway adjacent to the Site. This RA would achieve the RAOs for soil, on-site groundwater and soil vapor in the short-term and reduce the time to achieve RAOs for potentially contaminated, downgradient, and off-site groundwater or soil vapor.	Alternative 4 would protect public health and the environment through reducing and controlling existing or potential exposure pathways through institutional controls and operation of an enhanced MPE System to remove soil contamination remaining at the Site.
Short-term Impacts and Effectiveness	Alternative 1 would include no actions, and therefore would not result in short-term adverse impacts and risks to the community, site workers, and the environment.	Alternative 2 would not include construction or other type of activities at the Site that would result in potential short-term adverse impacts and risks to the community, workers, or the environment during implementation.	Alternative 3 includes excavation and off-site treatment or disposal or both of the on-site source area soils and groundwater and application of chemical oxidant to the open excavation. Short-term adverse impacts and risks to the community, site workers, and the environment are possible during the excavation and transportation of source areas soils. However, these risks could be controlled through coordination and communication, erosion, sedimentation, and dust control, and a comprehensive contractor health and safety program.	Alternative 4 includes construction activities associated with the enhancement of the existing MPE System which would result in potential short-term risks to the community, workers, and the environment. These risks would be addressed through coordination and communication with the property owner(s) and preparation and implementation of a construction health and safety plan. It is estimated that this alternative could be fully implemented in less than one year.

Prepared by: BPN 12/10/10
Checked by:

Table 12.2: Comparative Analysis of Remedial Alternatives

Remedial Alternative	Alternative 5: In-Situ Source Treatment - Chemical Oxidation with Soil Mixing	Alternative 6: Discrete Soil Source Excavation and Off-Site Disposal and In-Situ Enhanced Biodegradation with Groundwater Monitoring	Alternative 7: In-Situ Electrical Resistance Heating
Compliance with New York State SCGs	Alternative 5 would meet Chemical-specific SCGs for soil by treatment of soil contamination in excess of the Protection of Groundwater SCGs. However, unless the vertical extents of soil contamination in the overburden/interface zone and horizontal extents east and west of the site are determined, RAOs for the site will not be satisfied. This alternative would rely upon natural attenuation to meet RAOs for groundwater. Implementation of soil mixing, as well as institutional controls, would be implemented in accordance with Action- and Location-specific SCGs.	Alternative 6 would not meet Chemical-specific SCGs in the short term for soil and groundwater. However, by removing the source of soil and groundwater contamination and injecting enhanced biodegradation amendments, this alternative would satisfy Chemical-specific SCGs in the long term for soil and groundwater. Implementation of excavation, transportation, and treatment and/or disposal would be implemented in accordance with Action- and Location specific SCGs.	Alternative 7 would meet Chemical-specific SCGs for soil by treatment of soil and groundwater contamination in excess of SCGs but would rely upon natural attenuation to meet RAOs for groundwater outside the treatment area. Implementation of electrical resistance heating would be implemented in accordance with Action- and Location-specific SCGs.
Overall Protection of Human Health and the Environment	Alternative 5 would protect public health and the environment through reducing the source of soil, groundwater and soil vapor contamination and the implementation of institutional controls. Existing engineering controls are in place to address the existing soil vapor to indoor air pathway adjacent to the Site. This alternative would achieve the RAOs for soil in the short-term and reduce the time to achieve RAOs for downgradient groundwater and soil vapor.	Alternative 6 would protect public health and the environment through eliminating a large source of soil, groundwater and soil vapor contamination. Existing engineering controls are in place to address the existing soil vapor to indoor air pathway adjacent to the Site. This alternative would achieve the RAOs for soil, on-site groundwater and soil vapor in the long term.	Alternative 7 would protect public health and the environment through reducing the source of groundwater and soil vapor contamination and through the implementation of institutional controls. Existing engineering controls are in place to address the existing soil vapor to indoor air pathway adjacent to the Site .
Short-term Impacts and Effectiveness	Alternative 5 includes in-situ mixing and treatment of the on-site source area soils using heavy equipment. Short-term adverse impacts and risks to the community, site workers, and the environment are possible during the course of work; however, these risks could be controlled through coordination and communication, erosion, sedimentation, and dust control, and a comprehensive contractor health and safety program.	Alternative 6 includes excavation and off-site treatment or disposal or both of on-site source area soils. Short-term adverse impacts and risks to the community, site workers, and the environment are possible during the excavation and transportation of source areas soils. However, these risks could be controlled through coordination and communication, erosion, sedimentation, and dust control, and a comprehensive contractor health and safety program.	Alternative 7 includes electrical resistance heating of the on-site source area soils, resulting in contaminated vapors which require capture and treatment. Short-term adverse impacts and risks to the community, site workers, and the environment are possible during the course of work; however, these risks could be controlled through coordination and communication, erosion, sedimentation, and dust control, and a comprehensive contractor health and safety program.

Table 12.2: Comparative Analysis of Remedial Alternatives

Remedial Alternative	Alternative 1: No Action	Alternative 2: No Further Action: Continued Multiphase Extraction	Alternative 3: Restoration to Pre-Disposal or Unrestricted Conditions	Alternative 4: Enhanced Multiphase Extraction
Long-term Effectiveness and Permanence	Alternative 1 does not include actions to address soil contamination at the Site and its potential impacts to indoor air and groundwater. This remedy may meet RAOs associated with VOC soil, groundwater and soil vapor contamination in the future due to natural attenuation processes, although the time period required to meet RAOs is likely significant.	Alternative 2 is currently reducing the VOC soil contamination at the Site as evidenced by on-going monitoring of performance (i.e., contaminant mass is being removed). However, evaluation of contaminant mass removal rates suggest that the contaminant mass removal rate of the current system layout has leveled off since August 2007 – which may indicate that the existing MPE system may not be capable of removing the remaining contamination at the Site.	Alternative 3 would provide permanent reduction of site-related soil contamination through the excavation and off-site treatment and disposal of soils exceeding SCGs.. This alternative would rely upon natural attenuation to address downgradient groundwater VOC contamination and potential soil vapor contamination.	Alternative 4 would include enhancement of the existing system to address soil contamination that the existing MPE system is not capable of removing. This alternative would be expected to provide long-term effectiveness and permanence through the removal of VOC soil contamination in excess of the SCOs.
Reduction of Toxicity, Mobility, and Volume	Alternative 1 would not provide reduction in the toxicity, mobility, or volume of VOC soil or groundwater contamination through treatment.	Alternative 2 includes continued operation of the existing MPE System which results in the reduction of contaminant volume in the subsurface. Reduction of toxicity, mobility, or volume through treatment would not occur because this alternative includes extraction of VOC soil contamination from the subsurface and direct discharge, without treatment, to the atmosphere.	Alternative 3 would provide reduction in the mobility of VOC soil contamination, but would only provide reduction in toxicity and volume if off-site treatment is conducted prior to disposal. Removal of the source area soils, extraction of source area groundwater and in-situ treatment of bedrock groundwater would result in long-term reduction in the toxicity, mobility, and volume of groundwater contamination migrating off site	Alternative 4 includes operation of an enhanced MPE System at the Site, resulting in the reduction of contaminant volume in the subsurface. Reduction in toxicity, mobility, or volume through treatment would not occur because this alternative includes extraction of VOC soil contamination from the subsurface and direct discharge, without treatment, to the atmosphere.
Implementability	Alternative 1 would include no actions, therefore there are no technical difficulties associated with this alternative. However, obtaining regulatory approval of this alternative would be difficult.	Alternative 2 includes continued operation, maintenance, and monitoring of the existing MPE System, and therefore would not be technically difficult to implement. However, because limitations of the existing MPE System relative to achieving RAOs have been identified, obtaining regulatory approval of this alternative may be difficult.	Alternative 3 would be technically difficult due to the presence of source area contamination beneath an adjacent building, the limited site area available to support remediation activities, the relatively shallow water table which would require excavation dewatering, and the difficulty in treating bedrock groundwater in-situ through infiltration.	Alternative 4 would not be difficult to implement. Because this alternative would be designed and implemented to address residual soil contamination at the Site, obtaining regulatory approval of this alternative is not anticipated to be difficult.
Land Use	Alternative 1 does not include actions to remove or treat soil or groundwater contamination in excess of the Protection of Groundwater SCOs, and would therefore not be compatible with current and foreseeable future land use.	Alternative 2 includes continued operation, maintenance, and monitoring of the existing MPE System. If RAOs are achieved, this alternative would be compatible with existing and foreseeable future land use. However, in the short-term, the presence of the MPE System, and associated infrastructure at the Site would limit future use.	The current and reasonably anticipated future land use of the Site is for commercial and/or residential purposes. This alternative would be protective of potential commercial workers conducting subsurface work at the Site.	Alternative 4 includes enhanced operation, maintenance, and monitoring of the existing MPE System. Once RAOs are achieved (in approximately three years after system start-up), this alternative would be compatible with existing and foreseeable future land use. However, in the short-term, the presence of the MPE System, and associated infrastructure at the Site would limit future land use.

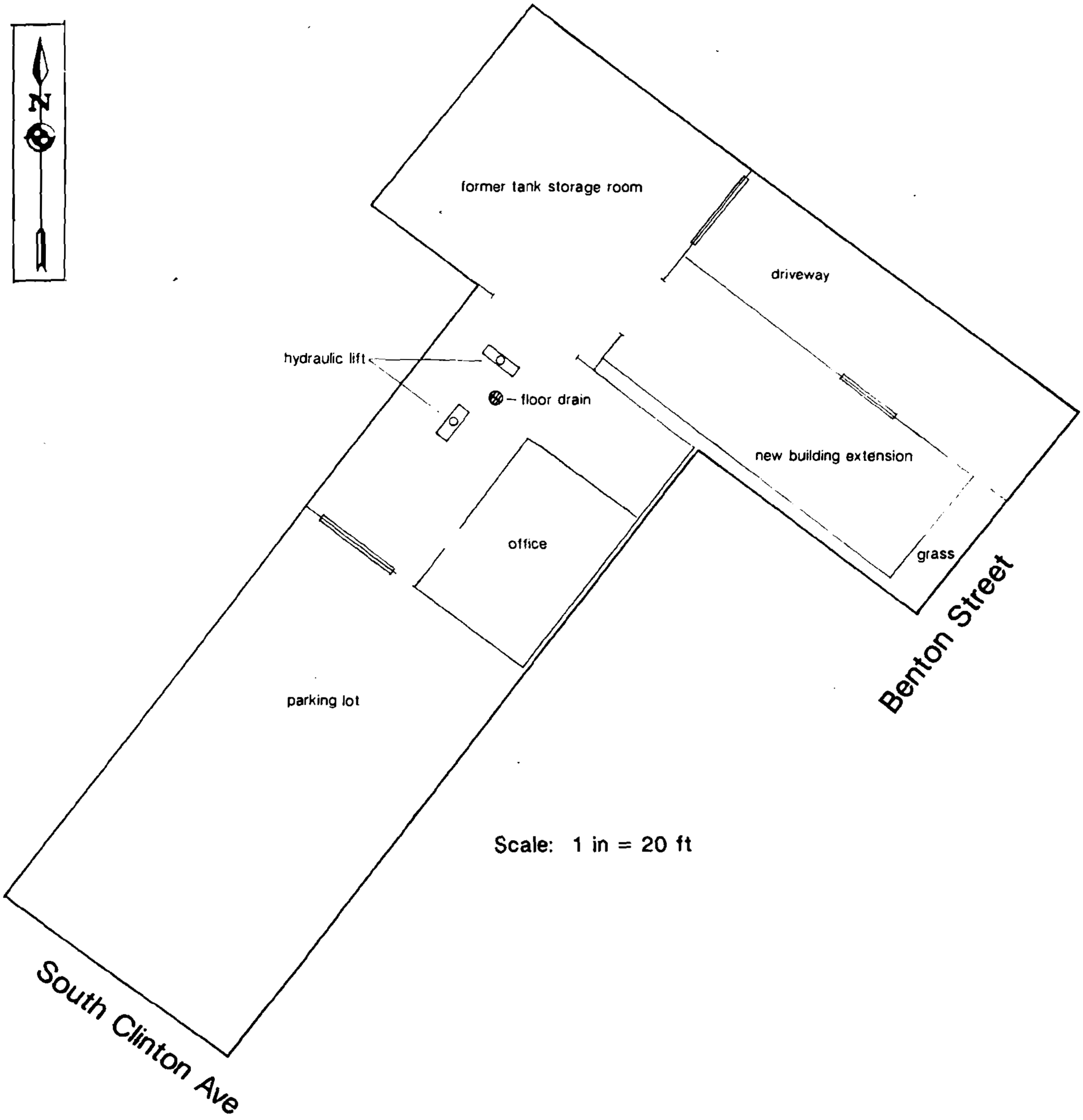
Prepared by: BPN 12/10/10
Checked by:

Table 12.2: Comparative Analysis of Remedial Alternatives

Remedial Alternative	Alternative 5: In-Situ Source Treatment - Chemical Oxidation with Soil Mixing	Alternative 6: Discrete Soil Source Excavation and Off-Site Disposal and In-Situ Enhanced Biodegradation with Groundwater Monitoring	Alternative 7: In-Situ Electrical Resistance Heating
Long-term Effectiveness and Permanence	Alternative 5 would provide permanent reduction of site-related soil contamination through in-situ mixing and treatment of source area soils. This alternative would rely upon existing engineering controls to address downgradient soil vapor contamination and natural attenuation (unless optional in-situ enhanced biodegradation was implemented) to address groundwater VOC contamination contributing to the downgradient groundwater and soil vapor contamination.	Alternative 6 would provide permanent reduction of site-related soil contamination through the excavation and off-site treatment and disposal of soils exceeding SCGs.. This alternative would rely upon enhanced biodegradation to address other on-site soil and groundwater contamination and natural attenuation to address downgradient groundwater VOC contamination and potential soil vapor contamination.	Alternative 7 would provide permanent reduction in site-related soil contamination through electrical resistance heating of source area soils and groundwater. This alternative would rely upon existing engineering controls to address downgradient soil vapor contamination and natural attenuation (unless optional in-situ enhanced biodegradation was implemented) to address groundwater VOC contamination contributing to downgradient groundwater and soil vapor contamination.
Reduction of Toxicity, Mobility, and Volume	Alternative 5 would provide reduction in the toxicity, mobility, or volume of VOC soil and groundwater contamination through in-situ treatment of source area soils and groundwater.	The excavation component of Alternative 6 would reduce the mobility of VOC soil contamination, but would only provide reduction in toxicity and volume if off-site treatment is conducted prior to disposal. Removal of the source area soils and enhanced biodegradation of VOCs in soil and groundwater would result in long-term reduction in the toxicity, mobility, and volume of groundwater contamination migrating off site.	Alternative 7 would provide reduction in the toxicity, mobility, or volume of VOC soil and groundwater contamination through in-situ treatment of source area soils and groundwater.
Implementability	Alternative 5 would be technically difficult due to the presence of source area contamination beneath the site building, the shallow water table, which may impede soil mixing by reducing the rate of liquid chemical oxidant injection, and the small site area, which may require a phased approach to mixing and treatment.	Alternative 6 would be technically difficult due to the presence of source area contamination beneath an adjacent building, the limited site area available to support excavation activities, and the relatively shallow water table which would require excavation dewatering.	Alternative 7 would not be technically difficult to implement.
Land Use	The current and reasonably anticipated future land use of the Site is for commercial and/or residential purposes. This alternative would be protective of potential commercial workers conducting subsurface work at the Site.	The current and reasonably anticipated future land use of the Site is for commercial and/or residential purposes. This alternative would be protective of potential commercial workers conducting subsurface work at the Site.	The current and reasonably anticipated future land use of the Site is for commercial and/or residential purposes. This alternative would be protective of potential commercial workers conducting subsurface work at the Site.

APPENDIX A

SEARS BROWN AND URS EXHIBIT FIGURES



Scale: 1 in = 20 ft

THE SEAR-BROWN GROUP
FULL-SERVICE DESIGN PROFESSIONALS

85 METRO PARK
ROCHESTER NEW YORK 14623

716-475-1440 FAX: 716-272-1814

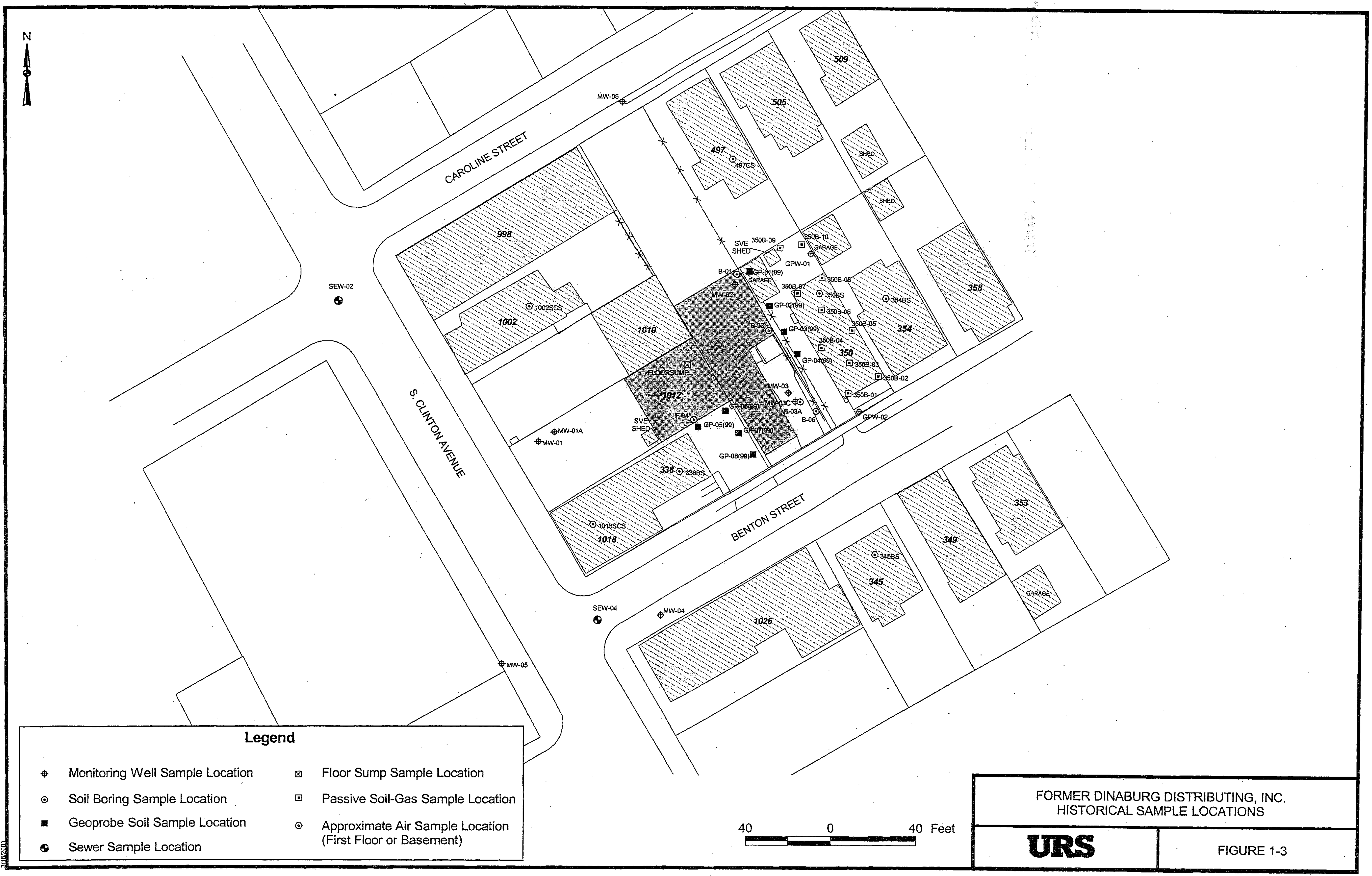
FIGURE 2

SITE PLAN

DINABURG DISTRIBUTING
1012 SOUTH CLINTON AVE
ROCHESTER, NY

Base Map: Tape Location Map, 4/10/90

H.H SULLIVAN, INC 574817

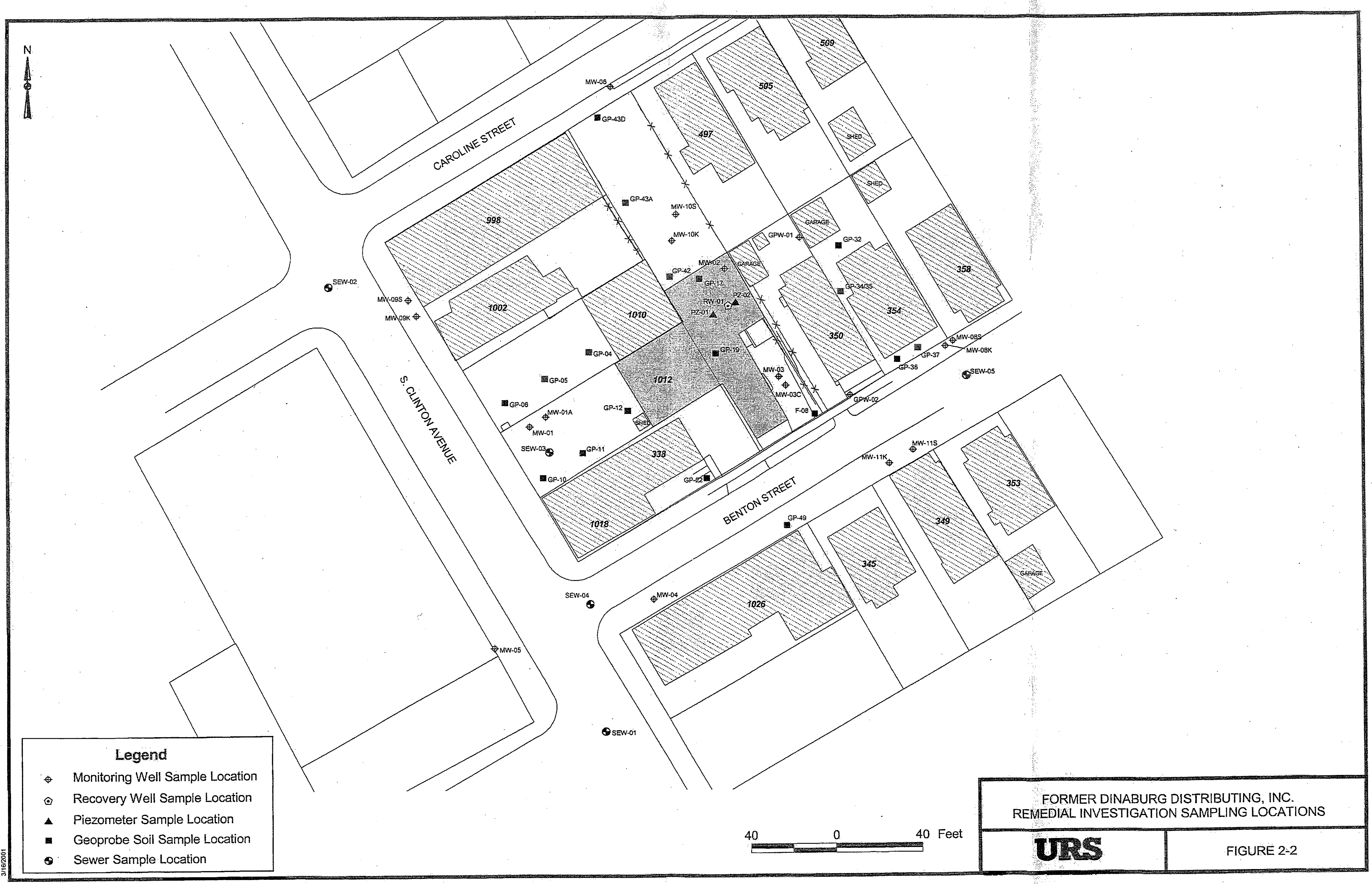


FORMER DINABURG DISTRIBUTING, INC.
HISTORICAL SAMPLE LOCATIONS

URS

FIGURE 1-3

J:\35798.01\dbl\gis\geology.apr HISTORICAL SAMPLING LOCATIONS
3/16/2001



FORMER DINABURG DISTRIBUTING, INC.
REMEDIAL INVESTIGATION SAMPLING LOCATIONS

FIGURE 2-2

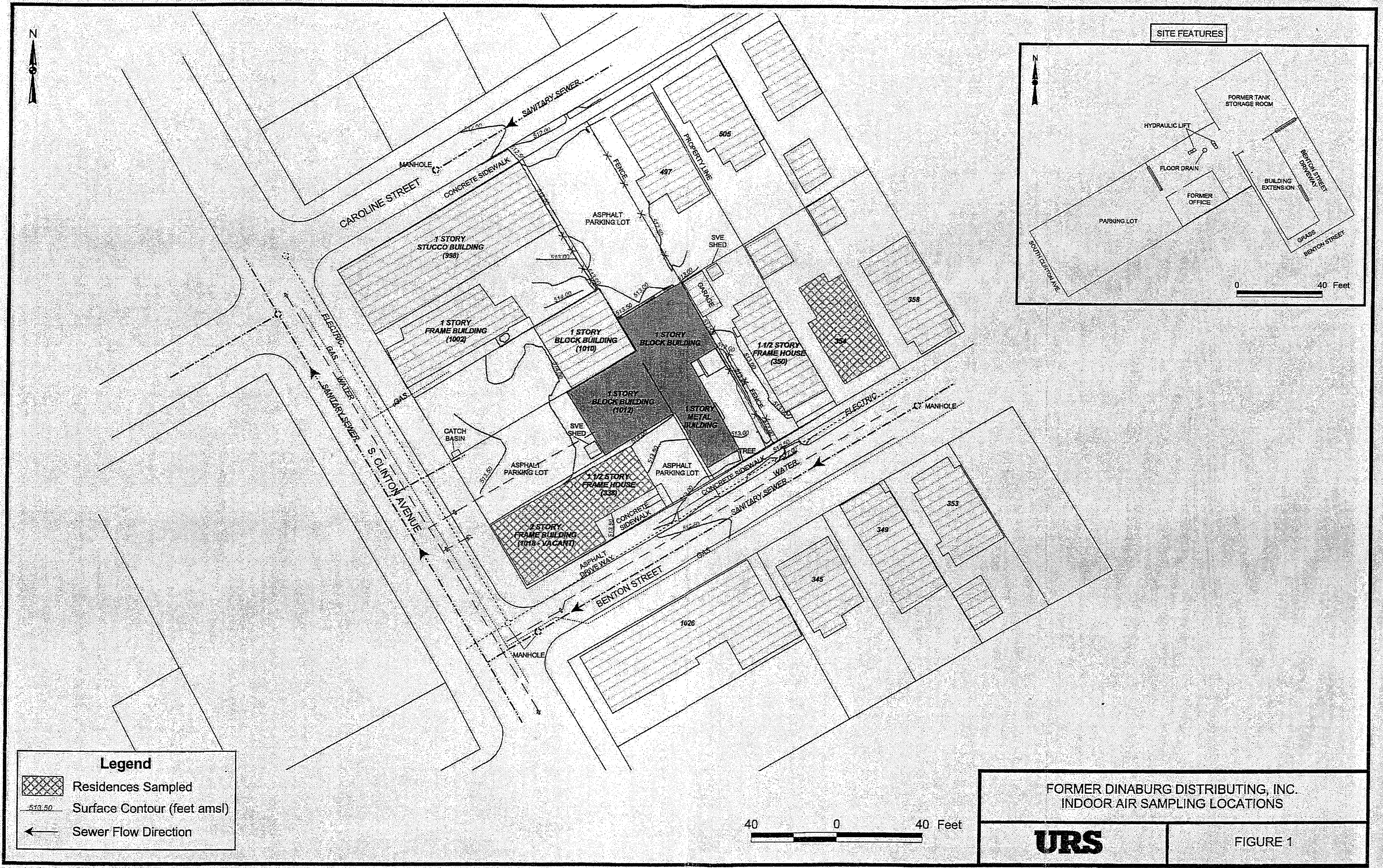
J:\35798.01\dbg\gis\geology.apr MONITORING WELL\SAMPLING LOCATIONS
3/16/2001

URS

FORMER DINABURG DISTRIBUTING, INC.
EXISTING SOIL VAPOR EXTRACTION SYSTEM

FIGURE 1-4

J:\35798.01\db\gis\geology.apr SOIL VAPOR EXTRACTION SYSTEM
3/16/2001

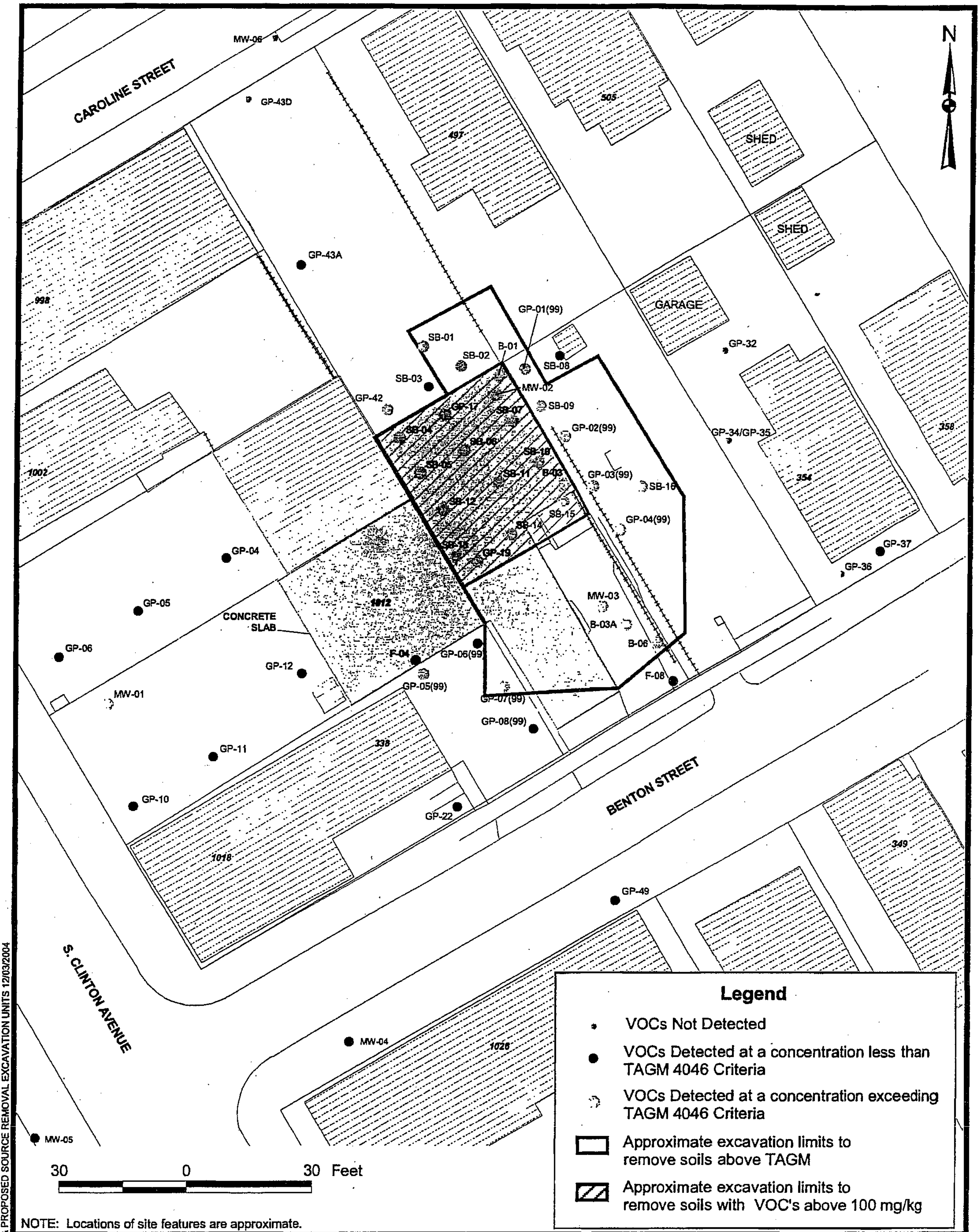


FORMER DINABURG DISTRIBUTING, INC.
INDOOR AIR SAMPLING LOCATIONS

URS

FIGURE 1

J:\45798.01\gis\geology.apr RESIDENCE TO BE SAMPLED
1/23/2004



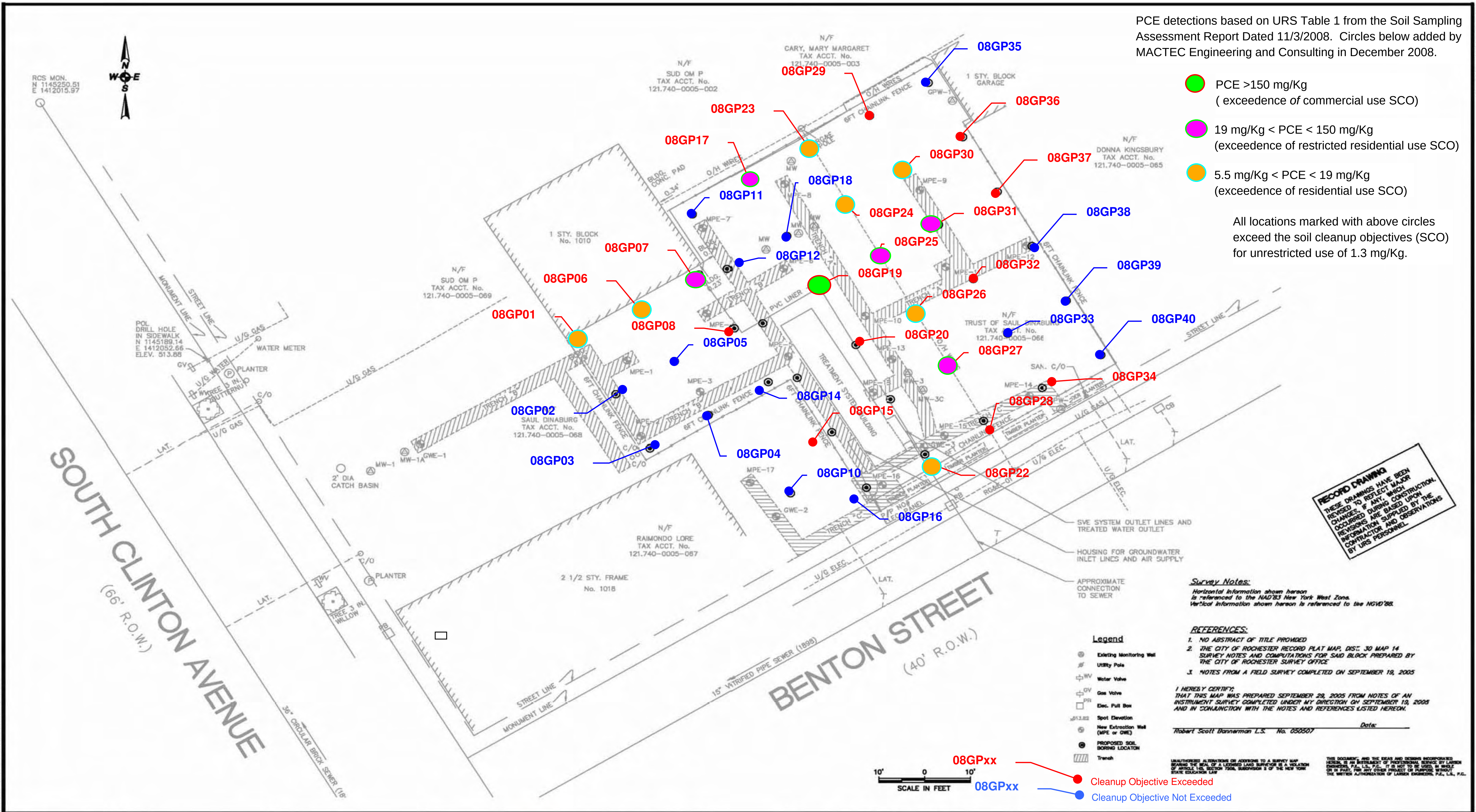
NOTE: Locations of site features are approximate.

J:\35798.01\db\gis\chemical.apr
SUPPLEMENTAL & PROPOSED SOURCE REMOVAL EXCAVATION UNITS 12/03/2004

URS

FORMER DINABURG DISTRIBUTING, INC.
BORING LOCATIONS AND PROPOSED SOURCE
REMOVAL EXCAVATION UNITS

FIGURE 1-2



PCE detections based on URS Table 1 from the Soil Sampling Assessment Report Dated 11/3/2008. Circles below added by MACTEC Engineering and Consulting in December 2008.

🟢	PCE >150 mg/Kg (exceedence *of* commercial use SCO)
🟣	19 mg/Kg < PCE < 150 mg/Kg (exceedence of restricted residential use SCO)
🟠	5.5 mg/Kg < PCE < 19 mg/Kg (exceedence of residential use SCO)

All locations marked with above circles exceed the soil cleanup objectives (SCO) for unrestricted use of 1.3 mg/Kg.

Survey Notes:

Horizontal information shown hereon is referenced to the NAD'83 New York West Zone. Vertical information shown hereon is referenced to the NGVD'88.

REFERENCES:

1. *NO ABSTRACT OF TITLE PROVIDED*
2. *THE CITY OF ROCHESTER RECORD PLAT MAP, DIST. 30 MAP 14 SURVEY NOTES AND COMPUTATIONS FOR SAID BLOCK PREPARED BY THE CITY OF ROCHESTER SURVEY OFFICE*
3. *NOTES FROM A FIELD SURVEY COMPLETED ON SEPTEMBER 19, 2005*

I HEREBY CERTIFY; THAT THIS MAP WAS PREPARED SEPTEMBER 29, 2005 FROM NOTES OF AN INSTRUMENT SURVEY COMPLETED UNDER MY DIRECTION ON SEPTEMBER 19, 2005 AND IN CONJUNCTION WITH THE NOTES AND REFERENCES LISTED HEREON.

Robert Scott Bannerman L.S. No. 050507 *Date:*

Legend

◎	Existing Monitoring Well
⊘	Utility Pole
WV	Water Valve
GV	Gas Valve
PB ☐	Elec. Pull Box
513.82	Spot Elevation
◎	New Extraction Well (MPE or GWE)
●	PROPOSED SOIL BORING LOCATON
▨	Trench
🔴	Cleanup Objective Exceeded
🔵	Cleanup Objective Not Exceeded

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NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

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PROJ. ENGR. DMc
CHECKED BY: CWP

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Group Consultants
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(716)856-5636 - (716)856-2545 fax
JOB No. 11173839.00000

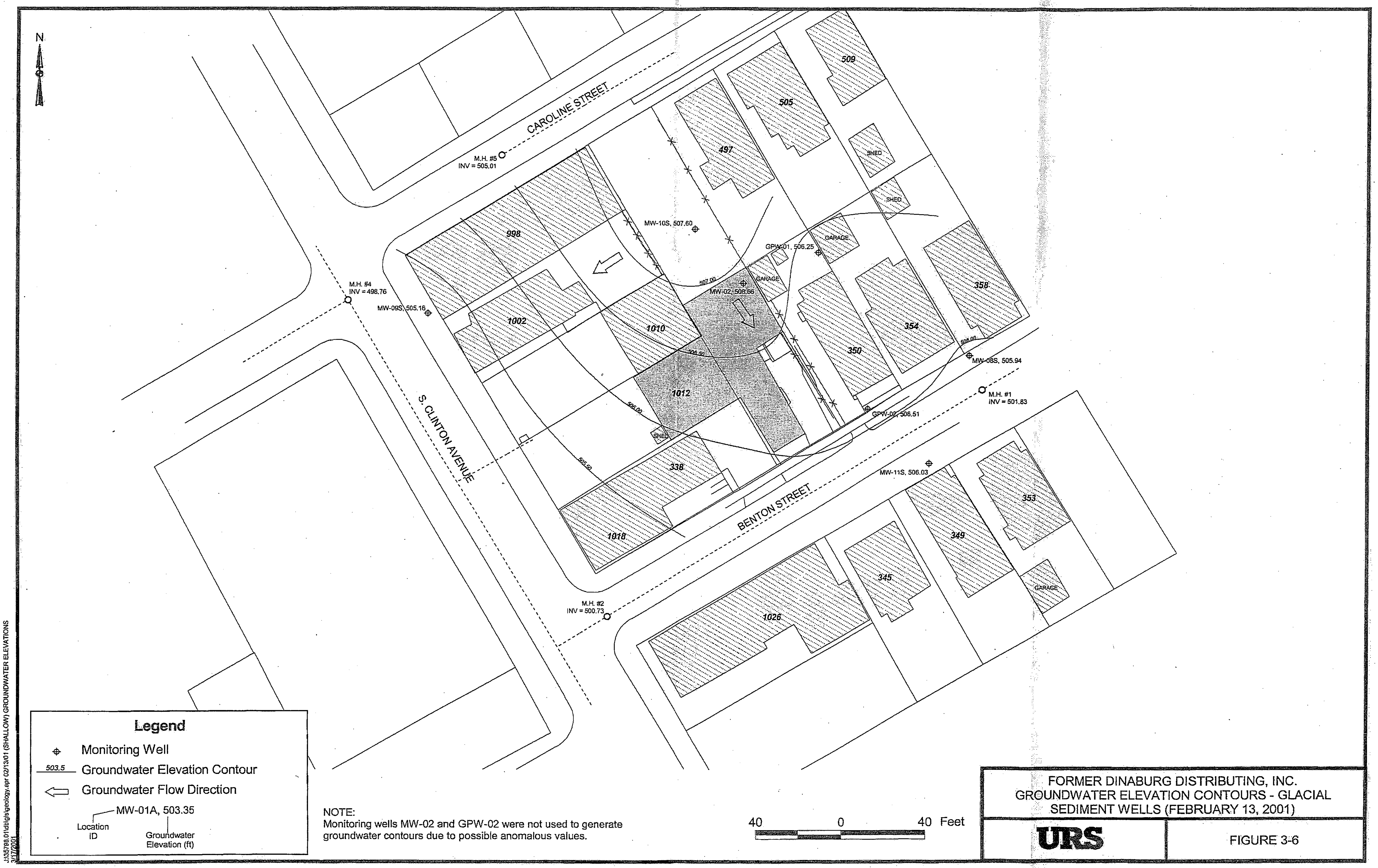
MONROE COUNTY
NYSDEC SITE 8-28-103
CITY OF ROCHESTER
FORMER DINABURG DISTRIBUTING, INC. SITE
ROCHESTER NEW YORK

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY, ALBANY, NEW YORK

LOCATIONS EXCEEDING UNRESTRICTED USE OBJECTIVES

Scale: AS SHOWN Date: MAY 2008 FIGURE 2

N:\11173839.00000\CAD\RECORD DRAWINGS\FIGURE 1.dwg 1:2 5/29/08 - 2 RAL



NOTE:
Monitoring wells MW-02 and GPW-02 were not used to generate groundwater contours due to possible anomalous values.

FORMER DINABURG DISTRIBUTING, INC.
GROUNDWATER ELEVATION CONTOURS - GLACIAL
SEDIMENT WELLS (FEBRUARY 13, 2001)

URS

FIGURE 3-6

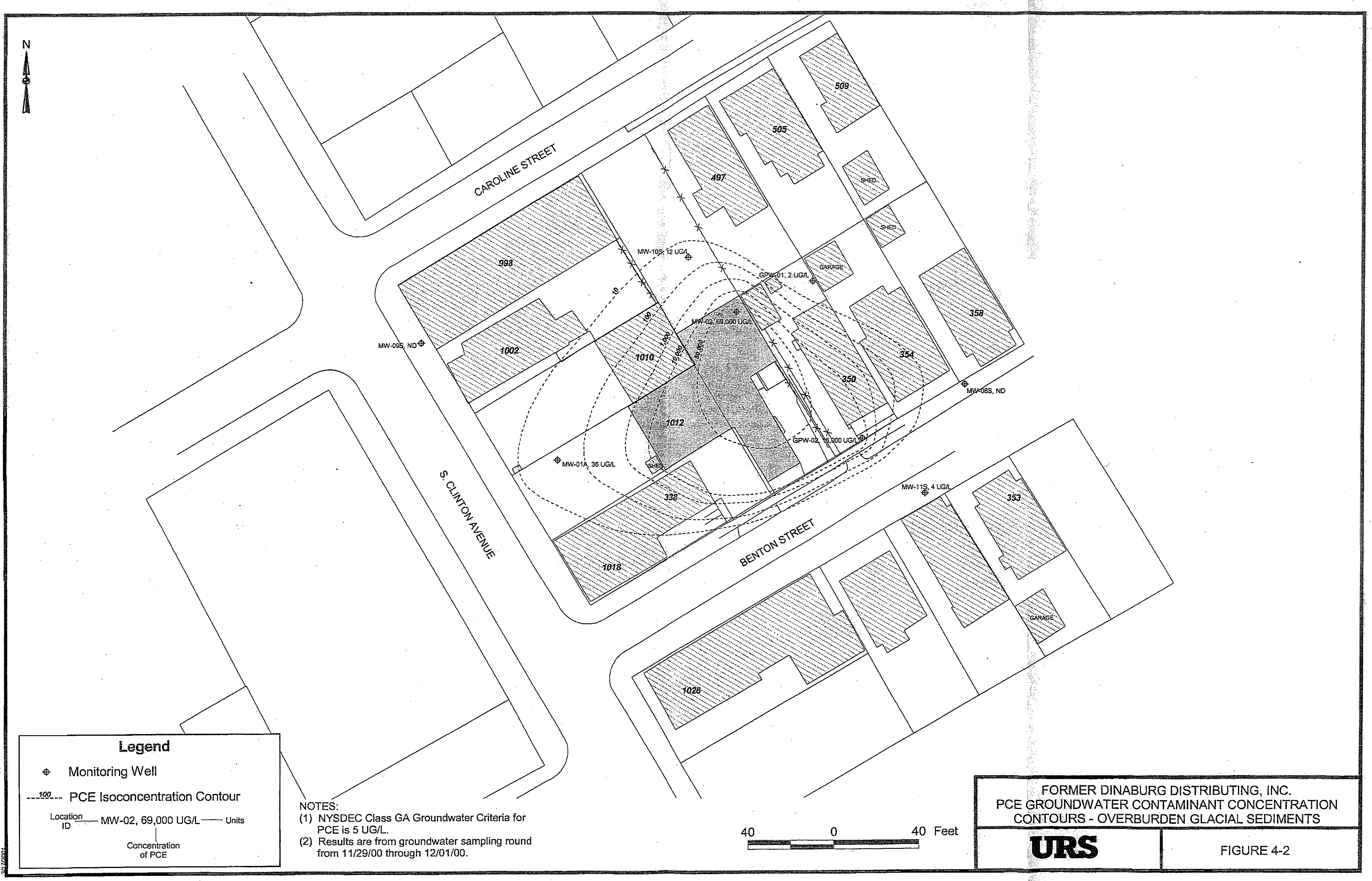
J:\35788.01\db\gis\geology.apr 02/13/01 (SHALLOW) GROUNDWATER ELEVATIONS
3/17/2001

J:\35798.01\db\gis\geology.apr 02/13/01 (DEEP) GROUNDWATER ELEVATIONS
3/17/2001

FORMER DINABURG DISTRIBUTING, INC.
GROUNDWATER ELEVATION CONTOURS - INTERFACE
WELLS (FEBRUARY 13, 2001)

URS

FIGURE 3-7



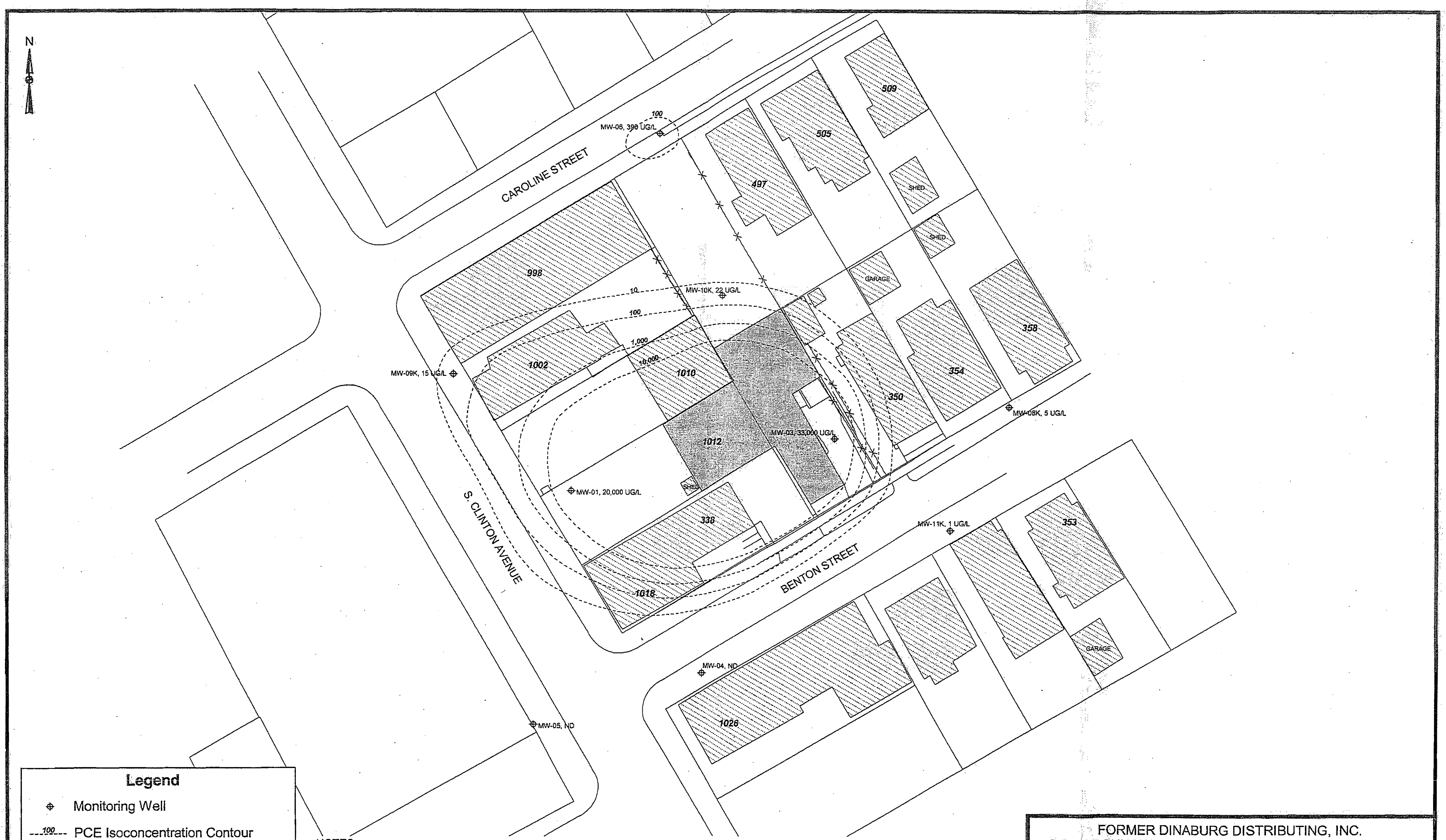
NOTES:
(1) NYSDEC Class GA Groundwater Criteria for PCE is 5 UG/L.
(2) Results are from groundwater sampling round from 11/29/00 through 12/01/00.

FORMER DINABURG DISTRIBUTING, INC.
PCE GROUNDWATER CONTAMINANT CONCENTRATION
CONTOURS - OVERBURDEN GLACIAL SEDIMENTS

URS

FIGURE 4-2

J:\35798.01\db\gis\chemical.apr NOV 00 PCE CONCECTRATIONS IN GROUNDWATER
3/17/2001



Legend

⊕ Monitoring Well

--100-- PCE Isoconcentration Contour

Location ID —— MW-01, 20,000 UG/L —— Units

Concentration of PCE

NOTES:
(1) NYSDEC Class GA Groundwater Criteria for PCE is 5 UG/L.
(2) Results are from groundwater sampling round from 11/29/00 through 12/01/00.

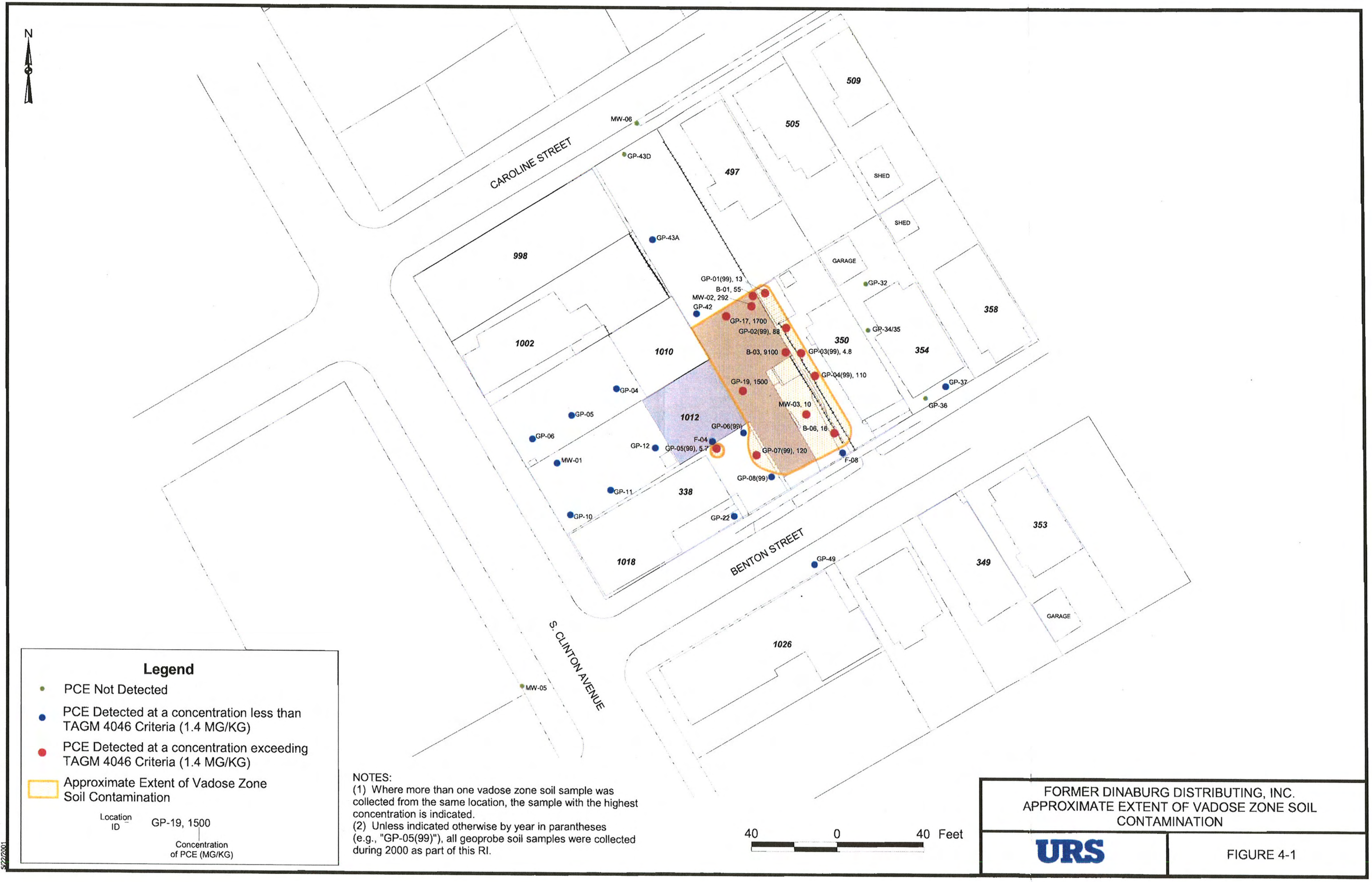
40 0 40 Feet

FORMER DINABURG DISTRIBUTING, INC.
PCE GROUNDWATER CONTAMINANT CONCENTRATION CONTOURS - INTERFACE ZONE

URS

FIGURE 4-3

J:\35798.01\db\gis\chemical.apr (DEEP) NOV 00 PCE CONCENTRATIONS
3/19/2001



Legend

- ● PCE Not Detected
- ● PCE Detected at a concentration less than TAGM 4046 Criteria (1.4 MG/KG)
- ● PCE Detected at a concentration exceeding TAGM 4046 Criteria (1.4 MG/KG)
- ▭ Approximate Extent of Vadose Zone Soil Contamination

Location ID — GP-19, 1500 — Concentration of PCE (MG/KG)

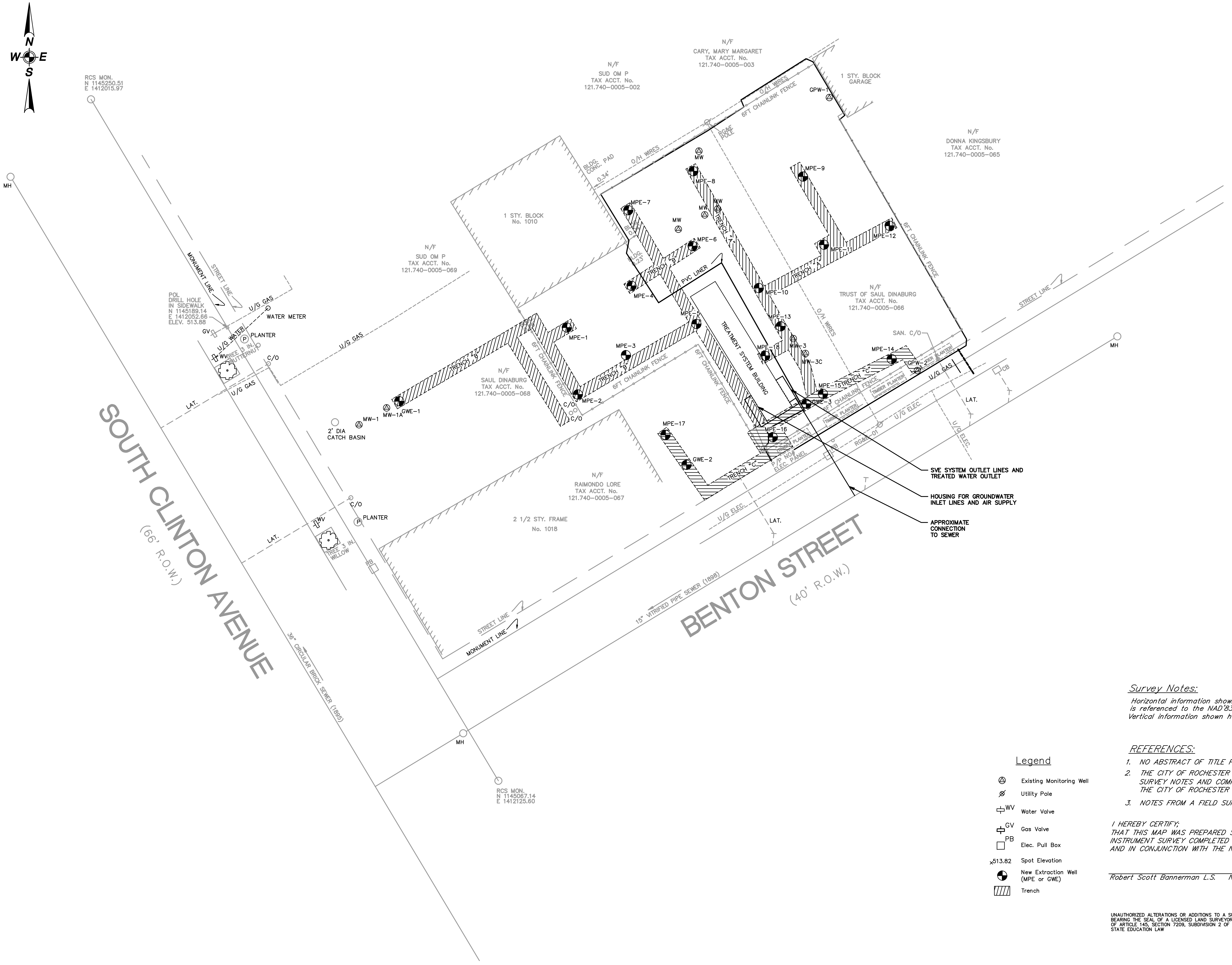
NOTES:
(1) Where more than one vadose zone soil sample was collected from the same location, the sample with the highest concentration is indicated.
(2) Unless indicated otherwise by year in parantheses (e.g., "GP-05(99)"), all geoprobe soil samples were collected during 2000 as part of this RI.

FORMER DINABURG DISTRIBUTING, INC.
APPROXIMATE EXTENT OF VADOSE ZONE SOIL CONTAMINATION

URS

FIGURE 4-1

J:\35798.01\db\gis\chemical.apr SOIL PCE CONCENTRATIONS
5/22/2001



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3. *NOTES FROM A FIELD SURVEY COMPLETED ON SEPTEMBER 19, 2005*

Legend

⊚	Existing Monitoring Well
⊘	Utility Pole
WV	Water Valve
GV	Gas Valve
☐ PB	Elec. Pull Box
×513.82	Spot Elevation
◐	New Extraction Well (MPE or GWE)
▨	Trench

I HEREBY CERTIFY;
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Date:

Robert Scott Bannerman L.S.   No. 050507

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15' 0 15'
SCALE: 1"=15'

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NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

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PROJ. ENGR. DMc
CHECKED BY: CWP

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Group Consultants
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 - (716)856-2545 fax

JOB No. 11173839.00000

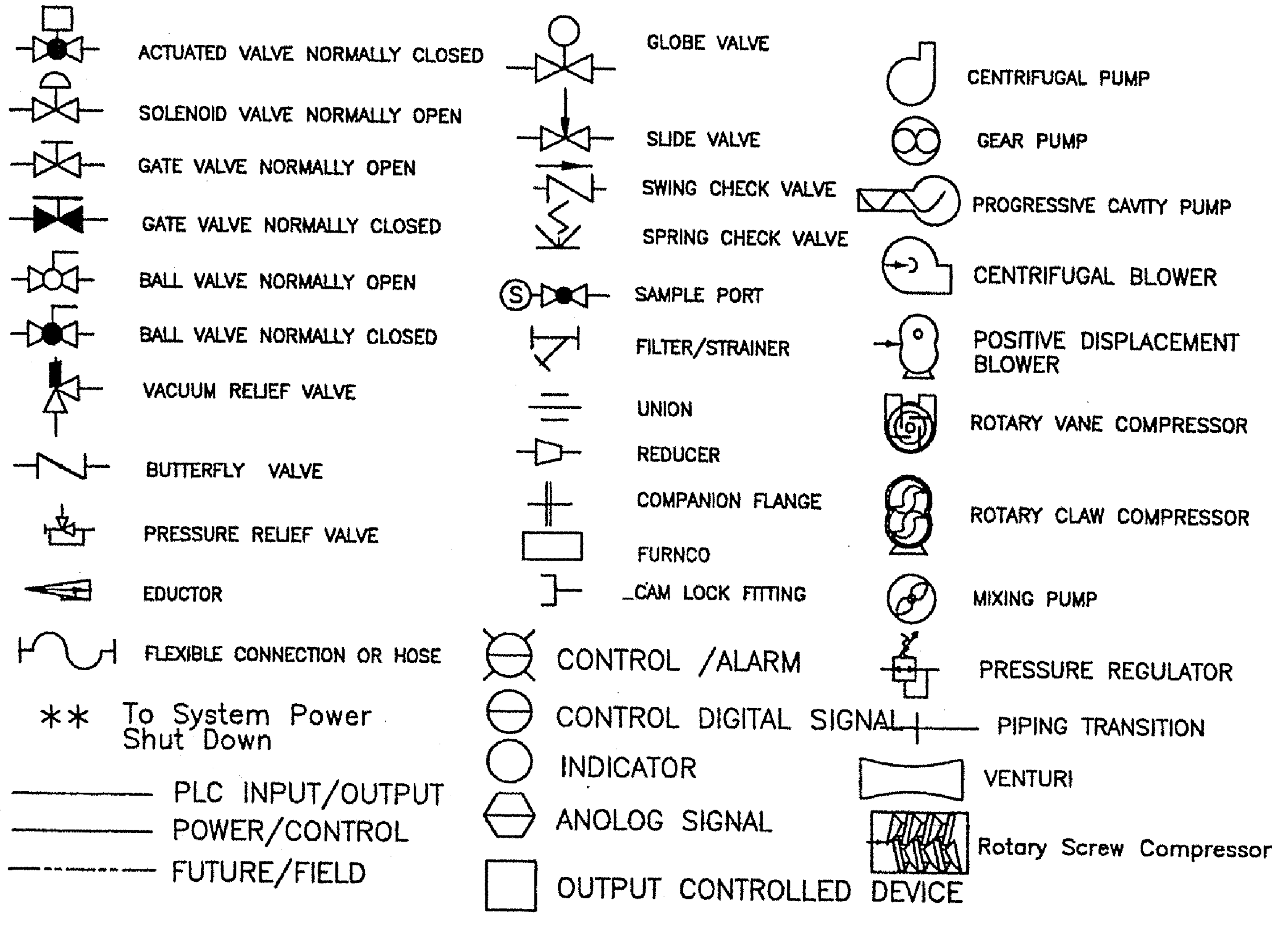
No. 095

MONROE COUNTY
NYSDEC SITE 8-28-103
CITY OF ROCHESTER
FORMER DINABURG
DISTRIBUTING, INC. SITE
ROCHESTER NEW YORK

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY, ALBANY, NEW YORK

SITE PLAN
SYSTEM LAYOUT AND
WELL LOCATIONS

Scale: AS SHOWN
Date: DEC. 2006
DWG. 2B



P&ID DESCRIPTION LEGEND

FIRST LETTER

INPUT MEASUREMENT

C CONTACT
DP DIFF PRESS
F FLOW RATE
H HAND
I CURRENT
L LEVEL
P PRESSURE
T TEMPERATURE
V VACUUM
Z POSITION

OUTPUT ACTION

A AERATION
B BYPASS
C COOLING
D DISCHARGE
F FIRING
G SPARGING
J REINJECTION
I INLET
M MOTORIZED
N PNEUMATIC
P PRESSURE
Q QUENCH
R RECYCLE
S SUCTION
T TRANSFER
U DILUTION
W WELL
V VACUUM

SECOND LETTER

DEVICE

B BLOWER
C COMPRESSOR (OUTPUT)
C COUNTER (INPUT)
E PRIMARY ELEMENT
F FAN
I INDICATOR
L LIGHT
M METER
P PUMP
R RECORDER
S SWITCH
T TRANSMITTER
V VALVE

REMAINING LETTERS

DESCRIPTOR

A ALARM
D DIFFERENTIAL
H HIGH
I INLET
L LOW
O OUTLET

RECORD DRAWING

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CHECKED BY: CWP

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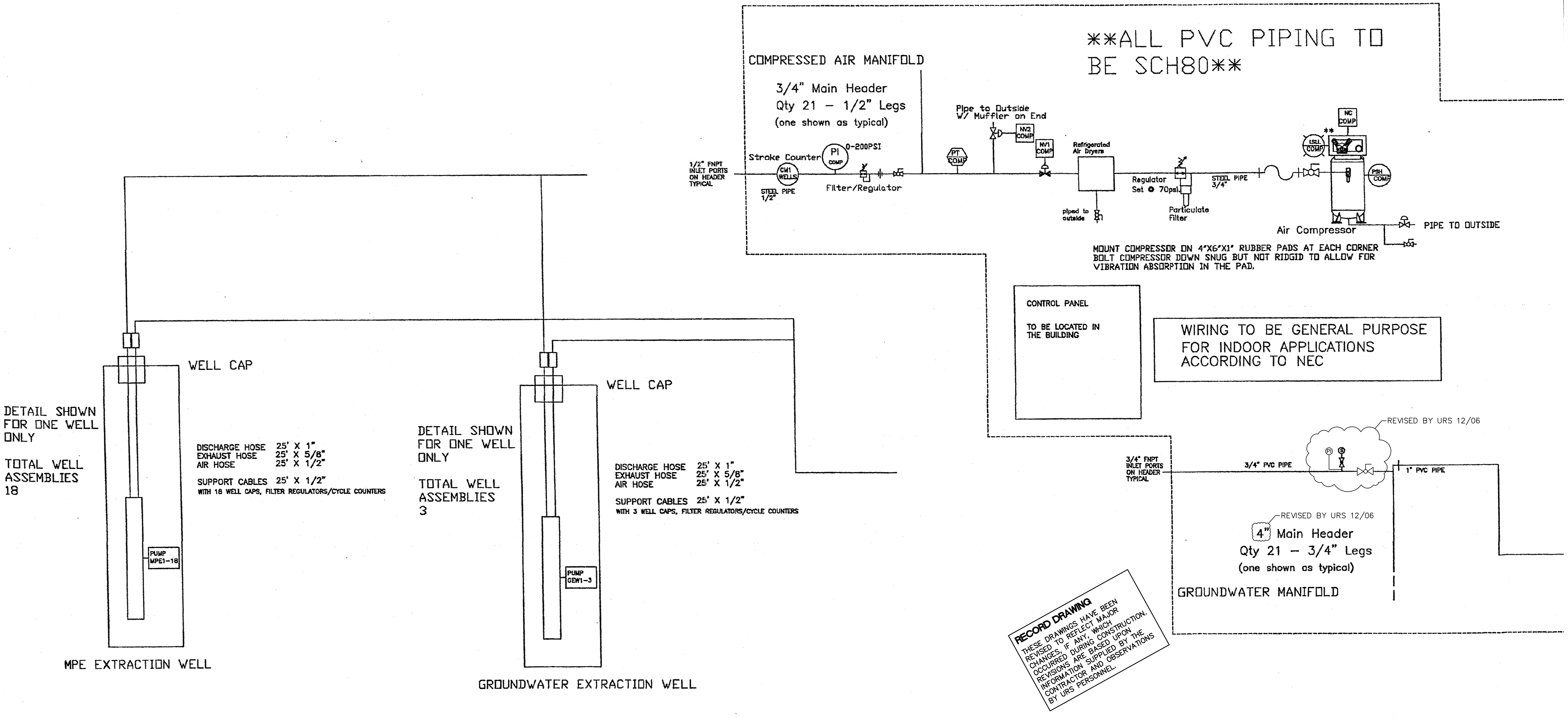
ROCHESTER NEW YORK

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY, ALBANY, NEW YORK

PIPING DIAGRAM
LEGEND

Scale: AS SHOWN
Date: DEC. 2006
DWG. 3A



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PIPING DETAILS FOR FLOW METERS:
WATER FLOW METERS: PROVIDE 10 DIAMETERS OF STRIAGHT PIPE BEFORE FLOW METERS AND 5 DIAMETERS OF STRAIGHT PIPE AFTER FLOW METERS. ENSURE THAT THROTTLING VALVES ARE NOT DIRECTLY IN LINE WITH FLOW METERS.
AIR FLOW METERS: PROVIDE 8 PIPE DIAMATERS OF STRAIGHT PIPE IN FRONT OF FLOW METERS AND 3 PIPE DIAMETETERS AFTER FLOW METERS WHEN EVER POSSIBLE. AVOID TEES AND ELBOWS BEFORE AND AFTER FLOW METERS.

PIPING DETAILS
MATERIALS OF VALVES AND FITTINGS TO BE THE SAME AS THE DESCRIPTION AT THE LINE.
IF THERE IS A TRANSITION FROM PVC TO STEEL THEN THE VALVE SHOULD BE A BRASS VALVE.
THERE ARE NO SPECIAL PIPING REQUIREMENTS OTHER THAN WHAT IS EXPLAINED ON THE DIAGRAM
WHEN PVC HOSE IS SPECIFIED ALWAYS USE VACUUM HOSE. USE GREEN HOSE FOR PRESSURES LESS THAN 60PSI, USE TANK TRUCK HOSE FOR PRESSURES BETWEEN 60PSI AND 150 PSI.

NOTE: PVC PIPE MAY BE SUSTITUTED WITH EQUAL SIZED PVC HOSE WHERE A FLEXIBLE CONNECTION IS PREFERRED

NOTE: DETAILS ON VARIOUS EQUIPMENT CAN FOUND IN THE COMPONENT MODULES OF YOUR MANUAL OR SUBMITTAL PACKAGE. THE LAST SECTION OF THE DESCRIPTION INDICATES THE RELEVANT MODULE IN THE MANUAL. FOR EXAMPLE TSH-LRP IS THE HIGH TEMPERATURE SWITCH IN THE LIQUID RING PUMP MODULE OF THE MANUAL

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LEVEL	DATE:	BY	REVISION:
C	FEB 1,06	BW	AS–BUILT
B	DEC 16,05	BW	FOR PRODUCTION
A	SEPT 13,05	BW	FOR APPROVAL

DWG. NO: 9915 –01
TITLE: Process & Instrumentation Drawing
CUSTOMER: FORMER DINABURG
ABSCOPE ENVIRONMENTAL
MAPLE LEAF ENVIRONMENTAL EQUIPMENT LTD.

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NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

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PROJ. ENGR. DMc
CHECKED BY: CWP

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(716)856-5636 - (716)856-2545 fax
JOB No. 11173839.00000

No. 098

MONROE COUNTY
NYSDEC SITE 8–28–103
CITY OF ROCHESTER
FORMER DINABURG
DISTRIBUTING, INC. SITE
ROCHESTER NEW YORK

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY, ALBANY, NEW YORK

PIPING DIAGRAM
SHEET 1 OF 2

Scale: AS SHOWN
Date: DEC. 2006
DWG. 3B

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PIPING DETAILS FOR FLOW METERS:
WATER FLOW METERS: PROVIDE 10 DIAMETERS OF STRIAGHT PIPE BEFORE FLOW METERS AND 5 DIAMETERS OF STRAIGHT PIPE AFTER FLOW METERS. ENSURE THAT THROTTLING VALVES ARE NOT DIRECTLY IN LINE WITH FLOW METERS.
AIR FLOW METERS: PROVIDE 8 PIPE DIAMATERS OF STRAIGHT PIPE IN FRONT OF FLOW METERS AND 3 PIPE DIAMETETERS AFTER FLOW METERS WHEN EVER POSSIBLE. AVOID TEES AND ELBOWS BEFORE AND AFTER FLOW METERS.

PIPING DETAILS
MATERIALS OF VALVES AND FITTINGS TO BE THE SAME AS THE DESCRIPTION AT THE LINE.
IF THERE IS A TRANSITION FROM PVC TO STEEL THEN THE VALVE SHOULD BE A BRASS VALVE.
THERE ARE NO SPECIAL PIPING REQUIREMENTS OTHER THAN WHAT IS EXPLAINED ON THE DIAGRAM
WHEN PVC HOSE IS SPECIFIED ALWAYS USE VACUUM HOSE. USE GREEN HOSE FOR PRESSURES LESS THAN 60PSI, USE TANK TRUCK HOSE FOR PRESSURES BETWEEN 60PSI AND 150 PSI.

NOTE: PVC PIPE MAY BE SUSTITUTED WITH EQUAL SIZED PVC HOSE WHERE A FLEXIBLE CONNECTION IS PREFERRED

NOTE: DETAILS ON VARIOUS EQUIPMENT CAN BE FOUND IN THE COMPONENT MODULES OF YOUR MANUAL OR SUBMITTAL PACKAGE. THE LAST SECTION OF THE DESCRIPTION INDICATES THE RELEVANT MODULE IN THE MANUAL. FOR EXAMPLE TSH-LRP IS THE HIGH TEMPERATURE SWITCH IN THE LIQUID RING PUMP MODULE OF THE MANUAL

THIS INFORMATION IS THE PROPERTY OF MLEE AND CANNOT BE REUSED OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF MAPLE LEAF ENVIRONMENTAL EQUIPMENT

LEVEL	DATE:	BY	REVISION:
C	FEB 1,06	BW	AS-BUILT
B	DEC 16,05	BW	FOR PRODUCTION
A	SEPT 13,05	BW	FOR APPROVAL

DWG. NO: 9915 -01
TITLE: Process & Instrumentation Drawing
CUSTOMER: FORMER DINABURG
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STATE OF NEW YORK
URS CORPORATION NEW YORK
NO. 056

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NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY, ALBANY, NEW YORK

PIPING DIAGRAM
SHEET 2 OF 2

Scale: AS SHOWN
Date: DEC. 2006
DWG. 3C

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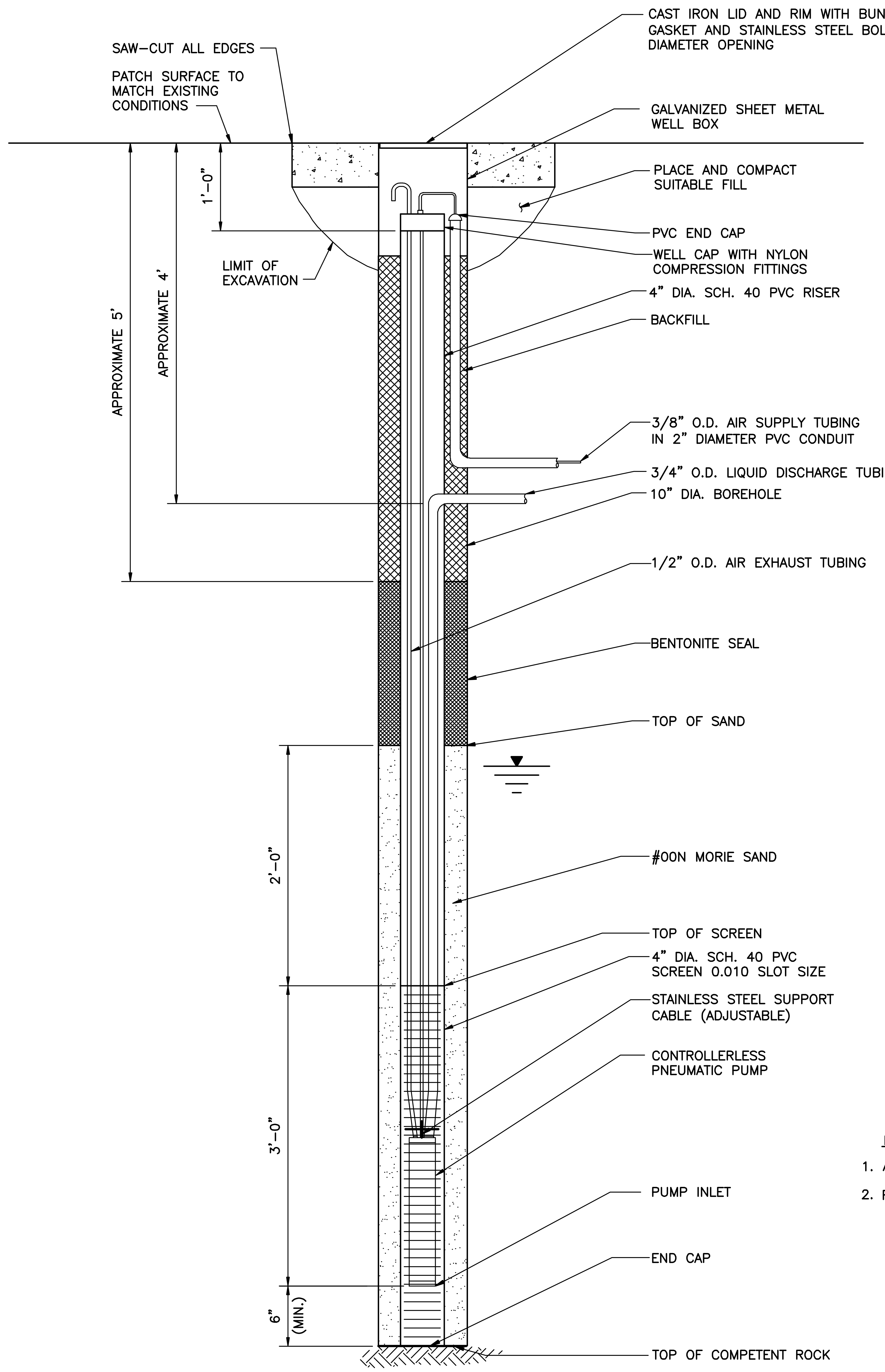
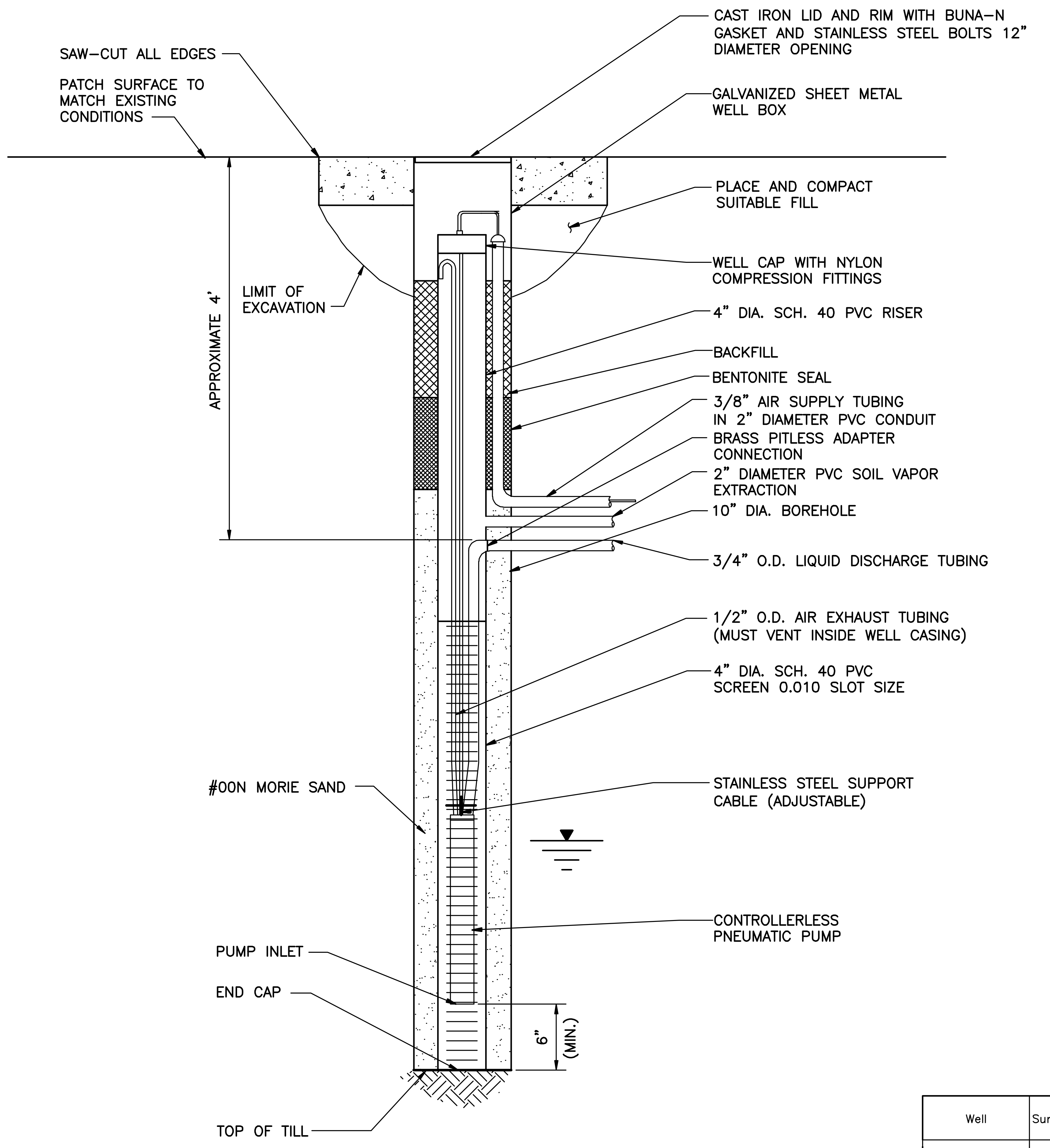


TYPICAL GROUNDWATER EXTRACTION WELL DETAIL

(WELLS 1 THROUGH 3)
NOT TO SCALE

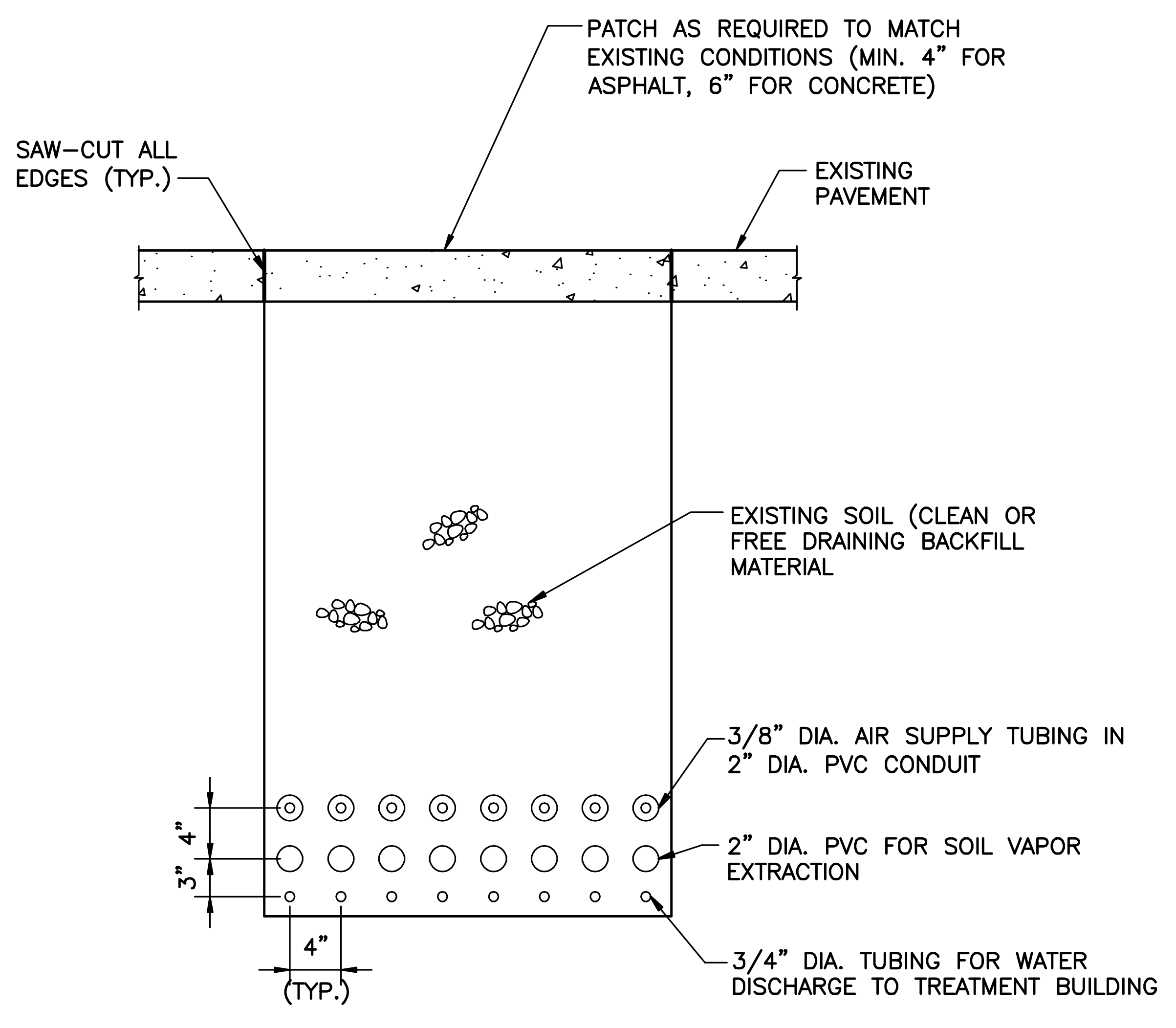
NOTES:

1. ALL DIMENSIONS AND ELEVATIONS ARE OF A TYPICAL WELL.
2. REFER TO WELL SCHEDULE FOR APPROXIMATE ELEVATIONS.



TYPICAL MPE WELL DETAIL

(WELLS 1 THROUGH 18)
NOT TO SCALE



TYPICAL PIPE TRENCH DETAIL

NOT TO SCALE

NOTES:

1. TYPICAL PIPE ARRANGEMENT IS SHOWN. ACTUAL PIPE AND PIPE DIAMETERS WILL VARY DEPENDING ON THE LOCATION.
2. ALL VAPOR EXTRACTION PIPES INSTALLED WITH A MINIMUM CONSTANT 1% SLOPE BACK TOWARDS THE EXTRACTION WELLS.

MPE WELL SCHEDULE

Well	Surface Elevation	Total Well Depth (bgs)	Top of Screen (bgs)	Bottom of Screen (bgs)	Screen Length (feet)	Top of Sand Pack (bgs)	Top of Bentonite (bgs)
1	514.56	13.5	3.5	13.5	10.0	3.0	2.5
2	514.68	13.5	6.0	13.5	7.5	5.5	5.0
3	514.51	13.5	3.5	13.5	10.0	3.0	2.5
4	514.41	12.5	3.0	12.5	9.5	2.5	2.0
5	514.47	11.5	3.0	11.5	8.5	2.5	2.0
6	514.32	12.0	3.0	12.0	9.0	2.5	2.0
7	514.55	11.0	3.0	11.0	8.0	2.5	2.0
8	514.59	10.0	3.0	10.0	7.0	2.5	1.5
9	514.30	10.0	3.0	10.0	7.0	2.5	2.0
10	514.22	12.0	3.0	12.0	9.0	2.5	2.0
11	514.00	10.0	6.0	10.0	4.0	5.5	5.0
12	513.93	10.0	6.0	10.0	4.0	5.5	2.8
13	513.99	11.5	6.5	11.5	5.0	6.0	5.5
14	513.40	11.0	6.0	11.0	5.0	5.5	3.0
15	514.02	11.0	6.0	11.0	5.0	5.5	3.0
16	514.29	12.0	3.0	12.0	9.0	2.5	2.0
17	514.14	13.5	6.0	13.5	7.5	5.5	5.0
18	514.25	11.0	3.0	11.0	8.0	2.5	2.0

GROUNDWATER EXTRACTION WELL SCHEDULE

Well	Surface Elevation	Total Well Depth (bgs)	Top of Screen (bgs)	Bottom of Screen (bgs)	Screen Length (feet)	Top of Sand Pack (bgs)	Top of Bentonite (bgs)
1	514.10	20.7	17.7	20.7	3.0	15.7	5.5
2	514.05	23.0	20.0	23.0	3.0	18.0	5.0
3	514.20	22.0	19.0	22.0	3.0	17.0	5.0

RECORD DRAWING

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PROJ. ENGR. DMc
CHECKED BY: CWP

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MONROE COUNTY
NYSDEC SITE 8-28-103
CITY OF ROCHESTER
FORMER DINABURG
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ROCHESTER NEW YORK

NEW YORK STATE DEPARTMENT OF
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TYPICAL WELL DETAILS

Scale: NONE
Date: DEC. 2006
DWG. 4

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SCALE BAR, EACH BLOCK IS 12' LONG

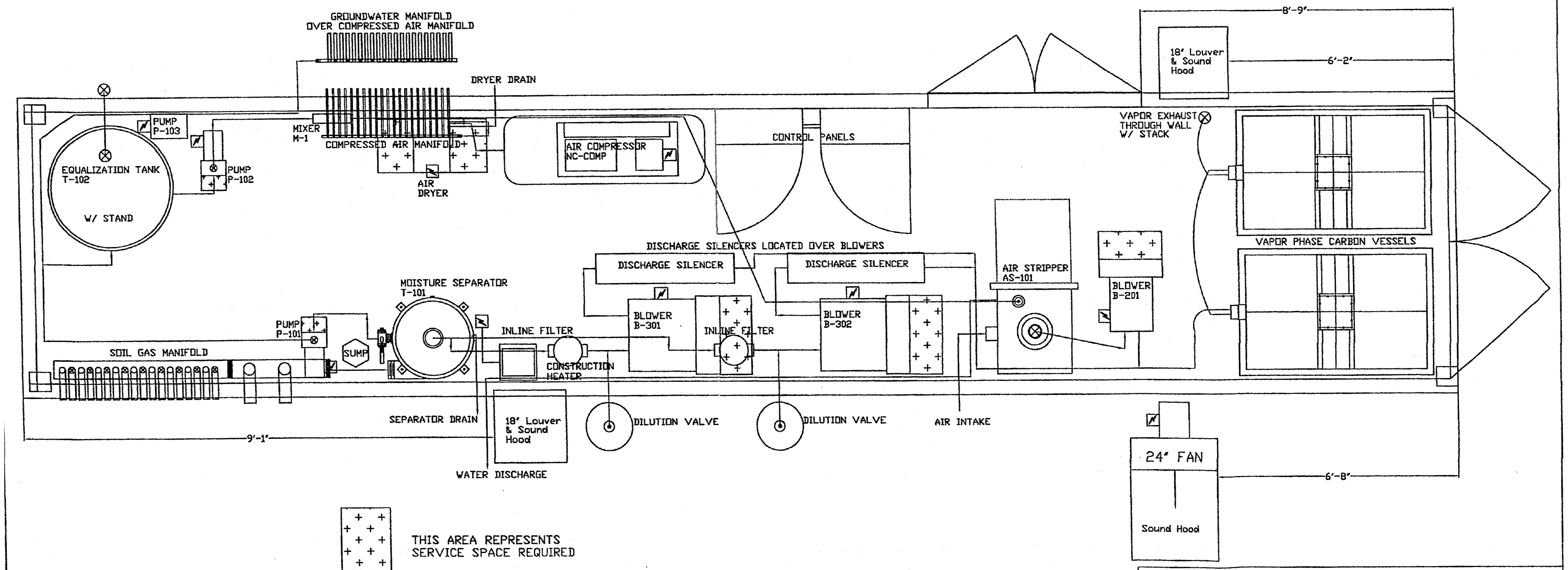
- LOCATE COOLING THERMOSTAT IN THE WARMEST LOCATION AT CEILING LEVEL.
- BUILDINGS NEED TO BE SHIMMED ON SITE TO ALLOW DOORS TO OPEN FREELY. PLEASE HAVE SHIMMING MATERIAL READY DURING BUILDING INSTALLATION.
- FOR BUILDINGS IN COLD WEATHER CLIMATES, WHERE THE BUILDING IS ELEVATED, A SKIRT MUST BE BUILT AROUND THE BASE TO PREVENT THE FLOOR FROM FREEZING.

PACKING LIST

DESCRIPTION	DIM (LXWXH)	WEIGHT
CONTAINER	40'X8'X8.5'	20000LBS

SPECIAL PROJECT NOTES*

- LIQUID PHASE CARBON VESSELS NEED INTERNAL SLOTTED PIPE BEFORE FILLING WITH CARBON.
- PROVIDE 3' WOOD CONTAINMENT BARRIER TO CONTAIN WATER SPILLS.
- PLUG & SEAL (WITH WASHERS) ANY HOLES IN THE FLOOR TO CONTAIN WATER SPILLS.
- NOISE LIMIT: _70_dB max @ _3 ft
- FAN & LOUVER HOODS NEED TO BE INSTALLED ON SITE. CANNOT SHIP WITH HOODS ATTACHED.
- LOCATE HEATING THERMOSTAT AT FLOOR LEVEL.



THIS AREA REPRESENTS SERVICE SPACE REQUIRED

FLOW DIRECTION
⊙ FLOW DOWN INTO THE PAGE
⊗ FLOW OUT OF THE PAGE
ELECTRICAL CONNECTION
SPACE ALLOCATED FOR SERVICING

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C	FEB 1.06	BW	AS-BUILT	DWG. NO: 9915 -02
B	DEC 16.05	BW	FOR PRODUCTION	System Layout
A	SEPT 15.05	BW	FOR APPROVAL	CUSTOMER: FORMER DINABURG ABSCOPE ENVIRONMENTAL
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NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

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625 BROADWAY, ALBANY, NEW YORK

TREATMENT SYSTEM LAYOUT

Scale: NONE
Date: DEC. 2006
DWG. 5

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APPENDIX B

URS EXHIBIT TABLES

TABLE 1-2
SUMMARY OF FEBRUARY 1995 SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-01	MW-01	MW-02	MW-02	MW-03
Sample ID			B-01	B-01	B-02	B-02	B-03
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			1.0-3.0	9.0-11.0	1.0-3.0	5.0-7.0	1.0-3.0
Date Sampled			02/01/95	02/01/95	02/02/95	02/02/95	02/06/95
Parameter	Units	Criteria*					
Volatile Organic Compounds							
Trichloroethene	UG/KG	700	11.5	799	170787	127.9	
Tetrachloroethene	UG/KG	1400	49	10008	291585	375.9	8590
Semivolatile Organic Compounds							
Naphthalene	UG/KG	13000	NA	NA	591		NA
Phenanthrene	UG/KG	50000	NA	NA	784		NA
Fluoranthene	UG/KG	50000	NA	NA	563		NA
Pyrene	UG/KG	50000	NA	NA	424		NA
Chrysene	UG/KG	400	NA	NA	425		NA
Benzo(b)fluoranthene	UG/KG	1100	NA	NA	431		NA

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Environmental Site Characterization Report - Sear-Brown Group, Inc., April 1995

Only Detected Results Reported.

Advanced Selection, 1-1
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[LOCID] LIKE "MW*" AND [MATRIX] = 'SO' AND [LOGDATE] <= #2/6/95#

TABLE 1-2
SUMMARY OF FEBRUARY 1995 SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-03
Sample ID			B-03
Matrix			Soil
Depth Interval (ft.)			7.0-9.0
Date Sampled			02/06/95
Parameter	Units	Criteria*	
Volatile Organic Compounds			
Trichloroethene	UG/KG	700	2110
Tetrachloroethene	UG/KG	1400	10278
Semivolatile Organic Compounds			
Naphthalene	UG/KG	13000	NA
Phenanthrene	UG/KG	50000	NA
Fluoranthene	UG/KG	50000	NA
Pyrene	UG/KG	50000	NA
Chrysene	UG/KG	400	NA
Benzo(b)fluoranthene	UG/KG	1100	NA

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Environmental Site Characterization Report - Sear-Brown Group, Inc., April 1995

*Only Detected Results Reported.

TABLE 1-3
SUMMARY OF FEBRUARY 1995 GROUNDWATER ANALYTICAL RESULTS FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-01	MW-02	MW-03
Sample ID			MW-01	MW-02	MW-03
Matrix			Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-
Date Sampled			02/10/95	02/10/95	02/10/95
Parameter	Units	Criteria*			
Volatile Organic Compounds					
1,2-Dichloroethene (total)	UG/L	5	519		
Trichloroethene	UG/L	5	3480	83989	160503
Tetrachloroethene	UG/L	5	2114	22890	14163

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Environmental Site Characterization Report - Sear-Brown Group, Inc., April 1995

Only Detected Results Reported.

TABLE 1-4
SUMMARY OF NOVEMBER 1995 SEWER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID		**SEW-02**	**SEW-04**
Sample ID		MHCAR_SCL	MHBEN_SCLI
Matrix		**Waste Water**	**Waste Water**
Depth Interval (ft.)		-	-
Date Sampled		**11/01/95**	**11/01/95**
Parameter	**Units**		
Volatile Organic Compounds			
1,2-Dichloroethene (total)	UG/L	2.20	
Chloroform	UG/L	9.80	6.60
1,2-Dichloropropane	UG/L	1.6	
Trichloroethene	UG/L	6.00	
Tetrachloroethene	UG/L	15.0	

Flags assigned during chemistry validation are shown.

Source: Monroe County Pure Waters Laboratory

Only Detected Results Reported.

Advanced Selection. 1-4
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[MATRIX] = 'WW' AND [LOGDATE] = #11/1/95#

TABLE 1-5
SUMMARY OF OCTOBER 1997 SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			B-03A	B-03A	MW-04	MW-04	MW-05
Sample ID			B-03A	B-03A	MW-04	MW-04	MW-05
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			9.0-11.0	15.0-16.8	8.0-11.0	22.0-22.8	7.0-9.0
Date Sampled			10/16/97	10/16/97	10/17/97	10/17/97	10/13/97
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
Trichloroethene	UG/KG	700	1300	1200	11		
Tetrachloroethene	UG/KG	1400	2900	5700			
Toluene	UG/KG	1500					12
Ethylbenzene	UG/KG	5500					8.6
Xylene (total)	UG/KG	1200					34
General Chemistry Parameters							
Total Organic Carbon (TOC)	MG/KG	-	1060	2540	1020	6110	NA

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Voluntary Investigation Report Former Dinaburg Distributing, Inc. - Sear Brown Group, Inc., April 1998.

Only Detected Results Reported.

TABLE 1-5
SUMMARY OF OCTOBER 1997 SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			**MW-05**	**MW-06**	**MW-06**
Sample ID			**MW-05**	**MW-06**	**MW-06**
Matrix			**Soil**	**Soil**	**Soil**
Depth Interval (ft.)			**21.0-22.8**	**7.0-9.0**	**19.0-19.8**
Date Sampled			**10/13/97**	**10/13/97**	**10/13/97**
Parameter	**Units**	**Criteria***			
Volatile Organic Compounds					
Trichloroethene	UG/KG	700			
Tetrachloroethene	UG/KG	1400			
Toluene	UG/KG	1500	6.9		
Ethylbenzene	UG/KG	5500			
Xylene (total)	UG/KG	1200			
General Chemistry Parameters					
Total Organic Carbon (TOC)	MG/KG	-	NA	NA	NA

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Voluntary Investigation Report Former Dinaburg Distributing, Inc. - Sear Brown Group, Inc., April 1998.

Only Detected Results Reported.

Advanced Selection: 1-5
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Printed: 3/19/01 2:18:45 PM
([LOCID] = 'B-03A' OR [LOCID] = 'MW-04' OR [LOCID] = 'MW-05' OR [LOCID] = 'MW-06') AND [MATRIX] = 'SO'

TABLE 1-6
SUMMARY OF OCTOBER/DECEMBER 1997 GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-01	MW-01	MW-02	MW-02	MW-03
Sample ID			MW-01	MW-01	MW-02	MW-02	MW-03
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-	-	-
Date Sampled			10/28/97	12/11/97	10/28/97	12/11/97	10/29/97
Parameter	Units	Criteria*					
Volatile Organic Compounds							
1,1-Dichloroethane	UG/L	5		NA	1200	NA	
1,2-Dichloroethene (total)	UG/L	5	1200	NA		NA	
1,1,1-Trichloroethane	UG/L	5		NA	2600	NA	
1,2-Dichloropropane	UG/L	1		NA		NA	
Trichloroethene	UG/L	5	16000	NA	93000	NA	99000
Tetrachloroethene	UG/L	5	18000	NA	33000	NA	21000
Metals							
Calcium	UG/L	-	NA	28000	NA	140000	NA
Magnesium	UG/L	35000	NA	3100	NA	31000	NA
Potassium	UG/L	-	NA		NA	18000	NA
Sodium	UG/L	20000	NA	41000	NA	65000	NA
Lead	UG/L	25	NA		NA		NA
Iron	UG/L	300	NA	8600	NA	2700	NA
General Chemistry Parameters							
Alkalinity	MG/L	-	NA	66	NA	180	NA
Chloride	MG/L	-	NA	73	NA	76	NA
Sulfate	MG/L	-	NA	21	NA	68	NA

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Voluntary Investigation Report Former Dinaburg Distributing, Inc. - Sear Brown Group, Inc., April 1998.

Only Detected Results Reported.

TABLE 1-6

SUMMARY OF OCTOBER/DECEMBER 1997 GROUNDWATER ANALYTICAL RESULTS FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-03	MW-03C	MW-03C	MW-04	MW-04
Sample ID			MW-03	MW-03C	MW-03C	MW-04	MW-04
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-	-	-
Date Sampled			12/11/97	10/29/97	12/11/97	10/28/97	12/11/97
Parameter	Units	Criteria*					
Volatile Organic Compounds							
1,1-Dichloroethane	UG/L	5	NA		NA		NA
1,2-Dichloroethene (total)	UG/L	5	NA	35	NA		NA
1,1,1-Trichloroethane	UG/L	5	NA		NA		NA
1,2-Dichloropropane	UG/L	1	NA		NA		NA
Trichloroethene	UG/L	5	NA	300	NA		NA
Tetrachloroethene	UG/L	5	NA	570	NA		NA
Metals							
Calcium	UG/L	-	280000	NA	120000	NA	92000
Magnesium	UG/L	35000	63000	NA	51000	NA	42000
Potassium	UG/L	-	9300	NA	4600	NA	5800
Sodium	UG/L	20000	20000	NA	110000	NA	47000
Lead	UG/L	25	36.0	NA		NA	
Iron	UG/L	300	32000	NA	350	NA	1200
General Chemistry Parameters							
Alkalinity	MG/L	-	360	NA	400	NA	340
Chloride	MG/L	-	5.6	NA	220	NA	67
Sulfate	MG/L	-	38	NA	170	NA	120

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Voluntary Investigation Report Former Dinaburg Distributing, Inc. - Sear Brown Group, Inc., April 1998.

Only Detected Results Reported.

TABLE 1-6
SUMMARY OF OCTOBER/DECEMBER 1997 GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-05	MW-05	MW-06	MW-06
Sample ID			MW-05	MW-05	MW-06	MW-06
Matrix			Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-	-
Date Sampled			10/28/97	12/11/97	10/28/97	12/11/97
Parameter	Units	Criteria*				
Volatile Organic Compounds						
1,1-Dichloroethane	UG/L	5		NA		NA
1,2-Dichloroethene (total)	UG/L	5		NA		NA
1,1,1-Trichloroethane	UG/L	5		NA		NA
1,2-Dichloropropane	UG/L	1		NA	55	NA
Trichloroethene	UG/L	5		NA	380	NA
Tetrachloroethene	UG/L	5		NA	970	NA
Metals						
Calcium	UG/L	-	NA	58000	NA	140000
Magnesium	UG/L	35000	NA	22000	NA	21000
Potassium	UG/L	-	NA	12000	NA	3900
Sodium	UG/L	20000	NA	320000	NA	170000
Lead	UG/L	25	NA		NA	
Iron	UG/L	300	NA	760	NA	2600
General Chemistry Parameters						
Alkalinity	MG/L	-	NA	360	NA	450
Chloride	MG/L	-	NA	700	NA	190
Sulfate	MG/L	-	NA	120	NA	100

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Voluntary Investigation Report Former Dinaburg Distributing, Inc. - Sear Brown Group, Inc., April 1998.

Only Detected Results Reported.

TABLE 1-7
SUMMARY OF APRIL 1999 SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			B-01	B-01	B-01	B-03	B-03
Sample ID			G-1S	G-1W	G-1B	G-2S	G-2W
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			0.0-4.0	4.0-8.0	15.0-17.0	0.0-4.0	4.0-8.0
Date Sampled			04/30/99	04/30/99	04/30/99	04/30/99	04/30/99
Parameter	Units	Criteria*					
Volatile Organic Compounds							
Methylene Chloride	UG/KG	100			34		
Acetone	UG/KG	200					
cis-1,2-Dichloroethene	UG/KG	-					
Trichloroethene	UG/KG	700	20000	2200 D	860	690000 D	3600
Tetrachloroethene	UG/KG	1400	55000	9400 D	1200 D	9100000 D	44000
Toluene	UG/KG	1500					
m&p-Xylene	UG/KG	1200					

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Soil Gas Survey Report, Galson Consulting, May 1999.

Only Detected Results Reported.

Advanced Selection: 1-7
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TABLE 1-7
SUMMARY OF APRIL 1999 SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			**B-06**	**B-06**	**F-04**	**F-04**
Sample ID			G-4S	G-4W	G-3S	G-3W
Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Depth Interval (ft.)			**0.0-4.0**	**4.0-8.0**	**0.0-4.0**	**4.0-8.0**
Date Sampled			**04/30/99**	**04/30/99**	**04/30/99**	**04/30/99**
Parameter	**Units**	**Criteria***				
Volatile Organic Compounds						
Methylene Chloride	UG/KG	100	11	8.2	6.2	
Acetone	UG/KG	200	28			
cis-1,2-Dichloroethene	UG/KG	-				5.9
Trichloroethene	UG/KG	700	670 E	810 D	47	94
Tetrachloroethene	UG/KG	1400	10000 D	16000 D	210	780 D
Toluene	UG/KG	1500		10	12	6.4
m&p-Xylene	UG/KG	1200		7.5	13	6.6

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Soil Gas Survey Report, Galson Consulting, May 1999.

Only Detected Results Reported.

TABLE 1-8
SUMMARY OF NOVEMBER 1999 ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-01(99)	GP-01(99)	GP-02(99)	GP-02(99)	GP-02(99)
Sample ID			GP-01(99)	GP-01(99)	GP-02(99)	GP-02(99)	GP-02(99)
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			0.0-4.0	4.0-8.0	0.0-4.0	4.0-8.0	8.0-12.0
Date Sampled			11/30/99	11/30/99	11/30/99	11/30/99	11/30/99
Parameter	Units	Criteria*					
Volatile Organic Compounds							
Methylene Chloride	UG/KG	100					
Acetone	UG/KG	200					
Trichloroethene	UG/KG	700	11000	7700	720	9400	21000
Tetrachloroethene	UG/KG	1400	13000	3200	11000	88000	73000
Xylene (total)	UG/KG	1200					

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Geoprobe Survey, Zebra Environmental Corp., November 1999.

Only Detected Results Reported.

TABLE 1-8
SUMMARY OF NOVEMBER 1999 ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-03(99)	GP-03(99)	GP-04(99)	GP-04(99)	GP-05(99)
Sample ID			GP-03(99)	GP-03(99)	GP-04(99)	GP-04(99)	GP-05(99)
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			0.0-4.0	4.0-8.0	0.0-4.0	4.0-8.0	0.0-4.0
Date Sampled			11/30/99	11/30/99	11/30/99	11/30/99	11/30/99
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
Methylene Chloride	UG/KG	100			2		
Acetone	UG/KG	200	5				
Trichloroethene	UG/KG	700	2	280	6	10000	160
Tetrachloroethene	UG/KG	1400	320	4800	400	110000	5700
Xylene (total)	UG/KG	1200	1		1	1300	

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

○ Concentration Exceeds Criteria.

Source: Geoprobe Survey, Zebra Environmental Corp., November 1999.

Only Detected Results Reported.

TABLE 1-8
SUMMARY OF NOVEMBER 1999 ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-05(99)	GP-06(99)	GP-06(99)	GP-07(99)	GP-07(99)
Sample ID			GP-05(99)	GP-06(99)	GP-06(99)	GP-07(99)	GP-07(99)
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			4.0-8.0	0.0-4.0	4.0-8.0	0.0-4.0	4.0-8.0
Date Sampled			11/30/99	11/30/99	11/30/99	11/30/99	11/30/99
Parameter	Units	Criteria*					
Volatile Organic Compounds							
Methylene Chloride	UG/KG	100	1				
Acetone	UG/KG	200					
Trichloroethene	UG/KG	700	20	3		950	
Tetrachloroethene	UG/KG	1400	120	120	18	120000	11000
Xylene (total)	UG/KG	1200					

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

○ . Concentration Exceeds Criteria.

Source: Geoprobe Survey, Zebra Environmental Corp., November 1999.

Only Detected Results Reported.

TABLE 1-8
SUMMARY OF NOVEMBER 1999 ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-08(99)	GP-08(99)
Sample ID			GP-08(99)	GP-08(99)
Matrix			Soil	Soil
Depth Interval (ft.)			0.0-4.0	4.0-8.0
Date Sampled			11/30/99	11/30/99
Parameter	Units	Criteria*		
Volatile Organic Compounds				
Methylene Chloride	UG/KG	100		
Acetone	UG/KG	200		
Trichloroethene	UG/KG	700	110	17
Tetrachloroethene	UG/KG	1400	660	610
Xylene (total)	UG/KG	1200		

Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Geoprobe Survey, Zebra Environmental Corp., November 1999.

Only Detected Results Reported.

TABLE 1-9
SUMMARY OF JUNE 2000 GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GPW-01	GPW-02
Sample ID			GPW-01	GPW-02
Matrix			Groundwater	Groundwater
Depth Interval (ft.)			-	-
Date Sampled			06/29/00	06/29/00
Parameter	**Units**	**Criteria***		
Volatile Organic Compounds				
Vinyl Chloride	UG/L	2		17
1,1-Dichloroethene	UG/L	5	1 J	2 J
cis-1,2-Dichloroethene	UG/L	5	19	180
trans-1,2-Dichloroethene	UG/L	5		2 J
1,1,1-Trichloroethane	UG/L	5		2 J
Trichloroethene	UG/L	5	2100 D	40000 D
Tetrachloroethene	UG/L	5	19	14000 D

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Source: Geoprobe Survey, Zebra Environmental Corp., November 1999.

Only Detected Results Reported.

Advanced Selection: 1-10
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TABLE 1-10
SUMMARY OF MARCH 2000 PASSIVE SOIL-GAS SURVEY ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID		350B-01	350B-02	350B-03	350B-04	350B-05
Sample ID		350B-01	350B-02	350B-03	350B-04	350B-05
Matrix		Ambient Air	Ambient Air	Ambient Air	Ambient Air	Ambient Air
Depth Interval (ft.)		-	-	-	-	-
Date Sampled		03/20/00	03/20/00	03/20/00	03/20/00	03/20/00
Parameter	**Units**					
Volatile Organic Compounds						
1,1-Dichloroethene	NG/C					
cis-1,2-Dichloroethene	NG/C	100		76	61	
Chloroform	NG/C	38		66	56	42
1,1,1-Trichloroethane	NG/C					
Trichloroethene	NG/C	1200	180	550	460	120
Tetrachloroethene	NG/C	1000	200	610	610	160
Toluene	NG/C		39	35	32	30

Flags assigned during chemistry validation are shown.

Source: Emflux Soil Gas Survey, Beacon Environmental Services, Inc. March 2000
NG/C - Nanograms/cartridge

Only Detected Results Reported.

Advanced Selection: 1-11
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TABLE 1-10
SUMMARY OF MARCH 2000 PASSIVE SOIL-GAS SURVEY ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID		350B-06	350B-07	350B-08	350B-09	350B-10
Sample ID		350B-06	350B-07	350B-08	350B-09	350B-10
Matrix		Ambient Air	Ambient Air	Ambient Air	Ambient Air	Ambient Air
Depth Interval (ft.)		-	-	-	-	-
Date Sampled		03/20/00	03/20/00	03/20/00	03/20/00	03/20/00
Parameter	**Units**					
Volatile Organic Compounds						
1,1-Dichloroethene	NG/C		230			
cis-1,2-Dichloroethene	NG/C		120			
Chloroform	NG/C	93				
1,1,1-Trichloroethane	NG/C		80			
Trichloroethene	NG/C	240	2600	180	600	190
Tetrachloroethene	NG/C	310	3800	170	670	180
Toluene	NG/C		31			180

Flags assigned during chemistry validation are shown.

Source: Emflux Soil Gas Survey, Beacon Environmental Services, Inc. March 2000
NG/C - Nanograms/cartridge

Only Detected Results Reported.

TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			F-08	F-08	GP-04	GP-05	GP-05
Sample ID			F-08	F-08	GP-04	GP-05	GP-05
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			3.0-4.0	6.0-7.0	4.0-6.0	3.0-4.0	7.0-8.0
Date Sampled			11/03/00	11/03/00	11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*					
Volatile Organic Compounds							
Methylene Chloride	UG/KG	50					
Acetone	UG/KG	50					
1,2-Dichloroethene (total)	UG/KG	250			10 J	9 J	
Methyl Ethyl Ketone (2-Butanone)	UG/KG	120			3 J		
1,1,1-Trichloroethane	UG/KG	680				4 J	
Trichloroethene	UG/KG	470	13	10 J	72	81	14
Tetrachloroethene	UG/KG	1300	380 D	110	36	360 D	170
Toluene	UG/KG	700	2 J				
Ethylbenzene	UG/KG	1000					
Xylene (Total)	UG/KG	260					
Semivolatile Organic Compounds							
4-Methylphenol	UG/KG	330					
Naphthalene	UG/KG	12,000					
2-Methylnaphthalene	UG/KG						
Acenaphthylene	UG/KG	100,000					
Acenaphthene	UG/KG	20,000					
Dibenzofuran	UG/KG	7,000					
Fluorene	UG/KG	30,000					
Phenanthrene	UG/KG	100,000					41 J
Anthracene	UG/KG	100,000					
Carbazole	UG/KG						
Fluoranthene	UG/KG	100,000					63 J

Criteria - 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

Advanced Selection: 4-1
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TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			F-08	F-08	GP-04	GP-05	GP-05
Sample ID			F-08	F-08	GP-04	GP-05	GP-05
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			3.0-4.0	6.0-7.0	4.0-6.0	3.0-4.0	7.0-8.0
Date Sampled			11/03/00	11/03/00	11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*					
Semivolatile Organic Compounds							
Pyrene	UG/KG	100,000					51 J
Butylbenzylphthalate	UG/KG						
Benzo(a)anthracene	UG/KG	1,000					
Chrysene	UG/KG	1,000					39 J
Benzo(b)fluoranthene	UG/KG	1000					
Benzo(k)fluoranthene	UG/KG	800					
Benzo(a)pyrene	UG/KG	1,000					
Indeno(1,2,3-cd)pyrene	UG/KG	500					
Benzo(g,h,i)perylene	UG/KG	100,000					
PCBs							
Aroclor 1248	UG/KG	100					
Aroclor 1254	UG/KG	100					
Aroclor 1260	UG/KG	100					

Criteria - 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-06	GP-10	GP-11	GP-11	GP-12
Sample ID			GP-06	GP-10	GP-11	GP-11	GP-12
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			3.0-4.0	3.0-4.0	3.0-5.0	8.0-10.0	5.0-7.0
Date Sampled			11/03/00	11/03/00	11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*					
Volatile Organic Compounds							
Methylene Chloride	UG/KG	50					
Acetone	UG/KG	50					
1,2-Dichloroethene (total)	UG/KG	250	2 J			2 J	
Methyl Ethyl Ketone (2-Butanone)	UG/KG	120		3 J	2 J		
1,1,1-Trichloroethane	UG/KG	680					
Trichloroethene	UG/KG	470	38	12 J	44	15	
Tetrachloroethene	UG/KG	1,300	140	13 J	200	77	35
Toluene	UG/KG	700					
Ethylbenzene	UG/KG	1,000		78			
Xylene (Total)	UG/KG	260		560			
Semivolatile Organic Compounds							
4-Methylphenol	UG/KG	330					
Naphthalene	UG/KG	12,000		660			
2-Methylnaphthalene	UG/KG			1200			
Acenaphthylene	UG/KG	100,000					
Acenaphthene	UG/KG	20,000		70 J			
Dibenzofuran	UG/KG	7,000					
Fluorene	UG/KG	30,000		84 J			
Phenanthrene	UG/KG	100,000		480	200 J	170 J	
Anthracene	UG/KG	100,000		120 J	47 J		
Carbazole	UG/KG	-		91 J	42 J		
Fluoranthene	UG/KG	100,000		800	440	200 J	

Criteria - 6 NYCRR : Part 375 Soil Cleanup Objectives for Unrestricted Use

Flags assigned during chemistry validation are shown.

◯ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-06	GP-10	GP-11	GP-11	GP-12
Sample ID			GP-06	GP-10	GP-11	GP-11	GP-12
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			3.0-4.0	3.0-4.0	3.0-5.0	8.0-10.0	5.0-7.0
Date Sampled			11/03/00	11/03/00	11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*					
Semivolatile Organic Compounds							
Pyrene	UG/KG	100,000		760	390	280 J	
Butylbenzylphthalate	UG/KG			53 J			
Benzo(a)anthracene	UG/KG	1,000		450	280 J	97 J	
Chrysene	UG/KG	1,000		630	390	120 J	
Benzo(b)fluoranthene	UG/KG	1,000		600	290 J	94 J	
Benzo(k)fluoranthene	UG/KG	800		440	210 J	100 J	
Benzo(a)pyrene	UG/KG	1,000		530 J	290 J		
Indeno(1,2,3-cd)pyrene	UG/KG	500		310 J	170 J	49 J	
Benzo(g,h,i)perylene	UG/KG	100,000		290 J	170 J	47 J	
PCBs							
Aroclor 1248	UG/KG	100					
Aroclor 1254	UG/KG	100		150 J	120	81	
Aroclor 1260	UG/KG	100		34 J			

Criteria-
6 NYCRR Part 375 Soil Cleanup Objectives for unrestricted Use

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-17	GP-17	GP-19	GP-19	GP-22
Sample ID			GP-17	GP-17	GP-19	GP-19	GP-22
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			3.0-4.0	5.0-7.0	0.0-2.0	7.0-8.0	4.0-6.0
Date Sampled			11/03/00	11/03/00	11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*					
Volatile Organic Compounds							
Methylene Chloride	UG/KG	50					
Acetone	UG/KG	50					
1,2-Dichloroethene (total)	UG/KG	250				19	1 J
Methyl Ethyl Ketone (2-Butanone)	UG/KG	120					
1,1,1-Trichloroethane	UG/KG	680				13	
Trichloroethene	UG/KG	470	180000	650 J	140000 J	4600 D	16
Tetrachloroethene	UG/KG	1,300	1700000	12000	1500000	12000 D	200
Toluene	UG/KG	700					
Ethylbenzene	UG/KG	1,000					
Xylene (Total)	UG/KG	260				2 J	
Semivolatile Organic Compounds							
4-Methylphenol	UG/KG	330					
Naphthalene	UG/KG	12,000	1500		270 J		
2-Methylnaphthalene	UG/KG		1100		800		
Acenaphthylene	UG/KG	100,000	390 J		190 J		
Acenaphthene	UG/KG	20,000	2000				
Dibenzofuran	UG/KG	7,000	2400				
Fluorene	UG/KG	30,000	2000				
Phenanthrene	UG/KG	100,000	51000 D	58 J	200 J		
Anthracene	UG/KG	100,000	10000 D		64 J		
Carbazole	UG/KG	-	7900 J				
Fluoranthene	UG/KG	100,000	46000 D	71 J	190 J		

Criteria -
6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use

Flags assigned during chemistry validation are shown.

◯ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-17	GP-17	GP-19	GP-19	GP-22
Sample ID			GP-17	GP-17	GP-19	GP-19	GP-22
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			3.0-4.0	5.0-7.0	0.0-2.0	7.0-8.0	4.0-6.0
Date Sampled			11/03/00	11/03/00	11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*					
Semivolatile Organic Compounds							
Pyrene	UG/KG	100,000	43000 D	89 J	190 J		
Butylbenzylphthalate	UG/KG						
Benzo(a)anthracene	UG/KG	1,000	22000 D		130 J		
Chrysene	UG/KG	1,000	28000 D	42 J	230 J		
Benzo(b)fluoranthene	UG/KG	1,000	20000 D		230 J		
Benzo(k)fluoranthene	UG/KG	800	10000 D		210 J		
Benzo(a)pyrene	UG/KG	1,000	16000 D		140 J		
Indeno(1,2,3-cd)pyrene	UG/KG	500	11000 D		110 J		
Benzo(g,h,i)perylene	UG/KG	100,000	10000 D		84 J		
PCBs							
Aroclor 1248	UG/KG	100			96 NJ		
Aroclor 1254	UG/KG	100			210		
Aroclor 1260	UG/KG	100			90		

Criteria - 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-32	GP-34/35	GP-36	GP-37	GP-42
Sample ID			GP-32	GP-34/35	GP-36	GP-37	GP-42
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			3.0-4.0	3.0-5.0	4.0-6.0	4.0-6.0	3.0-5.0
Date Sampled			11/03/00	11/03/00	11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*					
Volatile Organic Compounds							
Methylene Chloride	UG/KG	50					170 J
Acetone	UG/KG	50					58
1,2-Dichloroethene (total)	UG/KG	250					330
Methyl Ethyl Ketone (2-Butanone)	UG/KG	120					5 J
1,1,1-Trichloroethane	UG/KG	680					
Trichloroethene	UG/KG	470					78
Tetrachloroethene	UG/KG	1,300				3 J	160
Toluene	UG/KG	700					
Ethylbenzene	UG/KG	1,000					
Xylene (Total)	UG/KG	260					
Semivolatile Organic Compounds							
4-Methylphenol	UG/KG	330					170 J
Naphthalene	UG/KG	12,000					170 J
2-Methylnaphthalene \	UG/KG						120 J
Acenaphthylene	UG/KG	100,000					420 J
Acenaphthene	UG/KG	20,000		130 J			220 J
Dibenzofuran	UG/KG	7,000		80 J			240 J
Fluorene	UG/KG	30,000		130 J			490 J
Phenanthrene	UG/KG	100,000	330 J	1100			4200
Anthracene	UG/KG	100,000	65 J	190 J			1000
Carbazole	UG/KG	-	48 J	250 J			710 J
Fluoranthene	UG/KG	100,000	490	1200	95 J		6100

Criteria- 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

Advanced Selection: 4-1
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[MATRIX] = 'SO' AND [LOGDATE] = #11/3/00#

TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-32	GP-34/35	GP-36	GP-37	GP-42
Sample ID			GP-32	GP-34/35	GP-36	GP-37	GP-42
Matrix			Soil	Soil	Soil	Soil	Soil
Depth Interval (ft.)			3.0-4.0	3.0-5.0	4.0-6.0	4.0-6.0	3.0-5.0
Date Sampled			11/03/00	11/03/00	11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*					
Semivolatile Organic Compounds							
Pyrene	UG/KG	100,000	410	1100	92 J		5800
Butylbenzylphthalate	UG/KG						
Benzo(a)anthracene	UG/KG	1,000	170 J	400 J			3700
Chrysene	UG/KG	1,000	230 J	530	64 J		4600
Benzo(b)fluoranthene	UG/KG	1,000	190 J	390 J	56 J		3000
Benzo(k)fluoranthene	UG/KG	800	150 J	270 J	46 J		3100
Benzo(a)pyrene	UG/KG	1,000	170 J	410 J	46 J		3000
Indeno(1,2,3-cd)pyrene	UG/KG	500	94 J	180 J			1700
Benzo(g,h,i)perylene	UG/KG	100,000	89 J	170 J			1500
PCBs							
Aroclor 1248	UG/KG	100					
Aroclor 1254	UG/KG	100					
Aroclor 1260	UG/KG	100					

Criteria - 6 NYCRR Part 375 Soil Cleanup objectives for Unrestricted Use

Flags assigned during chemistry validation are shown.

◯ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-43A	GP-43D	GP-49
Sample ID			GP-43A	GP-43D	GP-49
Matrix			Soil	Soil	Soil
Depth Interval (ft.)			2.0-4.0	4.0-6.0	3.0-5.0
Date Sampled			11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*			
Volatile Organic Compounds					
Methylene Chloride	UG/KG	50			
Acetone	UG/KG	50			
1,2-Dichloroethene (total)	UG/KG	250			
Methyl Ethyl Ketone (2-Butanone)	UG/KG	120			
1,1,1-Trichloroethane	UG/KG	680			
Trichloroethene	UG/KG	470	8 J		15
Tetrachloroethene	UG/KG	1,300	13		35
Toluene	UG/KG	700			
Ethylbenzene	UG/KG	1,000			
Xylene (Total)	UG/KG	260			
Semivolatile Organic Compounds					
4-Methylphenol	UG/KG	330			
Naphthalene	UG/KG	12,000			
2-Methylnaphthalene	UG/KG				
Acenaphthylene	UG/KG	100,000			
Acenaphthene	UG/KG	20,000			
Dibenzofuran	UG/KG	7,000			
Fluorene	UG/KG	30,000	57 J		
Phenanthrene	UG/KG	100,000	490		
Anthracene	UG/KG	100,000	110 J		
Carbazole	UG/KG	-	83 J		
Fluoranthene	UG/KG	100,000	470		

Criteria - 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GP-43A	GP-43D	GP-49
Sample ID			GP-43A	GP-43D	GP-49
Matrix			Soil	Soil	Soil
Depth Interval (ft.)			2.0-4.0	4.0-6.0	3.0-5.0
Date Sampled			11/03/00	11/03/00	11/03/00
Parameter	Units	Criteria*			
Semivolatile Organic Compounds					
Pyrene	UG/KG	100,000	360 J		
Butylbenzylphthalate	UG/KG				
Benzo(a)anthracene	UG/KG	1,000	220 J		
Chrysene	UG/KG	1,000	240 J		
Benzo(b)fluoranthene	UG/KG	1,000	150 J		
Benzo(k)fluoranthene	UG/KG	800	120 J		
Benzo(a)pyrene	UG/KG	1,000	150 J		
Indeno(1,2,3-cd)pyrene	UG/KG	500	99 J		
Benzo(g,h,i)perylene	UG/KG	1,000	92 J		
PCBs					
Aroclor 1248	UG/KG	100			
Aroclor 1254	UG/KG	100			
Aroclor 1260	UG/KG	100			

Criteria- 6 NYCRR Part 375 Soil Cleanup objectives for Unrestricted Use

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GPW-01	GPW-02	MW-01	MW-01A	MW-02
Sample ID			GPW01	GPW02	MW01	MW01A	MW02
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-	-	-
Date Sampled			12/01/00	12/01/00	11/29/00	12/01/00	12/01/00
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
Vinyl Chloride	UG/L	2		91	110		
Acetone	UG/L	50					
Carbon Disulfide	UG/L	60		5 J			
1,1-Dichloroethene	UG/L	5	2 J	4 J	46		100 J
1,1-Dichloroethane	UG/L	5			150		310 J
1,2-Dichloroethene (total)	UG/L	5	21 J	560 DJ	1600 DJ	12 J	130 J
Chloroform	UG/L	7					22 J
1,2-Dichloroethane	UG/L	0.6					11 J
1,1,1-Trichloroethane	UG/L	5		2 J	27		1600 DJ
Trichloroethene	UG/L	5	3500 D	44000 D	8400 D	11	110000 D
1,1,2-Trichloroethane	UG/L	1					7 J
Benzene	UG/L	1					46 J
Tetrachloroethene	UG/L	5	2 J	16000 D	20000 D	36	69000 D
Toluene	UG/L	5			2 J		30 J
Ethylbenzene	UG/L	5			5 J		2 J
Xylene (Total)	UG/L	5			12		24 J
Semivolatile Organic Compounds							
Isophorone	UG/L	50	NA	NA			1 J
Naphthalene	UG/L	10	NA	NA	1 J		8 J
Bis(2-ethylhexyl)phthalate	UG/L	5	NA	NA	2 J	3 J	1 J
Metals							
Aluminum	UG/L	-	NA	NA	60.4 B	232 J	224 J

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

Advanced Selection 4-2
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[MATRIX] = 'WG' AND [LOGDATE] >= #11/28/00#

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			GPW-01	GPW-02	MW-01	MW-01A	MW-02
Sample ID			GPW01	GPW02	MW01	MW01A	MW02
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-	-	-
Date Sampled			12/01/00	12/01/00	11/29/00	12/01/00	12/01/00
Parameter	**Units**	**Criteria***					
Metals							
Barium	UG/L	1000	NA	NA	27.8 B	15.2 B	87.2 B
Beryllium	UG/L	3	NA	NA			
Cadmium	UG/L	5	NA	NA	7.9	4.5 B	6.9
Calcium	UG/L	-	NA	NA	145000	20500	132000
Chromium	UG/L	50	NA	NA			
Cobalt	UG/L	-	NA	NA	1.8 B		1.6 B
Copper	UG/L	200	NA	NA		9.2 B	8.3 B
Iron	UG/L	300	NA	NA	6540	403	392
Lead	UG/L	25	NA	NA	2.4 B	17.3	8.0
Magnesium	UG/L	35000	NA	NA	63400	1780 B	30400
Manganese	UG/L	300	NA	NA	66.3	29.7	138
Nickel	UG/L	100	NA	NA		2.4 B	3.0 B
Potassium	UG/L	-	NA	NA	7210 J	694 B	16500 J
Selenium	UG/L	10	NA	NA			3.0 B
Sodium	UG/L	20000	NA	NA	183000	10900	74400
Vanadium	UG/L	-	NA	NA		1.9 B	0.86 B
Zinc	UG/L	2000	NA	NA	27.8	60.1	19.8 B

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-03	MW-03C	MW-04	MW-05	MW-06
Sample ID			MW03	MW03C	MW04	MW05	MW06
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-	-	-
Date Sampled			11/29/00	11/28/00	11/30/00	11/30/00	11/29/00
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
Vinyl Chloride	UG/L	2		3 J			11 J
Acetone	UG/L	50					
Carbon Disulfide	UG/L	60					
1,1-Dichloroethene	UG/L	5	18 J	2 J			
1,1-Dichloroethane	UG/L	5	31 J	32 J			2 J
1,2-Dichloroethene (total)	UG/L	5	410 J	44 J			33
Chloroform	UG/L	7	3 J				
1,2-Dichloroethane	UG/L	0.6					
1,1,1-Trichloroethane	UG/L	5	110 J	3 J			
Trichloroethene	UG/L	5	16000 D	2000 D			94
1,1,2-Trichloroethane	UG/L	1					
Benzene	UG/L	1					
Tetrachloroethene	UG/L	5	33000 D	900 D			390
Toluene	UG/L	5					
Ethylbenzene	UG/L	5					
Xylene (Total)	UG/L	5					
Semivolatile Organic Compounds							
Isophorone	UG/L	50					
Naphthalene	UG/L	10					
Bis(2-ethylhexyl)phthalate	UG/L	5					
Metals							
Aluminum	UG/L	-	214 J		90.9 B	78.0 B	201 J

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-03	MW-03C	MW-04	MW-05	MW-06
Sample ID			MW03	MW03C	MW04	MW05	MW06
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-	-	-
Date Sampled			11/29/00	11/28/00	11/30/00	11/30/00	11/29/00
Parameter	Units	Criteria*					
Metals							
Barium	UG/L	1000	132 B	42.0 B	61.1 B	123 B	112 B
Beryllium	UG/L	3					
Cadmium	UG/L	5	3.2 B		3.3 B	3.2 B	0.55 B
Calcium	UG/L	-	139000	145000	115000	130000	173000
Chromium	UG/L	50					3.6 B
Cobalt	UG/L	-	0.99 B			23.1 B	6.9 B
Copper	UG/L	200	2.0 B			1.6 B	6.4 B
Iron	UG/L	300	431	919	1420	3720	4700
Lead	UG/L	25				2.4 B	5.9
Magnesium	UG/L	35000	30400	61700	47900	47700	50800
Manganese	UG/L	300	323	40.1	61.8	90.6	367
Nickel	UG/L	100	4.0 B			2.0 B	8.2 B
Potassium	UG/L	-	4680 B	4810 B	4650 B	9410 J	8500 J
Selenium	UG/L	10	2.5 B				2.2 B
Sodium	UG/L	20000	17500	104000	54100	453000	146000
Vanadium	UG/L	-	0.83 B			0.78 B	3.2 B
Zinc	UG/L	2000	17.9 B	8.9 B	6.1 B	13.4 B	20.8

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

Advanced Selection: 4-2
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[MATRIX] = 'WG' AND [LOGDATE] >= #11/28/00#

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-08K	MW-08S	MW-09K	MW-09S	MW-10K
Sample ID			MW08K	MW08S	MW09K	MW09S	MW10K
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-	-	-
Date Sampled			12/01/00	12/01/00	11/29/00	11/30/00	11/29/00
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
Vinyl Chloride	UG/L	2					
Acetone	UG/L	50					41 J
Carbon Disulfide	UG/L	60					
1,1-Dichloroethene	UG/L	5					
1,1-Dichloroethane	UG/L	5					1 J
1,2-Dichloroethene (total)	UG/L	5					4 J
Chloroform	UG/L	7					
1,2-Dichloroethane	UG/L	0.6					
1,1,1-Trichloroethane	UG/L	5					
Trichloroethene	UG/L	5	4 J		14		60 J
1,1,2-Trichloroethane	UG/L	1					
Benzene	UG/L	1					
Tetrachloroethene	UG/L	5	5 J		15		22 J
Toluene	UG/L	5					
Ethylbenzene	UG/L	5					
Xylene (Total)	UG/L	5					
Semivolatile Organic Compounds							
Isophorone	UG/L	50					
Naphthalene	UG/L	10					
Bis(2-ethylhexyl)phthalate	UG/L	5					
Metals							
Aluminum	UG/L	-		20.1 B	273 J	42.5 B	16.9 B

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			**MW-08K**	**MW-08S**	**MW-09K**	**MW-09S**	**MW-10K**
Sample ID			**MW08K**	**MW08S**	**MW09K**	**MW09S**	**MW10K**
Matrix			**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Depth Interval (ft.)			-	-	-	-	-
Date Sampled			**12/01/00**	**12/01/00**	**11/29/00**	**11/30/00**	**11/29/00**
Parameter	**Units**	**Criteria***					
Metals							
Barium	UG/L	1000	116 B	107 B	46.3 B	220	57.3 B
Beryllium	UG/L	3			0.13 B		
Cadmium	UG/L	5					
Calcium	UG/L	-	110000	117000	182000	136000	153000
Chromium	UG/L	50					
Cobalt	UG/L	-	1.0 B				1.2 B
Copper	UG/L	200	1.5 B	1.7 B	2.1 B	1.7 B	1.1 B
Iron	UG/L	300	21.0 B	30.3 B	2000	31.9 B	137
Lead	UG/L	25			13.2		
Magnesium	UG/L	35000	33000	29200	78400	41700	70100
Manganese	UG/L	300	82.5	63.6	167	32.3	140
Nickel	UG/L	100					2.8 B
Potassium	UG/L	-	4680 B	2890 B	5630 J	35000 J	19100 J
Selenium	UG/L	10	2.0 B	2.9 B	3.5 B	2.7 B	1.7 B
Sodium	UG/L	20000	30600	30300	98500	661000	38600
Vanadium	UG/L	-			1.0 B		0.74 B
Zinc	UG/L	2000	2.7 B	4.5 B	11.2 B	2.7 B	9.5 B

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-10S	MW-11K	MW-11S
Sample ID			MW10S	MW11K	MW11S
Matrix			Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-
Date Sampled			11/28/00	12/01/00	12/01/00
Parameter	**Units**	**Criteria***			
Volatile Organic Compounds					
Vinyl Chloride	UG/L	2			
Acetone	UG/L	50			
Carbon Disulfide	UG/L	60			
1,1-Dichloroethene	UG/L	5			
1,1-Dichloroethane	UG/L	5	4 J		
1,2-Dichloroethene (total)	UG/L	5	160		
Chloroform	UG/L	7			
1,2-Dichloroethane	UG/L	0.6			
1,1,1-Trichloroethane	UG/L	5	3 J		
Trichloroethene	UG/L	5	99	2 J	3 J
1,1,2-Trichloroethane	UG/L	1			
Benzene	UG/L	1			
Tetrachloroethene	UG/L	5	12	1 J	4 J
Toluene	UG/L	5			
Ethylbenzene	UG/L	5			
Xylene (Total)	UG/L	5			
Semivolatile Organic Compounds					
Isophorone	UG/L	50			
Naphthalene	UG/L	10			
Bis(2-ethylhexyl)phthalate	UG/L	5			
Metals					
Aluminum	UG/L	-	143 B	61.4 B	138 B

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-2
GROUNDWATER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			MW-10S	MW-11K	MW-11S
Sample ID			MW10S	MW11K	MW11S
Matrix			Groundwater	Groundwater	Groundwater
Depth Interval (ft.)			-	-	-
Date Sampled			11/28/00	12/01/00	12/01/00
Parameter	Units	Criteria*			
Metals					
Barium	UG/L	1000	210	49.0 B	74.4 B
Beryllium	UG/L	3			
Cadmium	UG/L	5			0.55 B
Calcium	UG/L	-	170000	113000	154000
Chromium	UG/L	50	6.5 B		
Cobalt	UG/L	-	1.3 B		1.7 B
Copper	UG/L	200	1.6 B		2.7 B
Iron	UG/L	300	3150	1250	140
Lead	UG/L	25			
Magnesium	UG/L	35000	64400	46200	57700
Manganese	UG/L	300	229	40.3	106
Nickel	UG/L	100	12.1 B		5.0 B
Potassium	UG/L	-	27100 J	9880 J	25000 J
Selenium	UG/L	10	2.0 B	2.4 B	
Sodium	UG/L	20000	26100	50400	86800
Vanadium	UG/L	-			2.1 B
Zinc	UG/L	2000	11.1 B		5.4 B

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

TABLE 4-4
SEWER ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID			SEW-01	SEW-02	SEW-03	SEW-04	SEW-05
Sample ID			SEW-1	SEW-2	SEW-3	SEW-4	SEW-5
Matrix			Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
Depth Interval (ft.)			-	-	-	-	-
Date Sampled			10/25/00	10/25/00	10/25/00	10/25/00	10/25/00
Parameter	Units	Criteria*					
Volatile Organic Compounds							
Vinyl Chloride	UG/L	2			570 D	3 J	
Methylene Chloride	UG/L	5	4 J	1 J		2 J	2 J
Acetone	UG/L	50	22 J	26 J	69 J	22 J	25 J
1,1-Dichloroethane	UG/L	5			4 J		
1,2-Dichloroethene (total)	UG/L	5		2 J	970 D	59 J	
Chloroform	UG/L	7	4 J	5 J		1 J	3 J
Methyl Ethyl Ketone (2-Butanone)	UG/L	50	10 J	8 J	19 J	4 J	2 J
1,1,1-Trichloroethane	UG/L	5			6 J	2 J	
Trichloroethene	UG/L	5		3 J	10 J	84	
4-Methyl-2-Pentanone	UG/L	-	1 J	3 J	2800 DJ	11	450 J
Tetrachloroethene	UG/L	5		8 J	4 J	190 D	1 NJ
Toluene	UG/L	5	2 J	1 J	45	1 J	4 J
Ethylbenzene	UG/L	5			2 J		
Xylene (Total)	UG/L	5			8 J		

Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June, 1998, Class GA (Amended April 2000).

Flags assigned during chemistry validation are shown.

⬭ Concentration Exceeds Criteria.

Only Detected Results Reported.

Advanced Selection' 4-4
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[MATRIX] = 'WW' AND [LOGDATE] = #10/25/00#

TABLE 1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID		SB-01	SB-02	SB-03	SB-04	SB-05
Sample ID		SB-1	SB-2	SB-3	SB-4	SB-5
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		3.0-4.0	3.0-4.0	3.0-4.0	3.0-4.0	4.0-6.0
Date Sampled		10/14/04	10/14/04	10/14/04	10/13/04	10/13/04
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	2 U	98 UJ	2 U	98 U	98 UJ
1,2,4-Trichlorobenzene	UG/KG	1.7 U	69 UJ	1.7 U	69 U	11,000 J
1,2-Dichlorobenzene	UG/KG	1.2 U	62 UJ	1.2 U	62 U	62 UJ
4-Methyl-2-Pentanone	UG/KG	1.6 UJ	81 UJ	1.6 UJ	81 U	81 UJ
Ethylbenzene	UG/KG	1.7 U	85 UJ	1.7 U	85 U	85 UJ
Isopropylbenzene (Cumene)	UG/KG	1.4 U	68 UJ	1.4 U	68 U	110,000 J
Methyl acetate	UG/KG	2.3 U	120 UJ	2.3 U	120 U	120 UJ
Methylcyclohexane	UG/KG	1.9 U	96 UJ	1.9 U	96 U	38,000 J
Methylene Chloride	UG/KG	4 J	91 UJ	1.8 U	91 U	91 UJ
Tetrachloroethene	UG/KG	660 DJ	3,000 J	1,900 DJ	490,000	1,000,000 J
Toluene	UG/KG	1.9 U	96 UJ	3 J	96 U	96 UJ
Trichloroethene	UG/KG	110	1,500 J	74	58,000	290,000 J
Xylene (total)	UG/KG	3 J	0.01 UJ	2 J	0.01 U	150,000 J

Flags assigned during chemistry validation are shown.

U - Not Detected
J - Estimated concentration below the sample quantitation limit, or due to quality control outliers.
NA - Not Analyzed

Only Detected Results Reported.

Detection Limits shown are MDL

TABLE 1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID		SB-06	SB-07	SB-08	SB-09	SB-10
Sample ID		SB-6	SB-7	SB-8	SB-9	SB-10
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		4.0-5.0	0.0-1.0	5.0-6.0	2.0-3.0	1.0-2.0
Date Sampled		10/13/04	10/13/04	10/14/04	10/14/04	10/13/04
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	98 U	98 UJ	2 U	98 UJ	98 UJ
1,2,4-Trichlorobenzene	UG/KG	69 U	4,900 J	1.7 U	69 UJ	69 UJ
1,2-Dichlorobenzene	UG/KG	62 U	62 UJ	1.2 U	62 UJ	62 UJ
4-Methyl-2-Pentanone	UG/KG	81 U	81 UJ	1.6 UJ	81 UJ	81 UJ
Ethylbenzene	UG/KG	85 U	85 UJ	1.7 U	85 UJ	85 UJ
Isopropylbenzene (Cumene)	UG/KG	68 U	68 UJ	1.4 U	68 UJ	68 UJ
Methyl acetate	UG/KG	120 U	120 UJ	2.3 U	120 UJ	120 UJ
Methylcyclohexane	UG/KG	96 U	96 UJ	1.9 U	96 UJ	96 UJ
Methylene Chloride	UG/KG	91 U	91 UJ	4 J	91 UJ	91 UJ
Tetrachloroethene	UG/KG	170,000	390,000 J	260 J	6,800 J	68,000 J
Toluene	UG/KG	96 U	96 UJ	1.9 U	96 UJ	96 UJ
Trichloroethene	UG/KG	16,000 J	73,000 J	8 J	2,600 J	22,000 J
Xylene (total)	UG/KG	0.01 U	0.01 UJ	0.01 U	0.01 UJ	0.01 UJ

Flags assigned during chemistry validation are shown.

U - Not Detected
J - Estimated concentration below the sample quantitation limit, or due to quality control outliers.
NA - Not Analyzed

Only Detected Results Reported.

Detection Limits shown are MDL

TABLE 1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID		**SB-11**	**SB-12**	**SB-13**	**SB-14**	**SB-15**
Sample ID		SB-11	SB-12	SB-13	SB-14	SB-15
Matrix		Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)		3.0-4.0	7.0-8.0	7.0-8.0	4.0-5.0	5.0-6.0
Date Sampled		10/13/04	10/13/04	10/14/04	10/14/04	10/13/04
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	98 UJ	98 UJ	5,900 J	98 U	98 UJ
1,2,4-Trichlorobenzene	UG/KG	69 UJ	69 UJ	69 UJ	69 U	69 UJ
1,2-Dichlorobenzene	UG/KG	62 UJ	62 UJ	200 J	62 U	62 UJ
4-Methyl-2-Pentanone	UG/KG	81 UJ	81 UJ	81 UJ	81 U	81 UJ
Ethylbenzene	UG/KG	85 UJ	570 J	2,200 J	85 U	85 UJ
Isopropylbenzene (Cumene)	UG/KG	68 UJ	68 UJ	1,100 J	68 U	68 UJ
Methyl acetate	UG/KG	120 UJ	120 UJ	120 UJ	1,100 J	120 UJ
Methylcyclohexane	UG/KG	96 UJ	960 J	17,000 J	96 U	96 UJ
Methylene Chloride	UG/KG	91 UJ	91 UJ	91 UJ	91 U	91 UJ
Tetrachloroethene	UG/KG	1,100,000 J	4,800 J	1,400 J	39,000	1,400,000 J
Toluene	UG/KG	96 UJ	96 UJ	510 J	96 U	96 UJ
Trichloroethene	UG/KG	180,000 J	96 UJ	3,600 J	3,500 J	96 UJ
Xylene (total)	UG/KG	0.01 UJ	970 J	14,000 J	0.01 U	0.01 UJ

Flags assigned during chemistry validation are shown.

U - Not Detected
J - Estimated concentration below the sample quantitation limit, or due to quality control outliers.
NA - Not Analyzed

Only Detected Results Reported.

Detection Limits shown are MDL

TABLE 1
SOIL ANALYTICAL RESULTS
FORMER DINABURG DISTRIBUTING, INC.

Location ID		**SB-16**
Sample ID		**SB-16**
Matrix		**Soil**
Depth Interval (ft)		**6.0-7.0**
Date Sampled		**10/14/04**
Parameter	**Units**	
Volatile Organic Compounds		
1,1,1-Trichloroethane	UG/KG	98 UJ
1,2,4-Trichlorobenzene	UG/KG	69 UJ
1,2-Dichlorobenzene	UG/KG	62 UJ
4-Methyl-2-Pentanone	UG/KG	280 J
Ethylbenzene	UG/KG	85 UJ
Isopropylbenzene (Cumene)	UG/KG	68 UJ
Methyl acetate	UG/KG	120 UJ
Methylcyclohexane	UG/KG	96 UJ
Methylene Chloride	UG/KG	91 UJ
Tetrachloroethene	UG/KG	3,400 J
Toluene	UG/KG	96 UJ
Trichloroethene	UG/KG	96 UJ
Xylene (total)	UG/KG	0.01 UJ

Flags assigned during chemistry validation are shown.

U - Not Detected
J - Estimated concentration below the sample quantitation limit, or due to quality control outliers.
NA - Not Analyzed

Only Detected Results Reported.

Detection Limits shown are MDL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		GEW-01	GEW-02	GEW-03	GPW-01	GPW-02
Sample ID		GEW-01	GEW-02	GEW-03	GPW-01	GPW-02
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/06/08	05/06/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	50	400 U	80 U	5 U	25 U
1,1,2,2-Tetrachloroethane	UG/L	5 U	400 U	80 U	5 U	25 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5 U	400 U	80 U	5 U	25 U
1,1,2-Trichloroethane	UG/L	5 UJ	400 U	80 UJ	5 U	25 U
1,1-Dichloroethane	UG/L	15	400 U	80 U	5 U	25 U
1,1-Dichloroethene	UG/L	4 J	400 U	80 U	5 U	25 U
1,2,4-Trichlorobenzene	UG/L	5 U	400 U	80 U	5 U	25 U
1,2-Dibromo-3-chloropropane	UG/L	5 U	400 UJ	80 U	5 UJ	25 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5 U	400 U	80 U	5 U	25 U
1,2-Dichlorobenzene	UG/L	5 U	400 U	80 U	5 U	25 U
1,2-Dichloroethane	UG/L	5 U	400 U	80 U	5 U	25 U
1,2-Dichloroethene (cis)	UG/L	290 DJ	400 U	26 J	1 J	25 U
1,2-Dichloroethene (trans)	UG/L	1 J	400 U	80 U	5 U	25 U
1,2-Dichloropropane	UG/L	5 U	400 U	80 U	5 U	25 U
1,3-Dichlorobenzene	UG/L	5 U	400 U	80 U	5 U	25 U
1,3-Dichloropropene (cis)	UG/L	5 U	400 U	80 U	5 U	25 U
1,3-Dichloropropene (trans)	UG/L	5 U	400 U	80 U	5 U	25 U
1,4-Dichlorobenzene	UG/L	5 U	400 U	80 U	5 U	25 U
2-Hexanone	UG/L	5 U	400 UJ	80 U	5 UJ	25 U
4-Methyl-2-Pentanone	UG/L	5 U	400 UJ	80 U	5 UJ	25 U
Acetone	UG/L	R	R	R	31 J	R
Benzene	UG/L	5 U	400 U	80 U	5 U	25 U
Bromodichloromethane	UG/L	5 U	400 U	80 U	5 U	25 U

Flags assigned during chemistry validation are shown.

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Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		GEW-01	GEW-02	GEW-03	GPW-01	GPW-02
Sample ID		GEW-01	GEW-02	GEW-03	GPW-01	GPW-02
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/06/08	05/06/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	5 U	400 U	80 U	5 U	25 U
Bromomethane	UG/L	5 UJ	400 U	80 UJ	5 U	25 UJ
Carbon Disulfide	UG/L	5 U	400 U	80 U	5 U	25 UJ
Carbon Tetrachloride	UG/L	5 U	400 U	80 U	5 U	25 U
Chlorobenzene	UG/L	5 UJ	400 U	80 UJ	5 U	25 U
Chloroethane	UG/L	5 U	400 U	80 U	5 U	25 U
Chloroform	UG/L	5 U	400 U	80 U	5 U	25 U
Chloromethane	UG/L	5 U	400 U	80 U	5 U	25 U
Cyclohexane	UG/L	5 U	400 U	80 U	5 U	25 U
Dibromochloromethane	UG/L	5 U	400 U	80 U	5 U	25 U
Dichlorodifluoromethane	UG/L	5 UJ	400 UJ	80 UJ	5 UJ	25 UJ
Ethylbenzene	UG/L	5 U	400 U	80 U	5 U	25 U
Isopropylbenzene (Cumene)	UG/L	5 U	400 U	80 U	5 U	25 U
Methyl acetate	UG/L	5 U	400 UJ	80 U	5 UJ	25 U
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	R	R	R	R
Methyl tert-butyl ether	UG/L	5 UJ	400 UJ	80 UJ	5 UJ	25 U
Methylcyclohexane	UG/L	5 U	400 U	80 U	5 U	25 U
Methylene Chloride	UG/L	5 U	400 U	80 U	5 U	25 U
Styrene	UG/L	5 U	400 U	80 U	5 U	25 U
Tetrachloroethene	UG/L	2,400 DJ	11,000	640 J	12	630
Toluene	UG/L	5 U	400 U	80 U	5 U	25 U
Trichloroethene	UG/L	800 DJ	6,400	1,700	120	1,600 D
Trichlorofluoromethane	UG/L	5 U	400 U	80 U	5 U	25 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		GEW-01	GEW-02	GEW-03	GPW-01	GPW-02
Sample ID		GEW-01	GEW-02	GEW-03	GPW-01	GPW-02
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/06/08	05/06/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	2 J	400 U	80 UJ	5 U	25 U
Xylene (total)	UG/L	5 U	400 U	80 U	5 U	25 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Sample ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/06/08	05/06/08	05/06/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	45 J	30	43 J	330	110
1,1,2,2-Tetrachloroethane	UG/L	50 U	20 U	50 U	40 U	50 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	50 U	20 U	50 U	40 U	50 U
1,1,2-Trichloroethane	UG/L	50 U	20 UJ	50 UJ	40 U	50 U
1,1-Dichloroethane	UG/L	10 J	8 J	11 J	45	23 J
1,1-Dichloroethene	UG/L	50 U	20 U	50 U	40 U	50 U
1,2,4-Trichlorobenzene	UG/L	50 U	20 U	50 U	40 U	50 U
1,2-Dibromo-3-chloropropane	UG/L	50 UJ	20 U	50 U	40 U	50 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	50 U	20 U	50 U	40 U	50 U
1,2-Dichlorobenzene	UG/L	50 U	20 U	50 U	40 U	50 U
1,2-Dichloroethane	UG/L	50 U	20 U	50 U	40 U	50 U
1,2-Dichloroethene (cis)	UG/L	59	59	56	140	48 J
1,2-Dichloroethene (trans)	UG/L	50 U	20 U	50 U	40 U	50 U
1,2-Dichloropropane	UG/L	50 U	20 U	50 U	40 U	50 U
1,3-Dichlorobenzene	UG/L	50 U	20 U	50 U	40 U	50 U
1,3-Dichloropropene (cis)	UG/L	50 U	20 U	50 U	40 U	50 U
1,3-Dichloropropene (trans)	UG/L	50 U	20 U	50 U	40 U	50 U
1,4-Dichlorobenzene	UG/L	50 U	20 U	50 U	40 U	50 U
2-Hexanone	UG/L	50 UJ	20 U	50 U	40 U	50 U
4-Methyl-2-Pentanone	UG/L	50 UJ	20 U	50 U	40 U	50 U
Acetone	UG/L	R	R	R	R	R
Benzene	UG/L	50 U	20 U	50 U	40 U	50 U
Bromodichloromethane	UG/L	50 U	20 U	50 U	40 U	50 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
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Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Sample ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/06/08	05/06/08	05/06/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	50 U	20 U	50 U	40 U	50 U
Bromomethane	UG/L	50 U	20 UJ	50 UJ	40 UJ	50 UJ
Carbon Disulfide	UG/L	50 U	20 U	50 U	40 UJ	50 UJ
Carbon Tetrachloride	UG/L	50 U	20 U	50 U	40 U	50 U
Chlorobenzene	UG/L	50 U	20 UJ	50 UJ	40 U	50 U
Chloroethane	UG/L	50 U	20 U	50 U	40 U	50 U
Chloroform	UG/L	50 U	20 U	50 U	40 U	50 U
Chloromethane	UG/L	50 U	20 U	50 U	40 U	50 U
Cyclohexane	UG/L	50 U	20 U	50 U	40 U	50 U
Dibromochloromethane	UG/L	50 U	20 U	50 U	40 U	50 U
Dichlorodifluoromethane	UG/L	50 UJ	20 UJ	50 UJ	40 UJ	50 UJ
Ethylbenzene	UG/L	50 U	20 U	50 U	40 U	50 U
Isopropylbenzene (Cumene)	UG/L	50 U	20 U	50 U	40 U	50 U
Methyl acetate	UG/L	50 UJ	20 U	50 U	40 U	50 U
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	R	R	R	R
Methyl tert-butyl ether	UG/L	50 UJ	20 UJ	50 UJ	40 U	50 U
Methylcyclohexane	UG/L	50 U	20 U	50 U	40 U	50 U
Methylene Chloride	UG/L	50 U	20 U	50 U	40 U	50 U
Styrene	UG/L	50 U	20 U	50 U	40 U	50 U
Tetrachloroethene	UG/L	1,500	580 J	1,300 J	1,100	1,300
Toluene	UG/L	50 U	20 U	50 U	40 U	50 U
Trichloroethene	UG/L	940	480	1,500	680	610
Trichlorofluoromethane	UG/L	50 U	20 U	50 U	40 U	50 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Sample ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/06/08	05/06/08	05/06/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	50 U	20 UJ	50 UJ	40 U	50 U
Xylene (total)	UG/L	50 U	20 U	50 U	40 U	50 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-06	MPE-08	MPE-09	MPE-10	MPE-11
Sample ID		MPE-06	MPE-08	MPE-09	MPE-10	MPE-11
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/06/08	05/06/08	05/06/08	05/07/08	05/06/08
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	170	4 J	400 U	8,000 U	100 U
1,1,2,2-Tetrachloroethane	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,1,2-Trichloroethane	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,1-Dichloroethane	UG/L	84	20 U	400 U	8,000 U	100 U
1,1-Dichloroethene	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,2,4-Trichlorobenzene	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,2-Dibromo-3-chloropropane	UG/L	25 UJ	20 UJ	400 UJ	8,000 U	100 UJ
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,2-Dichlorobenzene	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,2-Dichloroethane	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,2-Dichloroethene (cis)	UG/L	57	22	400 U	8,000 U	100 U
1,2-Dichloroethene (trans)	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,2-Dichloropropane	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,3-Dichlorobenzene	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,3-Dichloropropene (cis)	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,3-Dichloropropene (trans)	UG/L	25 U	20 U	400 U	8,000 U	100 U
1,4-Dichlorobenzene	UG/L	25 U	20 U	400 U	8,000 U	100 U
2-Hexanone	UG/L	25 UJ	20 UJ	400 UJ	8,000 U	100 UJ
4-Methyl-2-Pentanone	UG/L	25 UJ	20 UJ	400 UJ	8,000 U	100 UJ
Acetone	UG/L	R	R	R	R	R
Benzene	UG/L	25 U	20 U	400 U	8,000 U	100 U
Bromodichloromethane	UG/L	25 U	20 U	400 U	8,000 U	100 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-06	MPE-08	MPE-09	MPE-10	MPE-11
Sample ID		MPE-06	MPE-08	MPE-09	MPE-10	MPE-11
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/06/08	05/06/08	05/06/08	05/07/08	05/06/08
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	25 U	20 U	400 U	8,000 U	100 U
Bromomethane	UG/L	25 U	20 U	400 U	8,000 UJ	100 U
Carbon Disulfide	UG/L	25 U	20 U	400 U	8,000 UJ	100 U
Carbon Tetrachloride	UG/L	25 U	20 U	400 U	8,000 U	100 U
Chlorobenzene	UG/L	25 U	20 U	400 U	8,000 U	100 U
Chloroethane	UG/L	25 U	20 U	400 U	8,000 U	100 U
Chloroform	UG/L	25 U	20 U	400 U	8,000 U	100 U
Chloromethane	UG/L	25 U	20 U	400 U	8,000 U	100 U
Cyclohexane	UG/L	25 U	20 U	400 U	8,000 U	100 U
Dibromochloromethane	UG/L	25 U	20 U	400 U	8,000 U	100 U
Dichlorodifluoromethane	UG/L	25 UJ	20 UJ	400 UJ	8,000 UJ	100 UJ
Ethylbenzene	UG/L	25 U	20 U	400 U	8,000 U	100 U
Isopropylbenzene (Cumene)	UG/L	25 U	20 U	400 U	8,000 U	100 U
Methyl acetate	UG/L	25 UJ	20 UJ	400 UJ	8,000 U	100 UJ
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	R	R	R	R
Methyl tert-butyl ether	UG/L	25 UJ	20 UJ	400 UJ	8,000 U	100 UJ
Methylcyclohexane	UG/L	25 U	20 U	400 U	8,000 U	100 U
Methylene Chloride	UG/L	25 U	20 U	400 U	8,000 U	100 U
Styrene	UG/L	25 U	20 U	400 U	8,000 U	100 U
Tetrachloroethene	UG/L	560	510	3,900	64,000	1,300
Toluene	UG/L	25 U	20 U	400 U	8,000 U	100 U
Trichloroethene	UG/L	870	490	13,000	170,000	2,300
Trichlorofluoromethane	UG/L	25 U	20 U	400 U	8,000 U	100 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-06	MPE-08	MPE-09	MPE-10	MPE-11
Sample ID		MPE-06	MPE-08	MPE-09	MPE-10	MPE-11
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/06/08	05/06/08	05/06/08	05/07/08	05/06/08
Parameter	**Units**					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	25 U	20 U	400 U	8,000 U	100 U
Xylene (total)	UG/L	25 U	20 U	400 U	8,000 U	100 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-12	MPE-13	MPE-14	MPE-15	MPE-16
Sample ID		MPE-12	MPE-13	MPE-14	MPE-15	MPE-16
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/06/08	05/06/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,1,2-Trichloroethane	UG/L	10 U	80 U	100 UJ	400 U	8,000 U
1,1-Dichloroethane	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,1-Dichloroethene	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,2,4-Trichlorobenzene	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,2-Dibromo-3-chloropropane	UG/L	10 U	80 UJ	100 U	400 U	8,000 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,2-Dichlorobenzene	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,2-Dichloroethane	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,2-Dichloroethene (cis)	UG/L	10 U	29 J	100 U	400 U	8,000 U
1,2-Dichloroethene (trans)	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,2-Dichloropropane	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,3-Dichlorobenzene	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,3-Dichloropropene (cis)	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,3-Dichloropropene (trans)	UG/L	10 U	80 U	100 U	400 U	8,000 U
1,4-Dichlorobenzene	UG/L	10 U	80 U	100 U	400 U	8,000 U
2-Hexanone	UG/L	10 U	80 U	100 U	400 U	8,000 U
4-Methyl-2-Pentanone	UG/L	10 U	80 UJ	100 U	400 U	8,000 U
Acetone	UG/L	R	R	R	R	R
Benzene	UG/L	10 U	80 U	100 U	400 U	8,000 U
Bromodichloromethane	UG/L	10 U	80 U	100 U	400 U	8,000 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-12	MPE-13	MPE-14	MPE-15	MPE-16
Sample ID		MPE-12	MPE-13	MPE-14	MPE-15	MPE-16
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/06/08	05/06/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	10 U	80 U	100 U	400 U	8,000 U
Bromomethane	UG/L	10 UJ	80 U	100 UJ	400 UJ	8,000 UJ
Carbon Disulfide	UG/L	10 UJ	80 U	100 U	400 UJ	8,000 UJ
Carbon Tetrachloride	UG/L	10 U	80 U	100 U	400 U	8,000 U
Chlorobenzene	UG/L	10 U	80 U	100 UJ	400 U	8,000 U
Chloroethane	UG/L	10 U	80 U	100 U	400 U	8,000 U
Chloroform	UG/L	10 U	80 U	100 U	400 U	8,000 U
Chloromethane	UG/L	10 U	80 U	100 U	400 U	8,000 U
Cyclohexane	UG/L	10 U	80 U	100 U	400 U	8,000 U
Dibromochloromethane	UG/L	10 U	80 U	100 U	400 U	8,000 U
Dichlorodifluoromethane	UG/L	10 UJ	80 UJ	100 UJ	400 UJ	8,000 UJ
Ethylbenzene	UG/L	10 U	80 U	100 U	400 U	8,000 U
Isopropylbenzene (Cumene)	UG/L	10 U	80 U	100 U	400 U	8,000 U
Methyl acetate	UG/L	10 U	80 UJ	100 U	400 U	8,000 U
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	R	R	R	R
Methyl tert-butyl ether	UG/L	10 U	80 UJ	100 UJ	400 U	8,000 U
Methylcyclohexane	UG/L	10 U	80 U	100 U	400 U	8,000 U
Methylene Chloride	UG/L	10 U	80 U	100 U	400 U	8,000 U
Styrene	UG/L	10 U	80 U	100 U	400 U	8,000 U
Tetrachloroethene	UG/L	170	2,000	1,000 J	9,300	220,000
Toluene	UG/L	10 U	80 U	100 U	400 U	8,000 U
Trichloroethene	UG/L	130	1,100	2,400	3,800	12,000
Trichlorofluoromethane	UG/L	10 U	80 U	100 U	400 U	8,000 U

Flags assigned during chemistry validation are shown.

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Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-12	MPE-13	MPE-14	MPE-15	MPE-16
Sample ID		MPE-12	MPE-13	MPE-14	MPE-15	MPE-16
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/06/08	05/06/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	10 U	80 U	100 UJ	400 U	8,000 U
Xylene (total)	UG/L	10 U	80 U	100 U	400 U	8,000 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

Advanced Selection: AMK-TEMP
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[LOGDATE] > #5/1/2008# AND [MATRIX] = 'WG' AND ([LOCID] <> 'AS-EFF' AND [LOCID] <> 'AS-INF') AND [LOCID] <> 'FIELDQC'

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-17	MPE-18	MW-01	MW-01A	MW-03
Sample ID		MPE-17	MPE-18	MW-01	MW-01A	MW-03
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/06/08	05/06/08	05/07/08	05/07/08	05/07/08
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,1,2-Trichloroethane	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,1-Dichloroethane	UG/L	200 U	1,000 U	5 U	20 U	3 J
1,1-Dichloroethene	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,2,4-Trichlorobenzene	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,2-Dibromo-3-chloropropane	UG/L	200 UJ	1,000 U	5 UJ	20 UJ	10 UJ
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,2-Dichlorobenzene	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,2-Dichloroethane	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,2-Dichloroethene (cis)	UG/L	200 U	230 J	5 U	170	18
1,2-Dichloroethene (trans)	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,2-Dichloropropane	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,3-Dichlorobenzene	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,3-Dichloropropene (cis)	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,3-Dichloropropene (trans)	UG/L	200 U	1,000 U	5 U	20 U	10 U
1,4-Dichlorobenzene	UG/L	200 U	1,000 U	5 U	20 U	10 U
2-Hexanone	UG/L	200 UJ	1,000 U	5 UJ	20 UJ	10 UJ
4-Methyl-2-Pentanone	UG/L	200 UJ	1,000 U	5 UJ	20 UJ	10 UJ
Acetone	UG/L	R	R	R	R	R
Benzene	UG/L	200 U	1,000 U	5 U	20 U	10 U
Bromodichloromethane	UG/L	200 U	1,000 U	5 U	20 U	10 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

Advanced Selection: AMK-TEMP
N:\11170936.00000\DB\program\EDMS.mde
Printed: 7/2/2008 6:44:15 AM
[LOGDATE] > #5/1/2008# AND [MATRIX] = 'WG' AND ([LOCID] <> 'AS-EFF' AND [LOCID] <> 'AS-INF') AND [LOCID] <> 'FIELDQC'

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-17	MPE-18	MW-01	MW-01A	MW-03
Sample ID		MPE-17	MPE-18	MW-01	MW-01A	MW-03
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/06/08	05/06/08	05/07/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	200 U	1,000 U	5 U	20 U	10 U
Bromomethane	UG/L	200 U	1,000 UJ	5 U	20 U	10 U
Carbon Disulfide	UG/L	200 U	1,000 UJ	5 U	20 U	10 U
Carbon Tetrachloride	UG/L	200 U	1,000 U	5 U	20 U	10 U
Chlorobenzene	UG/L	200 U	1,000 U	5 U	20 U	10 U
Chloroethane	UG/L	200 U	1,000 U	5 U	20 U	10 U
Chloroform	UG/L	200 U	1,000 U	5 U	20 U	10 U
Chloromethane	UG/L	200 U	1,000 U	5 U	20 U	10 U
Cyclohexane	UG/L	200 U	1,000 U	5 U	20 U	10 U
Dibromochloromethane	UG/L	200 U	1,000 U	5 U	20 U	10 U
Dichlorodifluoromethane	UG/L	200 UJ	1,000 UJ	5 UJ	20 UJ	10 UJ
Ethylbenzene	UG/L	200 U	1,000 U	5 U	20 U	10 U
Isopropylbenzene (Cumene)	UG/L	200 U	1,000 U	5 U	20 U	10 U
Methyl acetate	UG/L	200 UJ	1,000 U	5 UJ	20 UJ	10 UJ
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	R	R	R	R
Methyl tert-butyl ether	UG/L	200 UJ	1,000 U	5 UJ	20 UJ	10 UJ
Methylcyclohexane	UG/L	200 U	1,000 U	5 U	20 U	10 U
Methylene Chloride	UG/L	200 U	1,000 U	5 U	20 U	10 U
Styrene	UG/L	200 U	1,000 U	5 U	20 U	10 U
Tetrachloroethene	UG/L	1,900	19,000	5 U	620	110
Toluene	UG/L	200 U	1,000 U	5 U	20 U	10 U
Trichloroethene	UG/L	3,900	5,100	5 U	200	200
Trichlorofluoromethane	UG/L	200 U	1,000 U	5 U	20 U	10 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
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TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MPE-17	MPE-18	MW-01	MW-01A	MW-03
Sample ID		MPE-17	MPE-18	MW-01	MW-01A	MW-03
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/06/08	05/06/08	05/07/08	05/07/08	05/07/08
Parameter	Units					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	200 U	1,000 U	5 U	20 U	10 U
Xylene (total)	UG/L	200 U	1,000 U	5 U	20 U	10 U

Flags assigned during chemistry validation are shown.

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Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Sample ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/07/08	05/07/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	250 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	UG/L	250 U	5 U	5 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	250 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	UG/L	250 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	UG/L	250 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	UG/L	250 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	UG/L	250 U	5 U	5 U	5 U	5 U
1,2-Dibromo-3-chloropropane	UG/L	250 U	5 UJ	5 UJ	5 UJ	5 UJ
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	250 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	UG/L	250 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	UG/L	250 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (cis)	UG/L	120 J	5 U	5 U	6	5 U
1,2-Dichloroethene (trans)	UG/L	250 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	UG/L	250 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	UG/L	250 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene (cis)	UG/L	250 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene (trans)	UG/L	250 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	UG/L	250 U	5 U	5 U	5 U	5 U
2-Hexanone	UG/L	250 U	5 UJ	5 UJ	5 UJ	5 UJ
4-Methyl-2-Pentanone	UG/L	250 U	5 UJ	5 UJ	5 UJ	5 UJ
Acetone	UG/L	R	R	R	R	R
Benzene	UG/L	250 U	5 U	5 U	5 U	5 U
Bromodichloromethane	UG/L	250 U	5 U	5 U	5 U	5 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
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Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Sample ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/07/08	05/07/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	250 U	5 U	5 U	5 U	5 U
Bromomethane	UG/L	250 UJ	5 U	5 U	5 U	5 U
Carbon Disulfide	UG/L	250 UJ	5 U	5 U	5 U	5 U
Carbon Tetrachloride	UG/L	250 U	5 U	5 U	5 U	5 U
Chlorobenzene	UG/L	250 U	5 U	5 U	5 U	5 U
Chloroethane	UG/L	250 U	5 U	5 U	5 U	5 U
Chloroform	UG/L	250 U	5 U	5 U	5 U	5 U
Chloromethane	UG/L	250 U	5 U	5 U	5 U	5 U
Cyclohexane	UG/L	250 U	5 U	5 U	5 U	5 U
Dibromochloromethane	UG/L	250 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	UG/L	250 UJ	5 UJ	5 UJ	5 UJ	5 UJ
Ethylbenzene	UG/L	250 U	5 U	5 U	5 U	5 U
Isopropylbenzene (Cumene)	UG/L	250 U	5 U	5 U	5 U	5 U
Methyl acetate	UG/L	250 U	5 UJ	5 UJ	5 UJ	5 UJ
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	R	R	R	R
Methyl tert-butyl ether	UG/L	250 U	2 J	5 UJ	5 UJ	5 UJ
Methylcyclohexane	UG/L	250 U	5 U	5 U	5 U	5 U
Methylene Chloride	UG/L	250 U	5 U	5 U	5 U	5 U
Styrene	UG/L	250 U	5 U	5 U	5 U	5 U
Tetrachloroethene	UG/L	6,400	5 U	5 U	5	5 U
Toluene	UG/L	250 U	5 U	5 U	5 U	5 U
Trichloroethene	UG/L	1,800	5 U	5 U	4 J	5 U
Trichlorofluoromethane	UG/L	250 U	5 U	5 U	5 U	5 U

Flags assigned during chemistry validation are shown.

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Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Sample ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/07/08	05/07/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	250 U	5 U	5 U	5 U	5 U
Xylene (total)	UG/L	250 U	5 U	5 U	5 U	5 U

Flags assigned during chemistry validation are shown.

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Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Sample ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/07/08	05/07/08	05/07/08	05/07/08
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	5 U	5 U	5 U	25 U	5 U
1,1,2,2-Tetrachloroethane	UG/L	5 U	5 U	5 U	25 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5 U	5 U	5 U	25 U	5 U
1,1,2-Trichloroethane	UG/L	5 U	5 U	5 U	25 U	5 U
1,1-Dichloroethane	UG/L	5 U	5 U	5 U	25 U	5 U
1,1-Dichloroethene	UG/L	5 U	5 U	5 U	25 U	5 U
1,2,4-Trichlorobenzene	UG/L	5 U	5 U	5 U	25 U	5 U
1,2-Dibromo-3-chloropropane	UG/L	5 UJ	5 UJ	5 UJ	25 U	5 UJ
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5 U	5 U	5 U	25 U	5 U
1,2-Dichlorobenzene	UG/L	5 U	5 U	5 U	25 U	5 U
1,2-Dichloroethane	UG/L	5 U	5 U	5 U	25 U	5 U
1,2-Dichloroethene (cis)	UG/L	5 U	5 U	5 U	52	5 U
1,2-Dichloroethene (trans)	UG/L	5 U	5 U	5 U	25 U	5 U
1,2-Dichloropropane	UG/L	5 U	5 U	5 U	25 U	5 U
1,3-Dichlorobenzene	UG/L	5 U	5 U	5 U	25 U	5 U
1,3-Dichloropropene (cis)	UG/L	5 U	5 U	5 U	25 U	5 U
1,3-Dichloropropene (trans)	UG/L	5 U	5 U	5 U	25 U	5 U
1,4-Dichlorobenzene	UG/L	5 U	5 U	5 U	25 U	5 U
2-Hexanone	UG/L	5 UJ	5 UJ	5 UJ	25 U	5 UJ
4-Methyl-2-Pentanone	UG/L	5 UJ	5 UJ	5 UJ	25 U	5 UJ
Acetone	UG/L	R	R	R	R	R
Benzene	UG/L	5 U	5 U	5 U	25 U	5 U
Bromodichloromethane	UG/L	5 U	5 U	5 U	25 U	5 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
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Advanced Selection: AMK-TEMP
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[LOGDATE] > #5/1/2008# AND [MATRIX] = 'WG' AND ([LOCID] <> 'AS-EFF' AND [LOCID] <> 'AS-INF') AND [LOCID] <> 'FIELDQC'

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Sample ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/07/08	05/07/08	05/07/08	05/07/08
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	5 U	5 U	5 U	25 U	5 U
Bromomethane	UG/L	5 U	5 U	5 U	25 UJ	5 U
Carbon Disulfide	UG/L	5 U	5 U	5 U	25 UJ	5 U
Carbon Tetrachloride	UG/L	5 U	5 U	5 U	25 U	5 U
Chlorobenzene	UG/L	5 U	5 U	5 U	25 U	5 U
Chloroethane	UG/L	5 U	5 U	5 U	25 U	5 U
Chloroform	UG/L	5 U	5 U	5 U	25 U	5 U
Chloromethane	UG/L	5 U	5 U	5 U	25 U	5 U
Cyclohexane	UG/L	5 U	5 U	5 U	25 U	5 U
Dibromochloromethane	UG/L	5 U	5 U	5 U	25 U	5 U
Dichlorodifluoromethane	UG/L	5 UJ	5 UJ	5 UJ	25 UJ	5 UJ
Ethylbenzene	UG/L	5 U	5 U	5 U	25 U	5 U
Isopropylbenzene (Cumene)	UG/L	5 U	5 U	5 U	25 U	5 U
Methyl acetate	UG/L	5 UJ	5 UJ	5 UJ	25 U	5 UJ
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	R	R	R	R
Methyl tert-butyl ether	UG/L	5 UJ	5 UJ	5 UJ	25 U	5 UJ
Methylcyclohexane	UG/L	5 U	5 U	5 U	25 U	5 U
Methylene Chloride	UG/L	5 U	5 U	5 U	25 U	5 U
Styrene	UG/L	5 U	5 U	5 U	25 U	5 U
Tetrachloroethene	UG/L	5 U	5 U	5 U	25 U	2 J
Toluene	UG/L	5 U	5 U	5 U	25 U	5 U
Trichloroethene	UG/L	5 U	5 U	5 U	890	4 J
Trichlorofluoromethane	UG/L	5 U	5 U	5 U	25 U	5 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

Advanced Selection: AMK-TEMP
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[LOGDATE] > #5/1/2008# AND [MATRIX] = 'WG' AND ([LOCID] <> 'AS-EFF' AND [LOCID] <> 'AS-INF') AND [LOCID] <> 'FIELDQC'

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Sample ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/07/08	05/07/08	05/07/08	05/07/08	05/07/08
Parameter	Units					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	5 U	5 U	5 U	25 U	5 U
Xylene (total)	UG/L	5 U	5 U	5 U	25 U	5 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MW-11S
Sample ID		MW-11S
Matrix		Groundwater
Depth Interval (ft)		-
Date Sampled		05/07/08
Parameter	**Units**	
Volatile Organic Compounds		
1,1,1-Trichloroethane	UG/L	5 U
1,1,2,2-Tetrachloroethane	UG/L	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5 U
1,1,2-Trichloroethane	UG/L	5 U
1,1-Dichloroethane	UG/L	5 U
1,1-Dichloroethene	UG/L	5 U
1,2,4-Trichlorobenzene	UG/L	5 U
1,2-Dibromo-3-chloropropane	UG/L	5 UJ
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5 U
1,2-Dichlorobenzene	UG/L	5 U
1,2-Dichloroethane	UG/L	5 U
1,2-Dichloroethene (cis)	UG/L	5 U
1,2-Dichloroethene (trans)	UG/L	5 U
1,2-Dichloropropane	UG/L	5 U
1,3-Dichlorobenzene	UG/L	5 U
1,3-Dichloropropene (cis)	UG/L	5 U
1,3-Dichloropropene (trans)	UG/L	5 U
1,4-Dichlorobenzene	UG/L	5 U
2-Hexanone	UG/L	5 UJ
4-Methyl-2-Pentanone	UG/L	5 UJ
Acetone	UG/L	R
Benzene	UG/L	5 U
Bromodichloromethane	UG/L	5 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MW-11S
Sample ID		MW-11S
Matrix		Groundwater
Depth Interval (ft)		-
Date Sampled		05/07/08
Parameter	**Units**	
Volatile Organic Compounds		
Bromoform	UG/L	5 U
Bromomethane	UG/L	5 U
Carbon Disulfide	UG/L	5 U
Carbon Tetrachloride	UG/L	5 U
Chlorobenzene	UG/L	5 U
Chloroethane	UG/L	5 U
Chloroform	UG/L	5 U
Chloromethane	UG/L	5 U
Cyclohexane	UG/L	5 U
Dibromochloromethane	UG/L	5 U
Dichlorodifluoromethane	UG/L	5 UJ
Ethylbenzene	UG/L	5 U
Isopropylbenzene (Cumene)	UG/L	5 U
Methyl acetate	UG/L	5 UJ
Methyl Ethyl Ketone (2-Butanone)	UG/L	R
Methyl tert-butyl ether	UG/L	5 UJ
Methylcyclohexane	UG/L	5 U
Methylene Chloride	UG/L	5 U
Styrene	UG/L	5 U
Tetrachloroethene	UG/L	5 U
Toluene	UG/L	5 U
Trichloroethene	UG/L	5 U
Trichlorofluoromethane	UG/L	5 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

Advanced Selection: AMK-TEMP
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[LOGDATE] > #5/1/2008# AND [MATRIX] = 'WG' AND ([LOCID] <> 'AS-EFF' AND [LOCID] <> 'AS-INF') AND [LOCID] <> 'FIELDQC'

TABLE 1
VALIDATED GROUNDWATER SAMPLE RESULTS
DINABURG DISTRIBUTING

Location ID		MW-11S
Sample ID		MW-11S
Matrix		Groundwater
Depth Interval (ft)		-
Date Sampled		05/07/08
Parameter	Units	
Volatile Organic Compounds		
Vinyl Chloride	UG/L	5 U
Xylene (total)	UG/L	5 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 6/20/2008
CHECKED BY: MK 7/1/2008

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Sample ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/M3	2.7	16	170	19	46
1,1,2,2-Tetrachloroethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
1,1,2-Trichloroethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
1,1-Dichloroethane	UG/M3	1.0 U	4.3	51	1.2	8.4
1,1-Dichloroethene	UG/M3	0.99 U	0.99 U	12	0.99 U	1.2
1,2,4-Trichlorobenzene	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
1,2-Dibromo-3-chloropropane	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
1,2-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichloroethane	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (cis)	UG/M3	23	48	390	30	63
1,2-Dichloroethene (trans)	UG/M3	0.99 U	0.99 U	2.0	0.99 U	0.99 U
1,2-Dichloropropane	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Dichloropropene (cis)	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,3-Dichloropropene (trans)	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,4-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
2-Hexanone	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-Pentanone	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	UG/M3	99	37	12 U	7.9 U	11 U
Benzene	UG/M3	5.0	6.9	3.2	0.80 U	1.2
Bromodichloromethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Sample ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/M3	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Bromomethane	UG/M3	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U
Carbon Disulfide	UG/M3	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U
Carbon Tetrachloride	UG/M3	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Chlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Chloroethane	UG/M3	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U
Chloroform	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Chloromethane	UG/M3	1.6	1.2	0.52 U	0.52 U	2.9
Cyclohexane	UG/M3	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
Dibromochloromethane	UG/M3	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Dichlorodifluoromethane	UG/M3	2.2	2.0	2.1	2.0	2.0
Ethylbenzene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Isopropylbenzene (Cumene)	UG/M3	3.1 U	3.1 U	3.1 U	5.2	3.1 U
m&p-Xylene	UG/M3	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Methyl acetate	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	21	11	3.1	1.4	2.8
Methyl tert-butyl ether	UG/M3	0.90 U	0.90 U	0.90 U	0.90 U	0.90 U
Methylcyclohexane	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
Methylene Chloride	UG/M3	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
o-Xylene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Styrene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Tetrachloroethene	UG/M3	1,300	2,200	6,100	500	2,000
Toluene	UG/M3	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Sample ID		MPE-01	MPE-02	MPE-03	MPE-04	MPE-05
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	Units					
Volatile Organic Compounds						
Trichloroethene	UG/M3	510	650	2,200	140	850
Trichlorofluoromethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Vinyl Chloride	UG/M3	0.64 U	0.64 U	0.68	0.64 U	0.88

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-06	MPE-07	MPE-08	MPE-09	MPE-10
Sample ID		MPE-06	MPE-07	MPE-08	MPE-09	MPE-10
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/M3	180	1.4	2.0	2.0	2.2
1,1,2,2-Tetrachloroethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
1,1,2-Trichloroethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
1,1-Dichloroethane	UG/M3	50	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	UG/M3	2.0	0.99 U	0.99 U	0.99 U	0.99 U
1,2,4-Trichlorobenzene	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
1,2-Dibromo-3-chloropropane	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
1,2-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichloroethane	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (cis)	UG/M3	76	5.0	9.8	19	19
1,2-Dichloroethene (trans)	UG/M3	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U
1,2-Dichloropropane	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Dichloropropene (cis)	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,3-Dichloropropene (trans)	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,4-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
2-Hexanone	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-Pentanone	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	UG/M3	6.4 U	13 U	15 U	6.9 U	9.5 U
Benzene	UG/M3	0.80 U	0.80 U	0.80 U	1.1	0.80 U
Bromodichloromethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-06	MPE-07	MPE-08	MPE-09	MPE-10
Sample ID		MPE-06	MPE-07	MPE-08	MPE-09	MPE-10
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	Units					
Volatile Organic Compounds						
Bromoform	UG/M3	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Bromomethane	UG/M3	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U
Carbon Disulfide	UG/M3	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U
Carbon Tetrachloride	UG/M3	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Chlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Chloroethane	UG/M3	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U
Chloroform	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Chloromethane	UG/M3	0.52 U	0.52 U	0.52 U	0.59	0.52 U
Cyclohexane	UG/M3	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
Dibromochloromethane	UG/M3	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Dichlorodifluoromethane	UG/M3	2.0	2.1	2.0	2.0	2.0
Ethylbenzene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Isopropylbenzene (Cumene)	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
m&p-Xylene	UG/M3	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Methyl acetate	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	0.74 U	2.6	2.6	1.3	2.0
Methyl tert-butyl ether	UG/M3	0.90 U	0.90 U	0.90 U	0.90 U	0.90 U
Methylcyclohexane	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
Methylene Chloride	UG/M3	3.5 U	3.5 U	3.5 U	3.5 U	3.8
o-Xylene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Styrene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Tetrachloroethene	UG/M3	1,500	200	690	1,200	1,400
Toluene	UG/M3	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		**MPE-06**	**MPE-07**	**MPE-08**	**MPE-09**	**MPE-10**
Sample ID		**MPE-06**	**MPE-07**	**MPE-08**	**MPE-09**	**MPE-10**
Matrix		**Gas Exhaust**	**Gas Exhaust**	**Gas Exhaust**	**Gas Exhaust**	**Gas Exhaust**
Depth Interval (ft)		-	-	-	-	-
Date Sampled		**05/18/10**	**05/18/10**	**05/18/10**	**05/18/10**	**05/18/10**
Parameter	**Units**					
Volatile Organic Compounds						
Trichloroethene	UG/M3	790	38	440	500	210
Trichlorofluoromethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Vinyl Chloride	UG/M3	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-11	MPE-12	MPE-13	MPE-14	MPE-15
Sample ID		MPE-11	MPE-12	MPE-13	MPE-14	MPE-15
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
1,1,2,2-Tetrachloroethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
1,1,2-Trichloroethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
1,1-Dichloroethane	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	UG/M3	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U
1,2,4-Trichlorobenzene	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
1,2-Dibromo-3-chloropropane	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
1,2-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichloroethane	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (cis)	UG/M3	13	11	15	5.9	3.0
1,2-Dichloroethene (trans)	UG/M3	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U
1,2-Dichloropropane	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Dichloropropene (cis)	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,3-Dichloropropene (trans)	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,4-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
2-Hexanone	UG/M3	1.1	1.0 U	1.0 U	2.7	1.0 U
4-Methyl-2-Pentanone	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	UG/M3	58 U	31 U	19 U	81	17 U
Benzene	UG/M3	3.0	0.80 U	0.83	0.80 U	0.80 U
Bromodichloromethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-11	MPE-12	MPE-13	MPE-14	MPE-15
Sample ID		MPE-11	MPE-12	MPE-13	MPE-14	MPE-15
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/M3	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Bromomethane	UG/M3	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U
Carbon Disulfide	UG/M3	0.78 U	0.86	0.78 U	0.78 U	0.78 U
Carbon Tetrachloride	UG/M3	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Chlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Chloroethane	UG/M3	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U
Chloroform	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Chloromethane	UG/M3	0.88	1.1	0.83	0.74	0.52 U
Cyclohexane	UG/M3	0.86 U	0.86 U	0.86 U	0.86 U	0.86 U
Dibromochloromethane	UG/M3	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Dichlorodifluoromethane	UG/M3	2.1	2.0	2.1	1.6	2.2
Ethylbenzene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Isopropylbenzene (Cumene)	UG/M3	5.6	3.1 U	3.1 U	3.1 U	3.1 U
m&p-Xylene	UG/M3	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Methyl acetate	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	13	5.5	5.5	16	4.3 U
Methyl tert-butyl ether	UG/M3	0.90 U	0.90 U	0.90 U	0.90 U	0.90 U
Methylcyclohexane	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
Methylene Chloride	UG/M3	13	3.5 U	3.5 U	7.5	3.5 U
o-Xylene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Styrene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Tetrachloroethene	UG/M3	1,200	990	1,300	270	510
Toluene	UG/M3	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-11	MPE-12	MPE-13	MPE-14	MPE-15
Sample ID		MPE-11	MPE-12	MPE-13	MPE-14	MPE-15
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	Units					
Volatile Organic Compounds						
Trichloroethene	UG/M3	630	330	310	140	99
Trichlorofluoromethane	UG/M3	1.7	1.4 U	1.4 U	1.4 U	1.4 U
Vinyl Chloride	UG/M3	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-16	MPE-17	MPE-18	VPCAS-2
Sample ID		MPE-16	MPE-17	MPE-18	AS-Effluent
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10
Parameter	**Units**				
Volatile Organic Compounds					
1,1,1-Trichloroethane	UG/M3	1.6	1.4 U	1.4 U	440
1,1,2,2-Tetrachloroethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U
1,1,2-Trichloroethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U
1,1-Dichloroethane	UG/M3	1.0 U	1.0 U	1.0 U	130
1,1-Dichloroethene	UG/M3	0.99 U	0.99 U	0.99 U	8.6
1,2,4-Trichlorobenzene	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U
1,2-Dibromo-3-chloropropane	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	1.9 U	1.9 U	1.9 U	1.9 U
1,2-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichloroethane	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (cis)	UG/M3	19	1.7	28	750
1,2-Dichloroethene (trans)	UG/M3	0.99 U	0.99 U	0.99 U	2.6
1,2-Dichloropropane	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U
1,3-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Dichloropropene (cis)	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U
1,3-Dichloropropene (trans)	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U
1,4-Dichlorobenzene	UG/M3	1.5 U	1.5 U	1.5 U	1.5 U
2-Hexanone	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-Pentanone	UG/M3	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	UG/M3	14 U	9.2 U	14 U	25 U
Benzene	UG/M3	1.4	0.80 U	0.80 U	19
Bromodichloromethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-16	MPE-17	MPE-18	VPCAS-2
Sample ID		MPE-16	MPE-17	MPE-18	AS-Effluent
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10
Parameter	**Units**				
Volatile Organic Compounds					
Bromoform	UG/M3	2.6 U	2.6 U	2.6 U	2.6 U
Bromomethane	UG/M3	0.97 U	0.97 U	0.97 U	0.97 U
Carbon Disulfide	UG/M3	0.78 U	0.78 U	0.78 U	0.78 U
Carbon Tetrachloride	UG/M3	1.6 U	1.6 U	1.6 U	1.6 U
Chlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U
Chloroethane	UG/M3	0.66 U	0.66 U	0.66 U	0.66 U
Chloroform	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U
Chloromethane	UG/M3	0.52 U	0.75	0.52 U	1.0
Cyclohexane	UG/M3	0.86 U	0.86 U	0.86 U	0.86 U
Dibromochloromethane	UG/M3	2.1 U	2.1 U	2.1 U	2.1 U
Dichlorodifluoromethane	UG/M3	2.1	2.2	2.3	2.2
Ethylbenzene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U
Isopropylbenzene (Cumene)	UG/M3	3.1 U	3.1 U	3.1 U	22
m&p-Xylene	UG/M3	2.2 U	2.2 U	2.2 U	2.2 U
Methyl acetate	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	3.3 U	2.4 U	2.5 U	5.0 U
Methyl tert-butyl ether	UG/M3	0.90 U	0.90 U	0.90 U	0.90 U
Methylcyclohexane	UG/M3	3.1 U	3.1 U	3.1 U	3.1 U
Methylene Chloride	UG/M3	3.5 U	3.5 U	3.5 U	5.9
o-Xylene	UG/M3	1.1 U	1.1 U	1.1 U	1.5
Styrene	UG/M3	1.1 U	1.1 U	1.1 U	1.1 U
Tetrachloroethene	UG/M3	2,600	86	840	8,500
Toluene	UG/M3	0.94 U	0.94 U	0.94 U	3.6

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 1
VALIDATED AIR SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-16	MPE-17	MPE-18	VPCAS-2
Sample ID		MPE-16	MPE-17	MPE-18	AS-Effluent
Matrix		Gas Exhaust	Gas Exhaust	Gas Exhaust	Gas Exhaust
Depth Interval (ft)		-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10
Parameter	Units				
Volatile Organic Compounds					
Trichloroethene	UG/M3	2,800	19	59	3,300
Trichlorofluoromethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U
Vinyl Chloride	UG/M3	0.64 U	0.64 U	0.64 U	21

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		GEW-01	GPW-01	GPW-02	MPE-01	MPE-02
Sample ID		GEW-1	GPW-01	GPW-02	MPE-01	MPE-02
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/17/10	05/18/10	05/17/10
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	690 D	5.0 U	5.0 U	37	24
1,1,2,2-Tetrachloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	UG/L	240 DJ	5.0 U	5.0 U	180	11
1,1-Dichloroethene	UG/L	12	5.0 U	5.0 U	130	6.9
1,2,4-Trichlorobenzene	UG/L	5.0 UJ	5.0 UJ	5.0 U	5.0 UJ	5.0 U
1,2-Dibromo-3-chloropropane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethene (cis)	UG/L	570 D	23	45	470 D	45
1,2-Dichloroethene (trans)	UG/L	2.6 J	5.0 U	5.0 U	2.6 J	5.0 U
1,2-Dichloropropane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (cis)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (trans)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	UG/L	9.0 J	R	R	R	10 J
Benzene	UG/L	1.9 J	5.0 U	5.0 U	6.0	5.0 U
Bromodichloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		GEW-01	GPW-01	GPW-02	MPE-01	MPE-02
Sample ID		GEW-1	GPW-01	GPW-02	MPE-01	MPE-02
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/17/10	05/18/10	05/17/10
Parameter	Units					
Volatile Organic Compounds						
Bromoform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Bromomethane	UG/L	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 UJ
Carbon Disulfide	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	UG/L	5.0 UJ	5.0 UJ	5.0 U	5.0 UJ	5.0 U
Cyclohexane	UG/L	5.0 U	5.0 U	5.0 U	1.8 J	5.0 U
Dibromochloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	UG/L	5.0 UJ	5.0 UJ	5.0 U	5.0 UJ	5.0 U
Ethylbenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene (Cumene)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl acetate	UG/L	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 UJ
Methyl Ethyl Ketone (2-Butanone)	UG/L	25	5.0 U	R	6.5	R
Methyl tert-butyl ether	UG/L	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 UJ
Methylcyclohexane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	UG/L	5,500 D	35	670 D	1,400 D	2,900 D
Toluene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Trichloroethene	UG/L	3,000 D	410 D	2,400 D	3,600 D	400 D
Trichlorofluoromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		GEW-01	GPW-01	GPW-02	MPE-01	MPE-02
Sample ID		GEW-1	GPW-01	GPW-02	MPE-01	MPE-02
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/17/10	05/18/10	05/17/10
Parameter	Units					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	5.0 U	5.0 U	5.0 U	1.5 J	5.0 U
Xylene (total)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-03	MPE-04	MPE-05	MPE-06	MPE-07
Sample ID		MPE-03	MPE-04	MPE-05	MPE-06	MPE-07
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/17/10	05/17/10	05/17/10	05/17/10	05/17/10
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	600 D	6,300 D	48	1,200 D	7.6
1,1,2,2-Tetrachloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	UG/L	5.0 U	2.8 J	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	UG/L	180	1,100 D	22	450 D	11
1,1-Dichloroethene	UG/L	50	240 DJ	5.0 J	65	5.0 U
1,2,4-Trichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	UG/L	5.0 U	1.4 J	5.0 U	5.0 U	5.0 U
1,2-Dichloroethene (cis)	UG/L	200 DJ	750 D	180	330 D	24
1,2-Dichloroethene (trans)	UG/L	1.3 J	3.2 J	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (cis)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (trans)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	UG/L	23 J	16 J	R	R	R
Benzene	UG/L	1.9 J	7.0	5.0 U	3.8 J	5.0 U
Bromodichloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-03	MPE-04	MPE-05	MPE-06	MPE-07
Sample ID		MPE-03	MPE-04	MPE-05	MPE-06	MPE-07
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/17/10	05/17/10	05/17/10	05/17/10	05/17/10
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Bromomethane	UG/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U
Carbon Disulfide	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	UG/L	5.0 U	2.6 J	5.0 U	5.0 U	5.0 U
Chloroform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	UG/L	5.0 U	38	5.0 U	5.0 U	5.0 U
Dibromochloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ
Ethylbenzene	UG/L	5.0 U	23	5.0 U	5.0 U	5.0 U
Isopropylbenzene (Cumene)	UG/L	5.0 U	1.8 J	5.0 U	5.0 U	5.0 U
Methyl acetate	UG/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	R	R	R	R
Methyl tert-butyl ether	UG/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U
Methylcyclohexane	UG/L	5.0 U	27	5.0 U	5.0 U	5.0 U
Methylene Chloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	UG/L	5,700 D	12,000 D	1,300 D	1,800 D	95
Toluene	UG/L	2.4 J	96	5.0 U	5.0 U	5.0 U
Trichloroethene	UG/L	3,700 D	9,900 D	530 D	3,700 D	130
Trichlorofluoromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-03	MPE-04	MPE-05	MPE-06	MPE-07
Sample ID		MPE-03	MPE-04	MPE-05	MPE-06	MPE-07
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/17/10	05/17/10	05/17/10	05/17/10	05/17/10
Parameter	**Units**					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	5.0 U	2.6 J	5.0 U	5.0 U	5.0 U
Xylene (total)	UG/L	5.0 U	140	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-08	MPE-11	MPE-12	MPE-13	MPE-14
Sample ID		MPE-08	MPE-11	MPE-12	MPE-13	MPE-14
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/17/10	05/17/10	05/17/10	05/18/10	05/18/10
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	12	9.5	5.0 U	1.4 J	40 U
1,1,2,2-Tetrachloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,1,2-Trichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,1-Dichloroethane	UG/L	11	2.0 J	5.0 U	1.1 J	40 U
1,1-Dichloroethene	UG/L	1.4 J	5.0 U	5.0 U	5.0 U	40 U
1,2,4-Trichlorobenzene	UG/L	5.0 U	5.0 UJ	5.0 UJ	5.0 UJ	40 UJ
1,2-Dibromo-3-chloropropane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,2-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,2-Dichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,2-Dichloroethene (cis)	UG/L	67	9.4	5.0 U	50	71
1,2-Dichloroethene (trans)	UG/L	5.0 U	5.0 U	5.0 U	1.6 J	40 U
1,2-Dichloropropane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,3-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,3-Dichloropropene (cis)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,3-Dichloropropene (trans)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
1,4-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
2-Hexanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
4-Methyl-2-Pentanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Acetone	UG/L	R	12 J	R	R	R
Benzene	UG/L	3.1 J	5.0 U	5.0 U	5.0 U	40 U
Bromodichloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-08	MPE-11	MPE-12	MPE-13	MPE-14
Sample ID		MPE-08	MPE-11	MPE-12	MPE-13	MPE-14
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/17/10	05/17/10	05/17/10	05/18/10	05/18/10
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Bromomethane	UG/L	5.0 UJ	5.0 U	5.0 U	5.0 U	40 U
Carbon Disulfide	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Carbon Tetrachloride	UG/L	5.0 U	1.5 J	5.0 U	5.0 U	40 U
Chlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Chloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Chloroform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Chloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 UJ	40 U
Cyclohexane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Dibromochloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Dichlorodifluoromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 UJ	40 U
Ethylbenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Isopropylbenzene (Cumene)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Methyl acetate	UG/L	5.0 UJ	5.0 UJ	5.0 U	5.0 U	40 U
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	5.0 U	5.0 U	5.0 U	600
Methyl tert-butyl ether	UG/L	5.0 UJ	5.0 U	5.0 U	5.0 U	40 U
Methylcyclohexane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Methylene Chloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Styrene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Tetrachloroethene	UG/L	2,700 D	13,000 D	130	4,100 D	40 U
Toluene	UG/L	5.0 U	1.0 J	5.0 U	5.0 U	40 U
Trichloroethene	UG/L	2,600 D	25,000 D	65	2,500 D	40 U
Trichlorofluoromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-08	MPE-11	MPE-12	MPE-13	MPE-14
Sample ID		MPE-08	MPE-11	MPE-12	MPE-13	MPE-14
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/17/10	05/17/10	05/17/10	05/18/10	05/18/10
Parameter	**Units**					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U
Xylene (total)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	40 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-16	MPE-17	MW-01	MW-01A	MW-03
Sample ID		MPE-16	MPE-17	MW-01	MW-01A	MW-03
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	280 J	100 U	7.5	5.0 U	1.5 J
1,1,2,2-Tetrachloroethane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	UG/L	4.2 J	100 U	1.0 J	5.0 U	5.0 U
1,1-Dichloroethene	UG/L	6.2	100 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	UG/L	5.0 UJ	100 UJ	5.0 UJ	5.0 UJ	5.0 UJ
1,2-Dibromo-3-chloropropane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethene (cis)	UG/L	190	98 J	81	5.0 U	7.9
1,2-Dichloroethene (trans)	UG/L	2.6 J	100 U	1.5 J	5.0 U	5.0 U
1,2-Dichloropropane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (cis)	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (trans)	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
2-Hexanone	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	UG/L	5.0 U	100 U	5.0 U	3.9 J	5.0 U
Acetone	UG/L	R	530 J	R	R	R
Benzene	UG/L	2.4 J	100 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-16	MPE-17	MW-01	MW-01A	MW-03
Sample ID		MPE-16	MPE-17	MW-01	MW-01A	MW-03
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	**Units**					
Volatile Organic Compounds						
Bromoform	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Bromomethane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Chloroethane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Chloroform	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Chloromethane	UG/L	5.0 UJ	100 U	5.0 UJ	5.0 U	5.0 UJ
Cyclohexane	UG/L	2.1 J	100 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	UG/L	5.0 UJ	100 U	5.0 UJ	5.0 U	5.0 UJ
Ethylbenzene	UG/L	6.3	100 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene (Cumene)	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Methyl acetate	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Methyl Ethyl Ketone (2-Butanone)	UG/L	5.1	2,600	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Styrene	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	UG/L	81,000 D	100 U	5,000 D	5.0 U	1,600 D
Toluene	UG/L	26	100 U	5.0 U	5.0 U	5.0 U
Trichloroethene	UG/L	4,800 D	100 U	490 D	5.0 U	480 D
Trichlorofluoromethane	UG/L	5.0 U	100 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MPE-16	MPE-17	MW-01	MW-01A	MW-03
Sample ID		MPE-16	MPE-17	MW-01	MW-01A	MW-03
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/18/10	05/18/10	05/18/10	05/18/10
Parameter	Units					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	9.7	360	5.0 U	5.0 U	5.0 U
Xylene (total)	UG/L	31	100 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Sample ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/17/10	05/17/10	05/17/10	05/17/10
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	UG/L	3.4 J	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	UG/L	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U
1,2-Dibromo-3-chloropropane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethene (cis)	UG/L	26	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethene (trans)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (cis)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (trans)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	UG/L	R	R	R	R	R
Benzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ
Bromodichloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Sample ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/17/10	05/17/10	05/17/10	05/17/10
Parameter	Units					
Volatile Organic Compounds						
Bromoform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Bromomethane	UG/L	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 UJ
Carbon Disulfide	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	UG/L	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	UG/L	5.0 UJ	5.0 U	5.0 UJ	5.0 U	5.0 U
Ethylbenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene (Cumene)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl acetate	UG/L	5.0 U	5.0 UJ	5.0 U	5.0 UJ	5.0 UJ
Methyl Ethyl Ketone (2-Butanone)	UG/L	5.0 U	R	R	5.0 U	R
Methyl tert-butyl ether	UG/L	5.0 U	3.1 J	5.0 U	5.0 U	5.0 UJ
Methylcyclohexane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	UG/L	100	5.0 U	5.0 U	5.0 U	5.0 U
Toluene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Trichloroethene	UG/L	130	5.0 U	5.0 U	2.0 J	5.0 U
Trichlorofluoromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Sample ID		MW-03C	MW-04	MW-05	MW-06	MW-08K
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/18/10	05/17/10	05/17/10	05/17/10	05/17/10
Parameter	Units					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Xylene (total)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Sample ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/17/10	05/17/10	05/17/10	05/17/10	05/17/10
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	UG/L	5.0 U	5.0 U	5.0 U	2.0 J	5.0 U
1,1-Dichloroethene	UG/L	5.0 U	5.0 U	5.0 U	1.6 J	5.0 U
1,2,4-Trichlorobenzene	UG/L	5.0 U	5.0 UJ	5.0 U	5.0 UJ	5.0 UJ
1,2-Dibromo-3-chloropropane	UG/L	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	UG/L	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethene (cis)	UG/L	5.0 U	5.0 U	5.0 U	51	1.7 J
1,2-Dichloroethene (trans)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	UG/L	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (cis)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropene (trans)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	UG/L	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
2-Hexanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	UG/L	R	R	R	R	R
Benzene	UG/L	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Sample ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/17/10	05/17/10	05/17/10	05/17/10	05/17/10
Parameter	Units					
Volatile Organic Compounds						
Bromoform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Bromomethane	UG/L	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Cyclohexane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	UG/L	5.0 U	5.0 UJ	5.0 UJ	5.0 U	5.0 U
Ethylbenzene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene (Cumene)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl acetate	UG/L	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	R	R	5.0 U	5.0 U
Methyl tert-butyl ether	UG/L	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
Methylcyclohexane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Toluene	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Trichloroethene	UG/L	5.0 U	5.0 U	5.0 U	770 D	7.3
Trichlorofluoromethane	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Sample ID		MW-08S	MW-09K	MW-09S	MW-10K	MW-10S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		05/17/10	05/17/10	05/17/10	05/17/10	05/17/10
Parameter	**Units**					
Volatile Organic Compounds						
Vinyl Chloride	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Xylene (total)	UG/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MW-11S
Sample ID		MW-11S
Matrix		Groundwater
Depth Interval (ft)		-
Date Sampled		05/17/10
Parameter	Units	
Volatile Organic Compounds		
1,1,1-Trichloroethane	UG/L	5.0 U
1,1,2,2-Tetrachloroethane	UG/L	5.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5.0 U
1,1,2-Trichloroethane	UG/L	5.0 U
1,1-Dichloroethane	UG/L	5.0 U
1,1-Dichloroethene	UG/L	5.0 U
1,2,4-Trichlorobenzene	UG/L	5.0 U
1,2-Dibromo-3-chloropropane	UG/L	5.0 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5.0 U
1,2-Dichlorobenzene	UG/L	5.0 U
1,2-Dichloroethane	UG/L	5.0 U
1,2-Dichloroethene (cis)	UG/L	5.0 U
1,2-Dichloroethene (trans)	UG/L	5.0 U
1,2-Dichloropropane	UG/L	5.0 U
1,3-Dichlorobenzene	UG/L	5.0 U
1,3-Dichloropropene (cis)	UG/L	5.0 U
1,3-Dichloropropene (trans)	UG/L	5.0 U
1,4-Dichlorobenzene	UG/L	5.0 U
2-Hexanone	UG/L	5.0 U
4-Methyl-2-Pentanone	UG/L	5.0 U
Acetone	UG/L	R
Benzene	UG/L	5.0 U
Bromodichloromethane	UG/L	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MW-11S
Sample ID		MW-11S
Matrix		Groundwater
Depth Interval (ft)		-
Date Sampled		05/17/10
Parameter	Units	
Volatile Organic Compounds		
Bromoform	UG/L	5.0 U
Bromomethane	UG/L	5.0 UJ
Carbon Disulfide	UG/L	5.0 U
Carbon Tetrachloride	UG/L	5.0 U
Chlorobenzene	UG/L	5.0 U
Chloroethane	UG/L	5.0 U
Chloroform	UG/L	5.0 U
Chloromethane	UG/L	5.0 U
Cyclohexane	UG/L	5.0 U
Dibromochloromethane	UG/L	5.0 U
Dichlorodifluoromethane	UG/L	5.0 U
Ethylbenzene	UG/L	5.0 U
Isopropylbenzene (Cumene)	UG/L	5.0 U
Methyl acetate	UG/L	5.0 UJ
Methyl Ethyl Ketone (2-Butanone)	UG/L	R
Methyl tert-butyl ether	UG/L	5.0 UJ
Methylcyclohexane	UG/L	5.0 U
Methylene Chloride	UG/L	5.0 U
Styrene	UG/L	5.0 U
Tetrachloroethene	UG/L	5.0 U
Toluene	UG/L	5.0 U
Trichloroethene	UG/L	5.0 U
Trichlorofluoromethane	UG/L	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 2
VALIDATED GROUNDWATER SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		MW-11S
Sample ID		MW-11S
Matrix		Groundwater
Depth Interval (ft)		-
Date Sampled		05/17/10
Parameter	Units	
Volatile Organic Compounds		
Vinyl Chloride	UG/L	5.0 U
Xylene (total)	UG/L	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

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[LOGDATE] > #5/01/2010# AND [MATRIX] <> 'GS' AND ([LOCID] <> 'AS-EFF' AND [LOCID] <> 'AS-INF') AND [SACODE] <> 'TB'

TABLE 3
VALIDATED FIELD QC SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		FIELDQC	FIELDQC
Sample ID		TRIP BLANK	TRIP BLANK
Matrix		Groundwater	Groundwater
Depth Interval (ft)		-	-
Date Sampled		05/17/10	05/18/10
Parameter	**Units**	Trip Blank (1-1)	Trip Blank (1-1)
Volatile Organic Compounds			
1,1,1-Trichloroethane	UG/L	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	UG/L	5.0 U	5.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5.0 U	5.0 U
1,1,2-Trichloroethane	UG/L	5.0 U	5.0 U
1,1-Dichloroethane	UG/L	5.0 U	5.0 U
1,1-Dichloroethene	UG/L	5.0 U	5.0 U
1,2,4-Trichlorobenzene	UG/L	5.0 U	5.0 UJ
1,2-Dibromo-3-chloropropane	UG/L	5.0 U	5.0 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/L	5.0 U	5.0 U
1,2-Dichlorobenzene	UG/L	5.0 U	5.0 U
1,2-Dichloroethane	UG/L	5.0 U	5.0 U
1,2-Dichloroethene (cis)	UG/L	5.0 U	5.0 U
1,2-Dichloroethene (trans)	UG/L	5.0 U	5.0 U
1,2-Dichloropropane	UG/L	5.0 U	5.0 U
1,3-Dichlorobenzene	UG/L	5.0 U	5.0 U
1,3-Dichloropropene (cis)	UG/L	5.0 U	5.0 U
1,3-Dichloropropene (trans)	UG/L	5.0 U	5.0 U
1,4-Dichlorobenzene	UG/L	5.0 U	5.0 U
2-Hexanone	UG/L	5.0 U	5.0 U
4-Methyl-2-Pentanone	UG/L	5.0 U	5.0 U
Acetone	UG/L	R	R
Benzene	UG/L	5.0 UJ	5.0 U
Bromodichloromethane	UG/L	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 3
VALIDATED FIELD QC SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		FIELDQC	FIELDQC
Sample ID		TRIP BLANK	TRIP BLANK
Matrix		Groundwater	Groundwater
Depth Interval (ft)		-	-
Date Sampled		05/17/10	05/18/10
Parameter	Units	Trip Blank (1-1)	Trip Blank (1-1)
Volatile Organic Compounds			
Bromoform	UG/L	5.0 U	5.0 U
Bromomethane	UG/L	5.0 UJ	5.0 U
Carbon Disulfide	UG/L	5.0 U	5.0 U
Carbon Tetrachloride	UG/L	5.0 U	5.0 U
Chlorobenzene	UG/L	5.0 U	5.0 U
Chloroethane	UG/L	5.0 U	5.0 U
Chloroform	UG/L	5.0 U	5.0 U
Chloromethane	UG/L	5.0 U	5.0 UJ
Cyclohexane	UG/L	5.0 U	5.0 U
Dibromochloromethane	UG/L	5.0 U	5.0 U
Dichlorodifluoromethane	UG/L	5.0 U	5.0 UJ
Ethylbenzene	UG/L	5.0 U	5.0 U
Isopropylbenzene (Cumene)	UG/L	5.0 U	5.0 U
Methyl acetate	UG/L	5.0 UJ	5.0 U
Methyl Ethyl Ketone (2-Butanone)	UG/L	R	5.0 U
Methyl tert-butyl ether	UG/L	5.0 UJ	5.0 U
Methylcyclohexane	UG/L	5.0 U	5.0 U
Methylene Chloride	UG/L	5.0 U	5.0 U
Styrene	UG/L	5.0 U	5.0 U
Tetrachloroethene	UG/L	5.0 U	5.0 U
Toluene	UG/L	5.0 U	5.0 U
Trichloroethene	UG/L	5.0 U	5.0 U
Trichlorofluoromethane	UG/L	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

Detection Limits shown are PQL

TABLE 3
VALIDATED FIELD QC SAMPLE RESULTS
MAY 2010
DINABURG DISTRIBUTING SITE

Location ID		FIELDQC	FIELDQC
Sample ID		TRIP BLANK	TRIP BLANK
Matrix		Groundwater	Groundwater
Depth Interval (ft)		-	-
Date Sampled		05/17/10	05/18/10
Parameter	Units	Trip Blank (1-1)	Trip Blank (1-1)
Volatile Organic Compounds			
Vinyl Chloride	UG/L	5.0 U	5.0 U
Xylene (total)	UG/L	5.0 U	5.0 U

Flags assigned during chemistry validation are shown.

MADE BY: AMK 7/6/10
CHECKED BY: MEB 7/9/10

TABLE 1
2008 GEOPROBE SAMPLING
COMPARISON TO UNRESTRICTED USE CLEANUO OBJECTIVES

COMPOUND	UNRESTRICTED USE OBJECTIVE (microg/kg)	DETECTED CONCENTRATION(microg/kg)							
		08GP01	08GP02	08GP03	08GP04	08GP05	08GP06	08GP07	08GP08
Sample depth (bgs)		7'-8'	7'-8'	7'-8'	10'-11'	11'-12'	6'-7'	10'-11'	0.4'-1'
1,1,1-trichloroethane	680							480	
1,2-dichloroethene(cis)	250							780	290
Acetone	50								
Cyclohexane	NV							3,500	
Ethylbenzene	1,000							1,500	
Isoproplybenzene	NV							480	
Methylcyclohexane	NV							16,000	
Methylene Chloride	50		6.6	8.5	6.3	5.8			42
Tetrachloroethene	1,300	12,000	88	37	170	170	11,000	39,000	1,100
Toluene	700								
Trichloroethene	470	1,500	6.6	8.3	35	17		3,300	100
Xylene	260							18,000	

COMPOUND	UNRESTRICTED USE OBJECTIVE (microg/kg)	DETECTED CONCENTRATION(microg/kg)							
		08GP10	08GP11	08GP12	08GP14	08GP15	08GP16	08GP17	08GP18
Sample depth (bgs)		4'-5'	9'-10'	6'-7'	6'-7'	10'-11'	9'-10'	11'-12'	8'-9'
1,1,1-trichloroethane	680								
1,2-dichloroethene(cis)	250								
Acetone	50			6.2	8.1				5.1
Cyclohexane	NV								
Ethylbenzene	1,000								
Isoproplybenzene	NV								
Methylcyclohexane	NV								
Methylene Chloride	50			7.4	9.1				
Tetrachloroethene	1,300	26	41	35	170	4,500	360	32,000	
Toluene	700				1.4				
Trichloroethene	470	8.2		13	51		31	1,300	
Xylene	260							340	

COMPOUND	UNRESTRICTED USE OBJECTIVE (microg/kg)	DETECTED CONCENTRATION(microg/kg)							
		08GP19	08GP19d	08GP20	08GP22	08GP23	08GP24	08GP25	08GP26
Sample depth (bgs)		8'-9'	8'-9'	10'-11'	9'-10'	11'-12'	10'-12'	7'-8'	11'-12'
1,1,1-trichloroethane	680								
1,2-dichloroethene(cis)	250								
Acetone	50								
Cyclohexane	NV								
Ethylbenzene	1,000								
Isoproplybenzene	NV								
Methylcyclohexane	NV								
Methylene Chloride	50								
Tetrachloroethene	1,300	170,000	310,000	3,600	8,500	5,900	15,000	38,000	13,000
Toluene	700								
Trichloroethene	470	22,000	21,000	5,300		1,800	2,000	300	2,100
Xylene	260								

NV = No Value
Gray shading indicates that concentration exceeds the cleanup objective.
Blank cells indicate that the compound was not detected.

TABLE 1
2008 GEOPROBE SAMPLING
COMPARISON TO UNRESTRICTED USE CLEANUP OBJECTIVES

COMPOUND	UNRESTRICTED USE OBJECTIVE (microg/kg)	DETECTED CONCENTRATION(microg/kg)							
		08GP27	08GP28	08GP29	08GP30	08GP31	08GP32	08GP33	08GP34
Sample depth (bgs)		10'-12'	7'-8'	7'-8'	10'-11'	10'-11'	7'-8'	7'-8'	11'-12'
1,1,1-trichloroethane	680								
1,2-dichloroethene(cis)	250								
Acetone	50								
Cyclohexane	NV								
Ethylbenzene	1,000								
Isoproplybenzene	NV								
Methylcyclohexane	NV								
Methylene Chloride	50								
Tetrachloroethene	1,300	22,000	1,400	1,600	13,000	24,000	4,800	1,300	3,900
Toluene	700		25	26				16	
Trichloroethene	470	2,000	42	170	6,100	1,900	290	270	530
Xylene	260								

COMPOUND	UNRESTRICTED USE OBJECTIVE (microg/kg)	DETECTED CONCENTRATION(microg/kg)							
		08GP35	08GP36	08GP37	08GP37d	08GP38	08GP39	08GP40	
Sample depth (bgs)		11'-12'	11'-12'	11'-12'	11'-12'	11'-12'	10'-11'	11'-12'	
1,1,1-trichloroethane	680								
1,2-dichloroethene(cis)	250								
Acetone	50				9				
Cyclohexane	NV								
Ethylbenzene	1,000								
Isoproplybenzene	NV								
Methylcyclohexane	NV								
Methylene Chloride	50				4.1	4.6	4.6	3.7	
Tetrachloroethene	1,300		2,400	160	99	4.5	9.6	12	
Toluene	700	2.9							
Trichloroethene	470	310	820	570	260	9	26	77	
Xylene	260								

NV = No Value
Gray shading indicates that concentration exceeds the cleanup objective.
Blank cells indicate that the compound was not detected.

TABLE A-1
2008 GEOPROBE SAMPLING
PID READINGS

SAMPLE INTERVAL	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)
	08GP01	**08GP01**	**08GP02**	**08GP02**	**08GP03**	**08GP03**	**08GP04**	**08GP04**	**08GP05**	**08GP05**	**08GP06**	**08GP06**	**08GP07**	**08GP07**
0 to 1 feet bgs	1.9		0.3		0.2		0.3		0.7		0.4		1.3	
1 to 2 feet bgs	1.9		0.3		0.2		0.3		0.7		0.4		1.3	
2 to 3 feet bgs	0.7		0.3		0.2		0.3		0.4		0.4		0.8	
3 to 4 feet bgs	0.4		0.3		0.2		0.3		0.4		0.4		0.8	
4 to 5 feet bgs	1.8		0.3		0.2		0.3		0		0.5		0.5	
5 to 6 feet bgs	1.8		6.6		0.2		0.4		0.5		1.0		2.0	
6 to 7 feet bgs	0.7		3.0		0.3		0.5		0.5		152.0	11,000	156.0	
7 to 8 feet bgs	25.7	12,000	12.4	88	0.5	37	0.3		1		16.0		305.0	
8 to 9 feet bgs	9.0		3.0		0.2		0.4		1		3.7		12.0	
9 to 10 feet bgs	20.0		2.1		0.2		0.4		0.7		21.0		424.0	
10 to 11 feet bgs	9.0		4.0		0.3		0.5	170	1.7		81.0		621.0	39,000
11 to 12 feet bgs	7.0		2.0		0.2		0.3		3.1	170	EOB		423.0	

SAMPLE INTERVAL	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)
	08GP08	**08GP08**	**08GP10**	**08GP10**	**08GP11**	**08GP11**	**08GP12**	**08GP12**	**08GP14**	**08GP14**	**08GP15**	**08GP15**	**08GP16**	**08GP16**
0 to 1 feet bgs	65.0	1,100	1.9		0.5		0.3		0.5		0.4		0.3	
1 to 2 feet bgs	65.0		9.0		0.5		0.3		0.5		1.1		0.3	
2 to 3 feet bgs	14.0		8.0		0.2		0.5		0.5		1.2		0.2	
3 to 4 feet bgs	8.0		5.0		0.7		0.4		0.5		0.7		0.6	
4 to 5 feet bgs	16.2		14.6	26	0.3		0.4		0.5		0.3		0.1	
5 to 6 feet bgs	7.0		3.0		0.4		0.4		0.2		0.5		0.2	
6 to 7 feet bgs	2.0		2.0		0.7		1.2	35	2.4	170	1.0		0.5	
7 to 8 feet bgs	2.0		1.0		2.6		0.3		1.3		3.3		0.8	
8 to 9 feet bgs	0.7		2.0		0.6		1.1		EOB		0.4		36.0	
9 to 10 feet bgs	0.7		1.0		6.3	41	1.1				0.4		36.0	360
10 to 11 feet bgs	0.5		1.7		3.6		1.1				11.0	4,500	36.0	
11 to 12 feet bgs	2.4		0.7		4.0		1.1				7.0		EOB	

SAMPLE INTERVAL	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)
	08GP17	**08GP17**	**08GP18**	**08GP10**	**08GP19**	**08GP19**	**08GP20**	**08GP20**	**08GP22**	**08GP22**	**08GP23**	**08GP23**	**08GP24**	**08GP24**
0 to 1 feet bgs	0.4		1.6		0.6		0.6		0.6		0.3		0.2	
1 to 2 feet bgs	0.4		1.6		0.6		0.6		0.6		0.3		0.4	
2 to 3 feet bgs	0.3		0.7		2.6		27.0		1.3		0.5		0.2	
3 to 4 feet bgs	0.4		0.5		0.5		5.0		2.0		0.4		0.2	
4 to 5 feet bgs	0.5		0.5		0.5		0.8		0.2		0.4		0.1	
5 to 6 feet bgs	0.5		0.5		0.5		1.0		0.6		0.4		0.5	
6 to 7 feet bgs	0.4		0.6		0.7		3.0		0.8		0.4		2.3	
7 to 8 feet bgs	0.7		0.5		6.3		1.1		4.2		1.2		5.7	
8 to 9 feet bgs	0.5		0.6		1429.0	170,000	1.0		2		3.0		110.0	
9 to 10 feet bgs	8.0		0.6	ND	56.0		2.4		141	8,500	5.0		110.0	
10 to 11 feet bgs	5.0		0.5		151.0		46.0	3,600	40		7.0		164.0	15,000
11 to 12 feet bgs	17.0	32,000	0.5		21.0		15.6		EOB		43.0	5,900	EOB	

EOB = End of Boring

TABLE A-1
2008 GEOPROBE SAMPLING
PID READINGS

SAMPLE INTERVAL	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)
	08GP25	08GP25	08GP26	08GP26	08GP27	08GP27	08GP28	08GP28	08GP29	08GP29	08GP30	08GP30	08GP31	08GP31
0 to 1 feet bgs	0.8		0.6		0.7		0.8		0.8		0.7		0.7	
1 to 2 feet bgs	0.8		0.6		0.7		0.8		0.8		0.7		0.7	
2 to 3 feet bgs	0.7		0.7		0.7		0.7		0.7		0.6		0.5	
3 to 4 feet bgs	0.9		0.6		0.7		0.7		0.8		0.6		0.6	
4 to 5 feet bgs	2.0		0.9		0.7		0.7		0.7		1.0		0.7	
5 to 6 feet bgs	2.0		0.9		0.8		0.7		0.7		1.0		0.6	
6 to 7 feet bgs	14.0		2.9		0.7		1.0		0.8		2.3		0.7	
7 to 8 feet bgs	1801.0	38,000	2.6		0.7		1.2	1,400	1.8	1,600	1.3		2.4	
8 to 9 feet bgs	1109.0		0.7		2.0		1.1		0.7		5.1		2.0	
9 to 10 feet bgs	1109.0		65.0		28.0		1.1		0.7		80.0		5.0	
10 to 11 feet bgs	300.0		45.0		65.0	22,000	1.1		1.0		146.0	13,000	194.0	24,000
11 to 12 feet bgs	586.0		351.0	13,000	32.0		1.1		1.0		EOB		20.0	

SAMPLE INTERVAL	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)
	08GP32	08GP32	08GP33	08GP33	08GP34	08GP34	08GP35	08GP35	08GP36	08GP36	08GP37	08GP37	08GP38	08GP38
0 to 1 feet bgs	0.6		0.7		0.7		0.7		0.5		0.5		0.3	
1 to 2 feet bgs	0.6		0.7		0.7		0.7		0.5		0.5		0.3	
2 to 3 feet bgs	0.7		0.8		0.8		0.7		0.5		0.5		0.4	
3 to 4 feet bgs	0.7		0.7		0.8		0.7		0.5		0.5		0.4	
4 to 5 feet bgs	0.7		0.7		0.8		0.7		0.6		0.6		0.3	
5 to 6 feet bgs	0.7		0.7		0.8		0.7		0.6		0.6		0.3	
6 to 7 feet bgs	0.8		0.8		1.2		0.7		0.7		0.7		0.3	
7 to 8 feet bgs	2.0	4,800	2.2	1,300	0.7		0.8		0.8		0.8		0.4	
8 to 9 feet bgs	EOB		EOB		0.6		1.1		1		0.7		0.6	
9 to 10 feet bgs					0.6		1.1		0.7		0.7		0.7	
10 to 11 feet bgs					0.7		1.2		7.2		7.2		0.7	
11 to 12 feet bgs					2.2	3,900	2.1	ND	15.2	2,400	15.2	160	0.8	5

SAMPLE INTERVAL	PID (ppm)	PCE CONC. (microg/ kg)	PID (ppm)	PCE CONC. (microg/ kg)										
	08GP39	08GP39	08GP40	08GP40										
0 to 1 feet bgs	0.4		0.0											
1 to 2 feet bgs	0.4		0.0											
2 to 3 feet bgs	0.3		0.0											
3 to 4 feet bgs	0.3		0.0											
4 to 5 feet bgs	0.3		0.0											
5 to 6 feet bgs	0.3		0.0											
6 to 7 feet bgs	0.3		0.0											
7 to 8 feet bgs	0.3		0.0											
8 to 9 feet bgs	0.1		0.0											
9 to 10 feet bgs	0.4		0.0											
10 to 11 feet bgs	0.5	4.6	0.1											
11 to 12 feet bgs	EOB		0.3	3.7										

EOB = End of Boring

APPENDIX C

FIELD DATA RECORDS - 2009

SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. GS-1
Project No. 3612082107
Client NYSDEC
Site Dinaburg Distributing
Sheet No. 1 of 2
Logged By M Lounsbury
Ground Elevation 513.8
Start Date 5/6/09
Finish Date 5/6/09
Drilling Contractor GeologicNY
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.8
Casing Size ≈2"
Auger Size NA
Soil Drilled 16
Rock Drilled 0
Total Depth 16
Depth to Groundwater/Date 5.88' TOR 6/3/09
Piez ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	PI Meter Head Space	Lab Tests ID Sample
1 2 3	0.5/4.0	NA	NA	Fill 0-0.5 Concrete Fine - Coarse Sand, trace Silt, Soft, Saturated, Light Brown - Brown	SP	NA	NA	NA
4 5 6 7	UNK/4.0			Fill, Gravelly Sand, Silt, Dark Brown, Dense Fuel-like odor	GP/SP	PFD down ~~7/09~~ ~~new~~		~~GS10709~~ MHL
8 9 10 11	UNK/4.0			FILL, Gravelly Sand, Silt, Dark Brown, Dense Fuel-like odor - appears that the Soil Has been reworked Sample taken from Silt Zone at 9' - with PFD-300	GP/GM	300		GS10909
12								828103-GS10909

PFD Down MHL 5/13/09

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JR 5/12/09

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SOIL BORING LOG

Project Dina Burk Distributing	Boring/Well No. GS-1	Project No. 3612082107
Client NYS DEC	Site S. Clinton Ave, Rochester NY.	Sheet No. 2 of 2

Logged By M. Hounsbury	Ground Elevation 513.8	Start Date 5/6/09	Finish Date 5/6/09

Drilling Contractor Geologic NY	Driller's Name Joe Menzel	Rig Type Geoprobe

Drilling Method Direct Push	Protection Level D	P.I.D. (eV) 10.0	Casing Size ≈2"	Auger Size NA

Soil Drilled 16	Rock Drilled 0	Total Depth 16	Depth to Groundwater/Date 5.88' TOR 6/3/09	Piez ☒	Well ☐	Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm)		Lab Tests ID Sample
						PI Meter Field Scan	PI Meter Head Space	
		NA	NA	18-12- Fall In from above		0		
13				~~18-12- Fall In from~~ above		1	NA	
14	2.0/4.0			13-14- TILL,		20.0		
				Reddish Brown Silt, With Imbedded				GS11609
15				gravel and coarse sand.	SM/GM		-	850
16								
				Bottom of boring = 16' BGS No refusal				

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JR 5/12/09

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SOIL BORING LOG

Project Dina Burg Distributing	Boring/Well No. GS-2	Project No. 3612082107
Client NYSDEC	Site Dinaburg Distributing	Sheet No. 1 of 2

Logged By M. Lounsbury	Ground Elevation 513.9	Start Date 5/6/09	Finish Date 5/6/09

Drilling Contractor Geologic NY	Driller's Name Joe Menzel	Rig Type Geoprobe

Drilling Method Direct Push	Protection Level D	P.I.D. (eV) 10.8	Casing Size ~~[illegible]~~ 2"	Auger Size NA

Soil Drilled 16'	Rock Drilled NA	Total Depth 16'	Depth to Groundwater/Date 6.06' TOR 6/13/09	Piez ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
				6" Concrete				
	0.5/4.0	NA	NA	Very poor recovery, Dark Brown, Silt, Sludgelike, DAMP soft, Fuel-like odor	SM	0	NA	NA
4	2.5/4.0	NA	NA	Brown Silty Dense Sand, DAMP, Mixed with Fine Gravel, Sands poorly graded PID-146 at Tip - Refusal at 7.3' - move ~~out~~ over Keep Going	SM	0 ↓ 146	NA	
8	4.0/4.0	NA	NA	Till, Reddish Brown Silty Sand with Embedded coarse Sand and Gravel, Dense, DAMP w/ 1" Silt zone at 11" ~~PID overrange~~ JR PID- overrange	SW/SP	0 To 3,000	NA	GS21109 1405 828103-GS21109
12								

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JR 5/12/09

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SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. GS-2
Project No. 7612082107
Client NYSDEC
Site Dinaburg Distributing
Sheet No. 2 of 2
Logged By M. Lounsbury
Ground Elevation 513.9
Start Date 5/6/09
Finish Date 5/6/09
Drilling Contractor Geologic NY
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.8
Casing Size ≈2" ~~NA~~
Auger Size NA
Soil Drilled 16'
Rock Drilled NA
Total Depth 16'
Depth to Groundwater/Date 6.06' TOR 6/13/09
Piez ☒ Well ☐ Boring ☐

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm)		Lab Tests ID Sample
						PI Meter Field Scan	PI Meter Head Space	
	2/4.0	NA	NA	Fill; Reddish Brown Silty Sand with Embedded Coarse ~~Grave~~ Sand and Gravel, Dense, Damp * Product noted on Sluff In ~~Sleeve~~ Sleeve,	SP/SM	50 ↓ 75		GS21609 1420
16				appeared to be weathered petroleum =			828103-GS21609	
				Bottom of boring = 16' BGS No refusal				

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JR 5/12/09

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SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. GS-3
Project No. 3612082107
Client NYSDEC
Site Dinaburg Distributing
Sheet No. 1 of 2
Logged By M. Lounsbury
Ground Elevation 513.7
Start Date 5/6/09
Finish Date 5/6/09
Drilling Contractor Geologic NY
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.6
Casing Size ~~NA~~ ~2"
Auger Size NA
Soil Drilled 16'
Rock Drilled NA
Total Depth 16'
Depth to Groundwater/Date 7.16' TOR 6/3/09
Piez ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
	4.0/4.0	NA	NA	Fill, Poorly graded Sandy, Gravel, Dense Dry, Liner at 1.0' (PID 3.7) under Liner. All other PID Reading 0	SP	0 - 3.7	NA	NA
4	3.5/4.0			Fill, Poorly graded Sandy Gravel, Dense, Dry to Damp - Slight Fuel-like odor at top	SP/GP	0 385	NA MHE 5/13/09	NA
8	?/4.0			8-9 - [illegible] 9-12 - Till Reddish Brown Silty Sand with Embedded Cobble and Gravel Gravel Zone at 10' ~ 1" wide with water - PID-0	SM/SP	385 ~~3.8~~ PM TLL		GS31109 152' ~~828~~103-GS31109
12								

JR 5/12/09

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SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. GS-3
Project No. 3612082107-03.1
Client NYSDEC
Site S. Clinton Ave Rochester, NY
Sheet No. 2 of 2
Logged By M. Lounsbury
Ground Elevation 513.7
Start Date 5/6/09
Finish Date 5/6/09
Drilling Contractor Geologic NY
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push.
Protection Level D
P.I.D. (eV) 10.0
Casing Size ~2"
Auger Size NA
Soil Drilled 16'
Rock Drilled 0
Total Depth 16'
Depth to Groundwater/Date 7.16' TOR 6/3/09
Piez ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
	NA ↓ Sample Stuck In tube	NA	NA	T.L. Reddish Brown Silty Sand, with Embedded Coarse Sand and Gravel-	SW/SP	20	NA	GS31609 1535
16						528103-GS31609		
				Bottom of Boring = 16' BGS No refusal				

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JR 5/12/09

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SOIL BORING LOG

Project Dinsburg Distributing
Boring/Well No. GS-4
Project No. 8612082107
Client NYSDEC
Site Dinsburg Distributing
Sheet No. 1 of 1
Logged By M Lounsbury
Ground Elevation 513.7
Start Date 5/8/09
Finish Date 5/8/09
Drilling Contractor Geologic NY
Driller's Name Jeem Menzel
Rig Type Geoprobe
Drilling Method Direct push
Protection Level ~~D~~ D
P.I.D. (eV) 10.8
Casing Size ~~NA~~ ≈2"
Auger Size NA
Soil Drilled 16'
Rock Drilled NA
Total Depth 16'
Depth to Groundwater/Date 7.12' TOR 6/3/09
Piez ☒ Well ☐ Boring ☐

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
	4.0/40	NA ~~NA~~	NA ~~NA~~	Fill, Lower 0.3' Gravely Sand, loose, Brown, Some Silt, Damp	GP	0 0.6 1.1 0	NA	
4								
	4.0/4.0	NA	NA	Fill, ~~same as above~~ same as above	GP	0		
8								
	2.0/4.0			Till - Reddish Brown Silty Sand with Embedded Coarse Sand and Gravel Pike Sand Zone ≈ 11.0-11.3 PID-638	Till SM/GM	114 21.6 638 95		GS41169 1005
12								828103-GS41109

12-16 - Till Sample Stuck In Sleeve,
Collect Sample from bottom of Sleeve
PID-321
GS41609
1015

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JJR 5/12/09

828103-GS41609

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SOIL BORING LOG

Project Dona burg Distributing
Boring/Well No. GS-5
Project No. 3612087107
Client NYS DEC
Site Dona burg Distributing
Sheet No. 1 of 2
Logged By M. Lounsbury
Ground Elevation 513.6
Start Date 5/6/09
Finish Date 5/6/09
Drilling Contractor Geologic
Driller's Name Joe Menzel
Rig Type Geo probe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.8
Casing Size ~~2~~ 2" ~~NA~~
Auger Size NA
Soil Drilled 16'
Rock Drilled NA
Total Depth 16'
Depth to Groundwater/Date 6.78' TOR 6/3/09
Piez ☑ Well ☐ Boring ☑

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	PI Meter Head Space	Lab Tests ID Sample
	2.0/4.0	NA	NA	Fill, Liner at 1.0 Foot, Poorly Graded Sand, Gravel, Silt, Brown-Gray, Dense, Dry	Fill	0	NA	NA
4	2.5/4.0	NA	NA	4.0-7.5 - FILL - as above 7.5-8.0 - Reddish Brown Silty Sand Dense, Similar to Fill	Fill SM	0 6.8		
8	2.5/4.0	NA	NA	Fill, Reddish Brown Silty Sand with Embedded Coarse Sand and gravel Very Dense	SM/SP ~~<200~~ 0	<2000		GS5 11 09 MU
12								828103-GS5 11 09

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SOIL BORING LOG

Project: Dina burg Distributing
Boring/Well No.: GS-5
Project No.: 3612082107

Client: NYS DEC
Site: Dina burg Distributing
Sheet No. 2 of 2

Logged By: M. Lounsbury
Ground Elevation: 513.6
Start Date: 5/~~5~~ 6/09
Finish Date: 5/6/09

Drilling Contractor: Geologic NY
Driller's Name: Joe Menzel
Rig Type: GeoProbe

Drilling Method: Direct Push
Protection Level: D
P.I.D. (eV): 10.8
Casing Size: [illegible] ~~NA~~
Auger Size: NA

Soil Drilled: 16'
Rock Drilled: NA
Total Depth: 16'
Depth to Groundwater/Date: 6.78' TOR 6/3/09
Piez ☒ Well ☒ Boring ☐

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
13 14 15 16	3.0/4.0	NA	NA	Till, Reddish Brown Silty Sand, Imbedded Coarse Sand and Gravel, Dense	GM ~~GM~~ SM	>2000	NA	GS5 16 09 1710 828109-GS5 15 09
				Bottom of boring = 16' BGS No refusal				

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SOIL BORING LOG

Project Dinaburg Distributing	Boring/Well No. GS-6	Project No. 3612082107
Client NYSDEC	Site Dinaburg Distributing	Sheet No. 1 of 2

Logged By M. Lounsbury	Ground Elevation 513.5	Start Date 5/7/09	Finish Date 5/7/09
Drilling Contractor GeologicNY	Driller's Name Joe Menzel	Rig Type Geoprobe	
Drilling Method Direct Push	Protection Level D	P.I.D. (eV) 10.8	Casing Size ≈2" ~~NA~~
Auger Size NA			
Soil Drilled 16'	Rock Drilled NA	Total Depth 16'	Depth to Groundwater/Date 6.43' TOR 6/3/09

Piez ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	PI Meter Head Space	Lab Tests ID Sample
1 2 3 4	4.0/4.0	NA	NA	Fill; - Asphalt Road Cover 0 - 0.3 - Brown Silty Sand, poorly graded Gravel, wet, Dense 0.3 - 1.0 - Black gravelly Sand, Loose Damp Poorly graded, Little Fill 1.0 - 4.0 Brown Silty sand, Dense, Some Gravel, poorly graded	SP/GP SM/SP	4.0 7.0 0	NA	
5 6 7 8	4.0/4.0	NA	NA	Fill, Fine Sand, non-plastic, Medium Dense, Light Brown Little Coarse material, PID - 6.0 at Tip ~~Sheet~~	SP	0 6.0		
9 10 11 12	3.0/4.0	-	-	8-10 - Fill as above 10-10.5 - Silt zone - Saturated - PID - >2000 10.5 - 12.0 - Reddish Brown Silty Sand, with Embedded Gravel - being Denser with Depth Sweet odor noted.	~~GP~~ >2000 ~~70~~ SP/SM	0.4 >2000		GS61009 MS/MSD/Dup

828103-GS61009

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SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. GS-6
Project No. 3612082107
Client NYSDEC
Site Dinaburg Distributing
Sheet No. 2 of 2
Logged By M. Lounsbury
Ground Elevation 513.5
Start Date 5/7/09
Finish Date 5/7/09
Drilling Contractor Geologic NY
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.0
Casing Size 2"
Auger Size NA
Soil Drilled 16
Rock Drilled 0
Total Depth 16
Depth to Groundwater/Date 6.43' TOR 6/3/09
Piez ☒ Well ☐ Boring ☒

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
		NA	NA	Till-		~~433~~	NA	
13	30/40			Reddish Brown Silty Sand Dense with Embedded Coarse Sand and Gravel	SM/SP	7200		GS61509 @15'
14								
15				PID - dropped to 433 ppm at Top		433		528103-GS61509
16				Bottom of boring = 16' BGS. No Refusal				

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SOIL BORING LOG

Project: Dinaburg Distributing
Boring/Well No.: GS-7
Project No.: 3612082107
Client: NYSDEC
Site: Dinaburg Distributing
Sheet No. 1 of 2
Logged By: M. Lounsbury
Ground Elevation: 513.5
Start Date: 5/8/09
Finish Date: 5/8/09
Drilling Contractor: GeologicNY
Driller's Name: Joe Menzel
Rig Type: Geoprobe
Drilling Method: Direct Push
Protection Level: D
P.I.D. (eV): 10.8
Casing Size: ~~NA~~ ≈2"
Auger Size: NA
Soil Drilled: 16'
Rock Drilled: NA
Total Depth: 16'
Depth to Groundwater/Date: 6.31' TOR 6/3/09
Piez ☒ Well ☐ Boring ☒

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
1 2 3 4	3.0/4.0	NA	NA	FILL, 0-0.8 – Gravely Sand, Loose, Damp 0.8 – Loness 0.8-4.0 – Fine Sand, Some Silt, Slightly Plastic, Soft, Damp, Dark Brown	~~1.2~~ Fill ~~1.2~~ GM/SM ~~0~~	1.2 Fill 1.2 0	NA	
5 6 7 8	3.2/4.0	NA	NA	4.0-6.0 Fine Sand, some Silt Slightly Plastic, Soft, Damp, Dark Brown 6.0-8.0 Brown Silt with Imbedded Gravel Dense, Damp, Slightly Plastic P.I.D-22.0 AT Tip	~~0~~ SP Fill SM ~~22.0~~	0 F 220		
9 10 12	2.0/4.0	NA	NA	Reddish Brown Silt Imbedded Coarse Gravel and poorly graded Sands, Dense, plastic Till PID-337 ppm at Tip	SM/GM ~~6.7~~ Till ↓ ~~337~~	6.7 Till ~~SM~~ ↓ 337	828103-GS71209	GS71209 8-12
12								

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SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. GS-7
Project No. 3612082107
Client NYSDEC
Site S. Clinton Ave, Rochester NY
Sheet No. 2 of 2
Logged By M. Lounsbury
Ground Elevation 513.5
Start Date 5/8/09
Finish Date 5/8/09
Drilling Contractor Geologic NY
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.0
Casing Size ≈ 2"
Auger Size NA
Soil Drilled 16'
Rock Drilled 0
Total Depth 16'
Depth to Groundwater/Date 6.31' TOR 6/3/09
Piez ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm)		Lab Tests ID Sample
						PI Meter Field Scan	PI Meter Head Space	
				Till		337	NA	
13	4.0/4.0	NA	NA	Reddish Brown Silty Sand with Embedded gravel and Coarse Sand, Dense, Damp.	Till			
14					SM/GM	106	828103-GS71609	GS71609 855
15						>2000		
16						>2000		
				Bottom of boring = 16' BGS. No refusal.				

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SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. D-5-8
Project No. 3612082107
Client NYSDEC
Site Dinaburg Distributing
Sheet No. 1 of 2
Logged By M. Lounsbury
Ground Elevation 513.5
Start Date 5/7/09
Finish Date 5/7/09
Drilling Contractor GeologicNY
Driller's Name Joe Menzel
Rig Type GeoProbe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 58 10.6
Casing Size ~~NA~~ ≈2"
Auger Size NA
Soil Drilled 16
Rock Drilled NA
Total Depth 16
Depth to Groundwater/Date 6.23' TOR 6/3/09
Piez ☒ Well ☐ Boring ☑

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
1 2 3	3.0/4.0	NA	NA	FILL, ? Orchard native Cover - Gravely Sand, ~~Dense~~, Sands poorly graded Little Silt, Loose	GP/SP	18.2 20.2 0	NA	
4 5 6 7	3.0/4.0	NA	NA	FILL 4-7- Fine Sand, Some Silt, non-plastic Medium Dense, Light Brown Damp-wet 7-8- Silty/Clay- Reddish Brown- Dense Damp PID-68.0 At top	SP/SM SM	0 68		
8 9 10 11 12	?/4.0			8-12 Reddish Brown Silty Sand, with Imbedded Gravel- becoming Denser with Depth	SM/GM	8.0 186 ~~148~~ 22	828103-GS81109	GS81109 0940

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SOIL BORING LOG

Project Dinubury Distributers
Boring/Well No. GS-8
Project No. 3612082107
Client NYS DEC
Site Dinubury Distributers
Sheet No. 2 of 2
Logged By M. Lounsbury
Ground Elevation 513.5
Start Date 5/7/09
Finish Date 5/7/09
Drilling Contractor Geologic NY
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.8
Casing Size ~~NA~~ x2"
Auger Size NA
Soil Drilled 16
Rock Drilled NA
Total Depth 16'
Depth to Groundwater/Date 6.23' TOR 6/3/09
Piez ☒ Well ☐ Boring ☒

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
				Till -		28		
13	2.0/4.0	NA	NA	Reddish Brown Silty Sand with				
14				Embedded Coarse Sand and Gravel		343		828103-GS81509
				Dense, Damp - Silt Zone at 14.0				
15				PID 343		48		GS81509 916
16								

Sample leaked methanol When packed for Shipment

Bottom of boring = 16' BGS No refusal

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SOIL BORING LOG

Project: Dinaburg Distributing
Boring/Well No. GS-9
Project No. 3612087107

Client: NYSDEC
Site: Dinaburg Distributing
Sheet No. 1 of 2

Logged By: M. Lounsbury
Ground Elevation: 513.5
Start Date: 5/8/09
Finish Date: 5/8/09

Drilling Contractor: GeologicNY
Driller's Name: Joe Menzel
Rig Type: Geoprobe

Drilling Method: Direct Push
Protection Level: D
P.I.D. (eV): 10.8
Casing Size: ~~NA~~ ~2"
Auger Size: N/A

Soil Drilled: 16'
Rock Drilled: NA
Total Depth: 16'
Depth to Groundwater/Date: 6.00' JOR 6/3/09
Piez ☒ Well ☐ Boring ☑

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
1 2 3 4	4.0/4.0	NA	NA	Fill - 0-0.6 - Gravely Sand, Loose, Dry 0.6-4.0 - Silty Sand, Gravel, Silty Dark Brown Loose, non-Plastic Liner at 0.6'	GP/SP F GM	0 2.2 1.9 0	NA	
5 6 7 8	UNR/4.0			4.0-6.0 - Silty Sand, Light Brown, Dry-Wet, non-plastic, Medium Dense 6.0-8.0 - Reddish Silty Sand, Embedded Gravel and Sands - Till PID - 64 - At tip	SM/SP F Till SM/GM	0 0 5.6 64		
9 10 11 12	UNR/4.0			Till - Reddish Brown Silty Sand with Embedded Gravel and Coarse Sand	Till SM/GM	430 220 109 480 104		828103-GS91209 GS91209 0935

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SOIL BORING LOG

Project Dinaburg Distributors
Boring/Well No. GS-9
Project No. 3612082107
Client NYSDEC
Site Dinaburg Distributors
Sheet No. 2 of 2
Logged By M. Lounsbury
Ground Elevation 513.5
Start Date 5/8/09
Finish Date 5/8/09
Drilling Contractor Geologic
Driller's Name Joe Menzel
Rig Type GeoProbe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.8
Casing Size ~~NA~~ ≈2" (88)
Auger Size NA
Soil Drilled 16'
Rock Drilled 0
Total Depth 16'
Depth to Groundwater/Date 6.00' TOR 6/3/09
Piez ☑ Well ☐ Boring ☑

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
				Till		400		
13				Reddish Brown Silty Sand with Embedded coarse Sand and Gravel -	Till	533		
14						>2000		GS41509 945
15					SM/GM	733		
16						528103-GS41509		
				Bottom of boring = 16' BGS. No refusal				

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SOIL BORING LOG

Project: Dinaburg Distributing
Boring/Well No.: GS-10
Project No.: 3612082107
Client: NYS DEC
Site: Dinaburg Distributing
Sheet No. 1 of 2
Logged By: M. Lounsbury
Ground Elevation: 513.1
Start Date: 5/8/09
Finish Date: 5/8/09
Drilling Contractor: Geologic NY
Driller's Name: Joe Menzel
Rig Type: Geoprobe
Drilling Method: Direct Push
Protection Level: D
P.I.D. (eV): 10.8
Casing Size: ~~N/A~~ 2.2"
Auger Size: N/A
Soil Drilled: 16'
Rock Drilled: N/A
Total Depth: 16'
Depth to Groundwater/Date: 5.66' TOR 6/3/09
Piez ☒ Well ☐ Boring ☒

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
1 2 3	2.0/4.0	NA	NA	0-0.2 - Gravely Sand, Silty, Loose, Damp 0.3 - Liner 0.3-4.0 - Gravely Sands, Silt, Brown, Loose Damp, Wet, Little Fines	GA	0	NA	
4 5 6 7	1.0/4.0	NA	NA	Poor Recovery 4.0-7.5 - Silty Sands, Damp, Loose, Brown 7.5-8.0 - Reddish Brown Silty Sand with Some Fine gravel, Silty Damp		0 0.7		
8 9 10 11	2.0/4.0	NA	NA	TILL - Reddish Brown Silty Sand with Dispersed Coarse Sand and Gravel, Dense		2.6 22 74 26		828103-GS1012.09 GS1012.09 1025
12								

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SOIL BORING LOG

Project Dinaburg Distributing

Boring/Well No. G510

Project No. 3612083107

Client NYSDEC

Site Dinaburg Distributing

Sheet No. 2 of 2

Logged By M. Lounsbury

Ground Elevation 513.1

Start Date 5/8/09

Finish Date 5/8/09

Drilling Contractor Geologic NY

Driller's Name Joe Menzel

Rig Type Geoprobe

Drilling Method Direct Push

Protection Level D

P.I.D. (eV) 10.8

Casing Size DB ~~NA~~ ≈2"

Auger Size NA

Soil Drilled 16'

Rock Drilled NA

Total Depth 16'

Depth to Groundwater/Date 5.66' TOR 6/3/09

Piez ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
				Poor Decay			NA	
13	4.0/4.0	NA	NA	Till	SM/GM			
14				Reddish Brown Silty Sand with Imbedded Gravel, Dense	~~9.9~~	9.9		G510 1509 1035
15					~~68~~	68		
16					~~26~~	26		828103-G510 1509
				Bottom of boring = 16' BGS. No refusal.				

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SOIL BORING LOG

Project Dinaburg Distributors	Boring/Well No. GS-11	Project No. 3612082107
Client NYSDEC	Site Dinaburg Distributors	Sheet No. 1 of 2
Logged By M. Lounsbury	Ground Elevation ≈512.8 same as MW-10K	Start Date 5/5/09 / Finish Date 5/5/09
Drilling Contractor GeologicNY	Driller's Name Joe Menzel	Rig Type Geoprobe
Drilling Method Direct Push	Protection Level D / P.I.D. (eV) 10.8	Casing Size ~~NA~~ 2" / Auger Size NA
Soil Drilled 16 / Rock Drilled NA	Total Depth 16	Depth to Groundwater/Date NA Piez ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
1 2 3 4	3.0/4.0	NA	NA	0-0.3 Black organic - Topsoil		0	NA	
				0.3-0.8 Black Coarse Sand/Gravel - Loose Damp - FILL	F	0	—	
				0.8-1.6 Brown Gravelly Sand, Silty Damp - Fill	F	1.0	—	
				1.6-2.0 Fill - Sand, Silt, Sand Fine - Coarse	F			
				2.0-4.0 Sand, Fine, Some Silt, Layered, Damp Slightly Plastic, Brown	SM	0		
5 6 7 8	3.6/4.0	NA	NA	4.0-4.6 Fine Sand, Some Silt, Damp-wet, Brown, as above	SP	0		
				4.6-5.2 as above Color Change to Orange	SM			
				5.2-6.6 Silt, Plastic orange/grey Damp Dense	SM			
				~~6.6 8.0~~ [illegible] Coarse Sand, Fine Gravel				
				6.6 8.0 As above Color Change to Reddish Brown	SM			
9 10 11 12	2.0/4.0	NA	NA	8.0-12.0 Till - Reddish Brown Dense Silty Sand with Imbedded coarse Sand and Gravel, Damp	SM/GM	0 1 40		828103-GS11009
				Sample Collected from Gravel Lens				

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SOIL BORING LOG

Project: Dina bury Distributing
Boring/Well No.: GS-11
Project No.: 3612082107
Client: NYSDEC
Site: Dina bury Distributing
Sheet No. 2 of 2
Logged By: M. Lounsbury
Ground Elevation: ≈ 512.8
Start Date: 5/5/09
Finish Date: 5/5/09
Drilling Contractor: GeologicNY
Driller's Name: Joe Mendel
Rig Type: Geoprobe
Drilling Method: Direct Push
Protection Level: D
P.I.D. (eV): 10.8
Casing Size: ~~OB~~ ~~NA~~ ≈ 2"
Auger Size: NA
Soil Drilled: ~~18~~ 16'
Rock Drilled: NA
Total Depth: ~~18~~ 16'
Depth to Groundwater/Date: NA
Piez ~~☒~~ Well ☐ Boring ☑

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
13				Till-	SM/GM		NA	
14	2.0/4.0	NA	NA	Reddish Brown, Dense, Silty Sand with Embedded Coarse Sand and gravel		0		050103-GS111609
15								
16				Bottom of boring = 16' BGS. No refusal.				

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SOIL BORING LOG

Project Dinabury Distributing
Boring/Well No. GS-12
Project No. 3617087107

Client NYSDEC
Site Dinabury Distributing
Sheet No. 1 of 2

Logged By M. Lounsbury
Ground Elevation ≈512.8' (Samlos MW-10R)
Start Date 5/5/09
Finish Date 5/5/09

Drilling Contractor GeologicNY
Driller's Name Joe Menzel
Rig Type GeoProbe

Drilling Method Direct Push
Protection Level ~~D~~ D
P.I.D. (eV) 10.6
Casing Size ≈2" ~~NA~~
Auger Size NA

Soil Drilled 16'
Rock Drilled 0
Total Depth 16'
Depth to Groundwater/Date NA
Piez ☒ Well ☐ Boring ~~☐~~

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
1 2	3.0/4.0	NA	NA	0-2.0 - Fill, Sand, gravel, Silt Some tar at top, multicolor, Damp - Loose		0	NA	NA
3 4				2.0-4.0 Fine Sand, Some Silt, Loose, Damp Light Brown -	SM	0	NA	NA
5	2.5/4.0	NA	NA	4.0-6.0 - As above, Layered, Wet	SP	0	NA	NA
6				6.0-6.5 - Dense Silt, Damp, plastic				
7 8				6.5-8.0 - Reddish Brown, Silt, with Embedded Gravel and Coarse Sand, Medium Dense	ML SM/GM	0	NA	NA
9 10 11 12	3.0/4.0	NA	NA	8-12 - Till - Reddish Brown Silty Sand, with Imbedded Gravel and Coarse Sand, Dense Damp Sample Collected from Zone with PID-6.0	SM/GM	0 to 6.0	NA	828103-GS12-1109

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SOIL BORING LOG

Project Dinaburg Distributing	Boring/Well No. GS-12	Project No. 3612087107
Client NYSDEC	Site Dinaburg Distributing	Sheet No. 2 of 2
Logged By M. Lounsbury	Ground Elevation ~~25~~ 512.8	Start Date 5/8/09
Finish Date 5/8/09		
Drilling Contractor Geologic NY	Driller's Name Joe Menzel	Rig Type Geoprobe
Drilling Method Direct Push	Protection Level D	P.I.D. (eV) 10.8
Casing Size ≈2" (m) ~~NA~~	Auger Size NA	
Soil Drilled 16'	Rock Drilled NA	Total Depth 16'
Depth to Groundwater/Date NA	NA Piez. ☒ Well ☐ Boring ☒	

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm)		Lab Tests ID Sample
						PI Meter Field Scan	PI Meter Head Space	
13	25/40	NA	NA	Till - Reddish Brown Silt with Embedded Coarse Sand and Gravel Very Dense	SM/GM	10 to 61	NA	GS121309
14								
15								
16				Sample Collected from Zone with PID-61				828103-GS121309
				End of Boring Bottom of boring = 16' BGS No refusal				

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SOIL BORING LOG

Project Dina burg Distributing
Boring/Well No. GS-13
Project No. 3612082107

Client NYSDEC
Site Dina burg Distributing
Sheet No. 1 of 2

Logged By M Lounsbury
Ground Elevation ≈512.8 (Same as MW-10K)
Start Date 5/5/09
Finish Date 5/5/09

Drilling Contractor GeologicNY
Driller's Name Joe Menzel
Rig Type Geoprobe

Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.8
Casing Size MB ~~NA~~ 2.2"
Auger Size NA

Soil Drilled 21'
Rock Drilled NA
Total Depth 21'
Depth to Groundwater/Date NA
Piez MB ~~☒~~ Well ☐ Boring ☑

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
1 2 3 4	2.5/4.0	NA	NA	Fill, Sand, gravel, Brick, Metal Porcelain, Loose, Damp, Multicolor		0	NA	NA
5 6 7 8	2.0/4.0	NA	NA	4.0-6.0 Fill - as above 6.0-8.0 Fine Sand, Silty Layered, Brown Soft, Damp-wett	0 SM	0 0	NA	NA
9 10 11 12				8-12.0 TILL, ~~Fine~~ Reddish Brown, Fine Sand With Embedded Gravel and Coarse Dense - to v. dense Damp Sample Collected from zone - 17 ppm		0 to 17.0	NA	GS131209

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SOIL BORING LOG

Project Dinaburg Distributors	Boring/Well No. GS-13	Project No. 7612082107
Client NYSDEC	Site Dinaburg Distributors	Sheet No. 2 of 2
Logged By M. Lounsbury	Ground Elevation ≈ 512.8	Start Date 5/5/09 · Finish Date 5/5/09
Drilling Contractor GeologicNY	Driller's Name Joe Menzel	Rig Type Geoprobe
Drilling Method Direct Push	Protection Level D · P.I.D. (eV) 10.6	Casing Size ~~NA~~ ≈2" · Auger Size NA
Soil Drilled 21' · Rock Drilled NA	Total Depth 21'	Depth to Groundwater/Date NA · JR Piez ☒ Well ☐ Boring ☑

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
12 13 14 16	VNR/4.0	NA	NA	Till, As above	SW/GM	4.0 to 145		GS131609 828103-GS131609
17 18 19	VNR/3.0			Till- Reddish Brown Silty with Imbedded Coarse Sand and Gravel	SW/GM	65 to 89		
20 21	VNR/2.0			Till- As Above Bedrock 21'	SW/GM	20 - 45		GS132109 828103-GS132109
				BOB Bottom of boring = 21' BGS. Refusal on probable bedrock.				

JR 5/12/09

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SOIL BORING LOG

Project Dinaburg Distributing	Boring/Well No. GS-14	Project No. 3612082107
Client NYSDEC	Site Dinaburg Distributing	Sheet No. 1 of 2
Logged By M. Lounsbury	Ground Elevation ≈512.8 (Same as MW-10K)	Start Date 5/8/09
		Finish Date 5/8/09
Drilling Contractor GeologicNY	Driller's Name Joe Menzel	Rig Type Geoprobe
Drilling Method Direct Push	Protection Level D	P.I.D. (eV) 10.8
Casing Size ~~NA~~ ≈2"	Auger Size NA	
Soil Drilled 16'	Rock Drilled NA	Total Depth 16'
Depth to Groundwater/Date NA	Piez ☒ Well ☐ Boring ☐	

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
1 2 3 4	2.0/4.0	NA	NA	0-0.5 - Organic - Leaves, Topsoil 0.5-4.0 - Fill, Sand, gravel, Silt, Damp Loose, Fine Sand at tip		0	NA	NA
5 6 7 8	4.0/4.0			4-6.0 - Fine Sand, Silty, Wet, Somewhat Layered, Soft 6.0-8.0 - Color Change to dark Brownish Sand Bed, becoming Darker with Depth, becoming Coarser with Depth	SM SM	0 0		
9 10 11 12	UNK/4.0			Refusal @7 - Move to try again Grace Tapper 8-12.0 Till, Reddish Brown, Silty Sand with Embedded Coarse Sand and Gravel	~~0~~ ~~to~~ ~~45~~ SM/GM	0 to 45		GS141209 828103-GS141209

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SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. GS-141
Project No. 3612082107
Client NYS DEC
Site Dinaburg Distributing
Sheet No. 2 of 2
Logged By M. Lounsbury
Ground Elevation ≈512.8
Start Date 5/15/09
Finish Date 5/15/09
Drilling Contractor Geologic NY
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.8
Casing Size ~~NA~~ ≈2"
Auger Size NA
Soil Drilled 16'
Rock Drilled NA
Total Depth 16'
Depth to Groundwater/Date NA
Piez ~~☒~~ Well ☐ Boring ☒

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
13 14 15	NNR/4.0	NA	NA	TILL Reddish Brown Silty Sand with Embedded coarse Sand and Gravel Very dense	SM/GM	4.5	0.2	GS141409
16				Bottom of boring = 16' BGS. No refusal				828103-GS141409

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Overburden Well Construction Diagram

Well No.: GS-1

Project No.: 3612.08 2071

NYSDEC

Project Name: Dinabury Distributing

Project Area: ~~NA~~ Clinton Ave, Rochester N.Y.

Contractor: Geologic NY

Driller: Joe Menzel

Method: GeoProbe

Logged By: M. Lounsbury

Date Started: 5/6/09

Completed: 5/6/09

Checked By: JKR

Date: 5/12/09

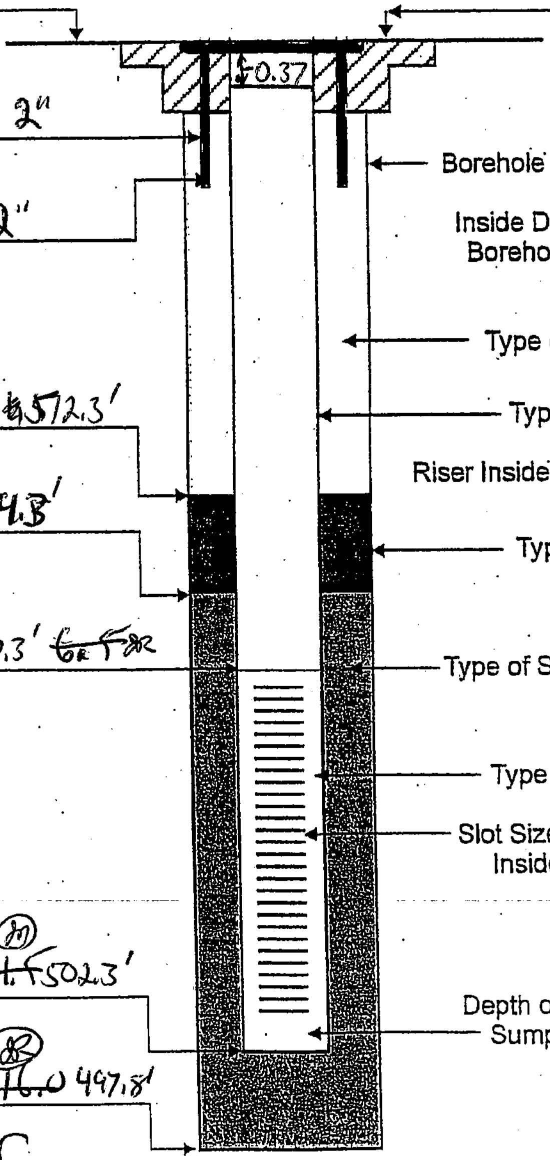
Well Development Date: NA

Not To Scale

Surface Casing Type: Flushmount aluminum

Ground Surface Elevation: 513.8'

Type of Surface Seal: Concrete ~~Road Box~~ JR



Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2"

Borehole Diameter: 2"

Inside Diameter of Borehole Casing: NA

Type of Backfill: ~~San~~ NA

Depth/Elevation of Top of Well Seal: 1.5' BGS / 512.3'

Type of Riser: Sch40PVC

Riser Inside Diameter: ~~2"~~ JR 1"

Depth/Elevation of Top of Sand: 4.5' BGS / 509.3'

Type of Seal: Bentonite chips/powder

Depth/Elevation of Top of Screen: 6.5' BGS / 507.3' ~~6.5~~ JR

Type of Sand Pack: #0 US Silica sand

Type of Screen: Sch40 PVC

Slot Size x Length: 5' x 0.010"

Inside Diameter of Screen: 1"

Depth/Elevation of Bottom of Screen: 11.5' BGS / ~~11.5~~ 502.3' JR

Depth/Elevation of Bottom of Boring: 16' BGS / ~~16.0~~ 497.8' JR

Depth of Sediment Sump with Plug: UNKNOWN

JR 6/8/09

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

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Overburden Well Construction Diagram

Well No.: GS-2

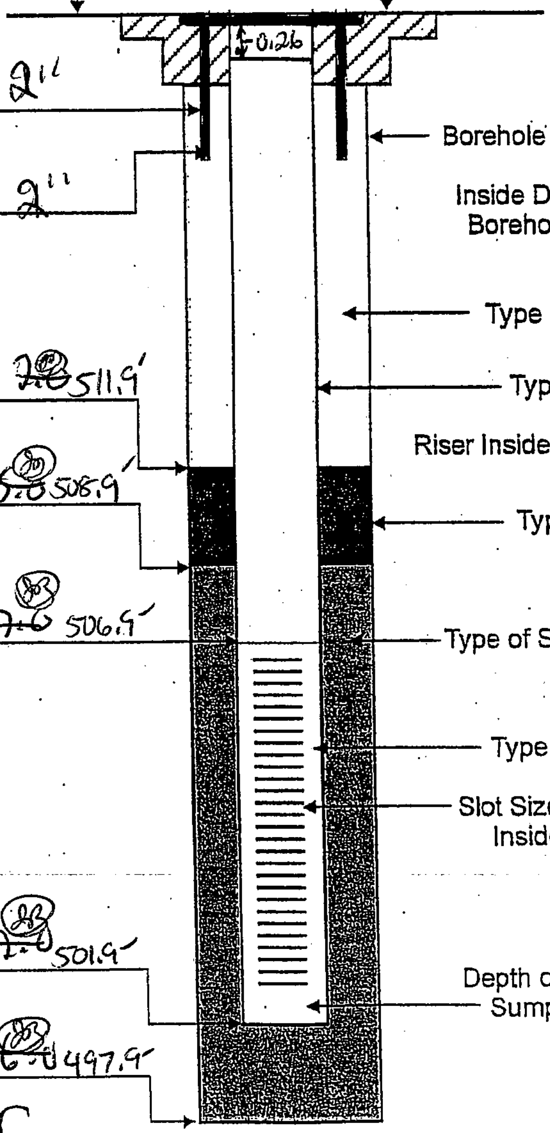
Project No.: 3612082107	Project Name: Dina Burg Distributing	
NYSDEC	Project Area: ~~NA~~ Clinton Ave, Rochester, N.Y.	
Contractor: Geologic NY	Driller: Joe Mamel	Method: Direct Push
Logged By: M. Lounsburg	Date Started: 5/6/09	Completed: 5/6/09
Checked By: JKR 5/12/09	Date:	Well Development Date: NA

Not To Scale

Surface Casing Type: ~~Concrete~~ Flushmount aluminum

Ground Surface Elevation: 513.9

Type of Surface Seal: Concrete



Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2"

Borehole Diameter: 2"

Inside Diameter of Borehole Casing: NA

Type of Backfill: ~~NA~~ Sand// Bentonit

Depth/Elevation of Top of Well Seal: 2.0' BGS / ~~2.0~~ 511.9'

Type of Riser: PVC Sch 40

Riser Inside Diameter: 1"

Depth/Elevation of Top of Sand: 5.0' BGS / ~~5.0~~ 508.9'

Type of Seal: Bentonite chips/powder

Depth/Elevation of Top of Screen: 7.0' BGS / ~~7.0~~ 506.9'

Type of Sand Pack: #0 US Silica

Type of Screen: PVC Sch 40

Slot Size x Length: 0.010" x 5'

Inside Diameter of Screen: 1"

Depth/Elevation of Bottom of Screen: 12.0' BGS / ~~12.0~~ 501.9'

Depth of Sediment Sump with Plug: NA/UNKNOWN

Depth/Elevation of Bottom of Boring: 16' BGS / ~~16.0~~ 497.9'

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

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Overburden Well Construction Diagram

Well No.: 6S-3

Project No.: 3612082107

NYSDEC

Project Name: Dina Burg Distributing

Project Area: ~~NA~~ Clinton Ave, Rochester, NY.

Contractor: Geologic N.Y

Driller: Joe Menzel

Method: GeoProbe

Logged By: M. Lounsbury

Date Started: 5/6/09

Completed: 5/6/09

Checked By: JKR

Date: 5/12/09

Well Development Date: NA

Not To Scale

Surface Casing Type: JR ~~Concrete~~ Flushmount aluminum

Ground Surface Elevation: 513.7

Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2"

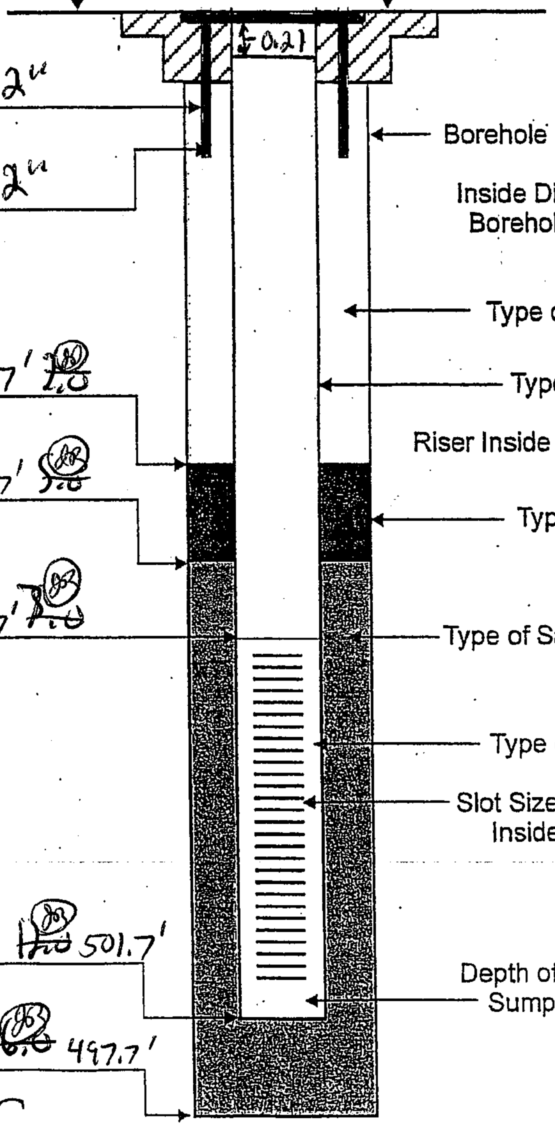
Depth/Elevation of Top of Well Seal: 2.0'BGS / 511.7' ~~2.0~~ JR

Depth/Elevation of Top of Sand: 5.0'BGS / 508.7' ~~5.0~~ JR

Depth/Elevation of Top of Screen: 7.0'BGS / 506.7' ~~7.0~~ JR

Depth/Elevation of Bottom of Screen: 12.0'BGS / ~~12.0~~ JR 501.7'

Depth/Elevation of Bottom of Boring: 16'BGS / ~~16.0~~ JR 497.7'



Type of Surface Seal: Concrete

Borehole Diameter: 2"

Inside Diameter of Borehole Casing: NA

Type of Backfill: Bonotnite chips/powder

Type of Riser: PVC Sch 40

Riser Inside Diameter: 1"

Type of Seal: Bentonite chips/powder

Type of Sand Pack: #0 US Silica

Type of Screen: PVC Sch 40

Slot Size x Length: 0.010" x 5'

Inside Diameter of Screen: 1"

Depth of Sediment Sump with Plug: NA/Unknown

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

Overburden Well Construction Diagram

Well No.: GS-4

Project No.: 3612082107

NYSDEC

Project Name: Dong Bus_Post monitoring

Project Area: ~~MA~~ Clinton Ave, Rochester, NY

Contractor: Geologic NY

Driller: Joe Menzer

Method: Geoprobe

Logged By: M Lounsbury

Date Started: 5/8/09

Completed: 5/8/09

Checked By: JKR

Date: 5/12/09

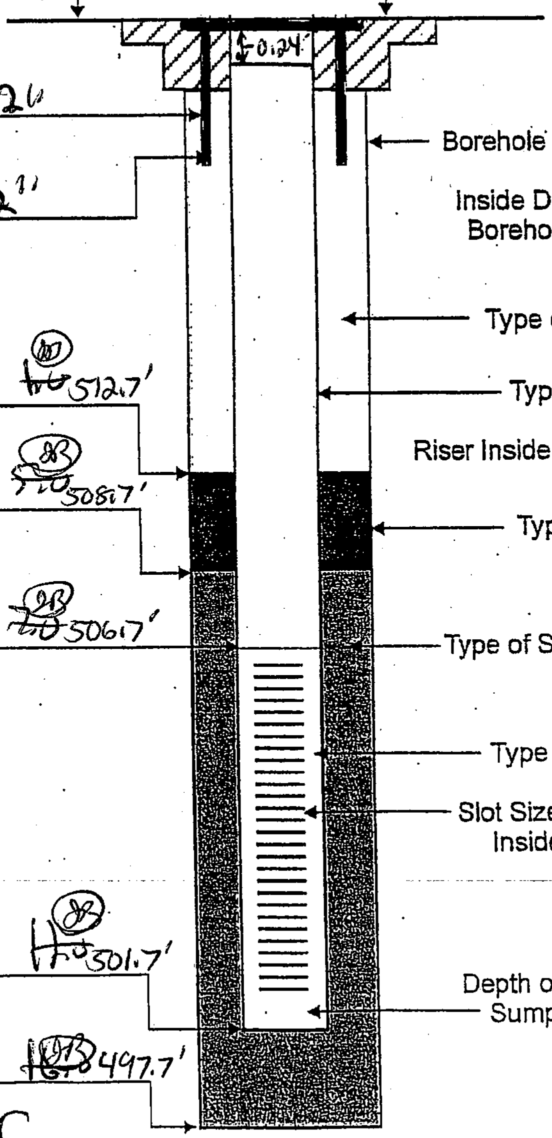
Well Development Date: NA

Not To Scale

Surface Casing Type: Flushmount aluminum

Ground Surface Elevation: 513.7

Type of Surface Seal: Concrete/cement



Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2"

Borehole Diameter: 2"

Inside Diameter of Borehole Casing: ~~2"~~ JR NA

Type of Backfill: Bentonite chips/powder

Depth/Elevation of Top of Well Seal: 1.0' BGS / ~~1.0~~ JR 512.7'

Type of Riser: PVC

Riser Inside Diameter: 1"

Depth/Elevation of Top of Sand: 5.0' BGS / ~~5.0~~ JR 508.7'

Type of Seal: Bentonite chips/powder

Depth/Elevation of Top of Screen: 7.0' BGS / ~~7.0~~ JR 506.7'

Type of Sand Pack: #0 US Silica

Type of Screen: PVC

Slot Size x Length: 0.010" x5'

Inside Diameter of Screen: 1"

Depth/Elevation of Bottom of Screen: 12.0' BGS / ~~12.0~~ JR 501.7'

Depth of Sediment Sump with Plug: NA/Unknown

Depth/Elevation of Bottom of Boring: 16' BGS / ~~16.0~~ JR 497.7'

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

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Overburden Well Construction Diagram

Well No.: G-5-5

Project No.: 3612082107

NYSDEC

Project Name: Dinaburg Distributing

Project Area: ~~N/A~~ Clinton Ave, Rochester, NY.

Contractor: Geologic NY

Driller: Joe Menzel

Method: GeoProbe

Logged By: M. Lounsbury

Date Started: 5/6/09

Completed: 5/6/09

Checked By: JKR

Date: 5/12/09

Well Development Date: NA

Not To Scale

Surface Casing Type: Flush mount Aluminum

Ground Surface Elevation: 513.6'

Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2" ~~1"~~

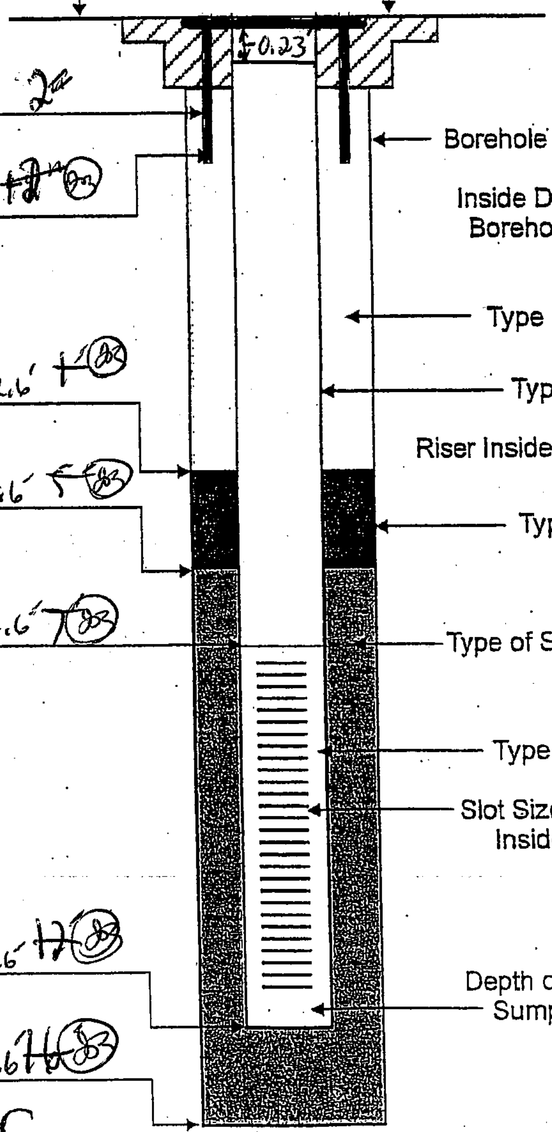
Depth/Elevation of Top of Well Seal: 1.0' BGS / 512.6' ~~1~~

Depth/Elevation of Top of Sand: 5.0' BGS / 508.6' ~~5~~

Depth/Elevation of Top of Screen: 7.0' BGS / 506.6' ~~7~~

Depth/Elevation of Bottom of Screen: 12.0' BGS / 501.6' ~~12~~

Depth/Elevation of Bottom of Boring: 16' BGS / 497.6' ~~16~~



Type of Surface Seal: Concrete

Borehole Diameter: 2"

Inside Diameter of Borehole Casing: NA

Type of Backfill: Bentonite

Type of Riser: PVC Sch40 PVC

Riser Inside Diameter: 1"

Type of Seal: Bentonite chips/powder

Type of Sand Pack: #0 US Silica

Type of Screen: PVC Sch40

Slot Size x Length: 0.010" x 5'

Inside Diameter of Screen: 1"

Depth of Sediment Sump with Plug: NA/UNKNOWN

6/8/09

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

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Overburden Well Construction Diagram

Well No.: GS-6

Project No.: 3612082107 NYSDEC

Project Name: Dunsbury Distributing

Project Area: ~~WA~~ Clinton Ave, Rochester, N.Y.

Contractor: Geologic NY

Driller: Joe Menzel

Method: GeoProbe / Direct Push

Logged By: M. Lounsbury

Date Started: 5/7/09

Completed: 5/7/09

Checked By: JKR

Date: 5/12/09

Well Development Date: NA

Not To Scale

Surface Casing Type: Flushmount aluminum

Ground Surface Elevation: 513.5

Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2"

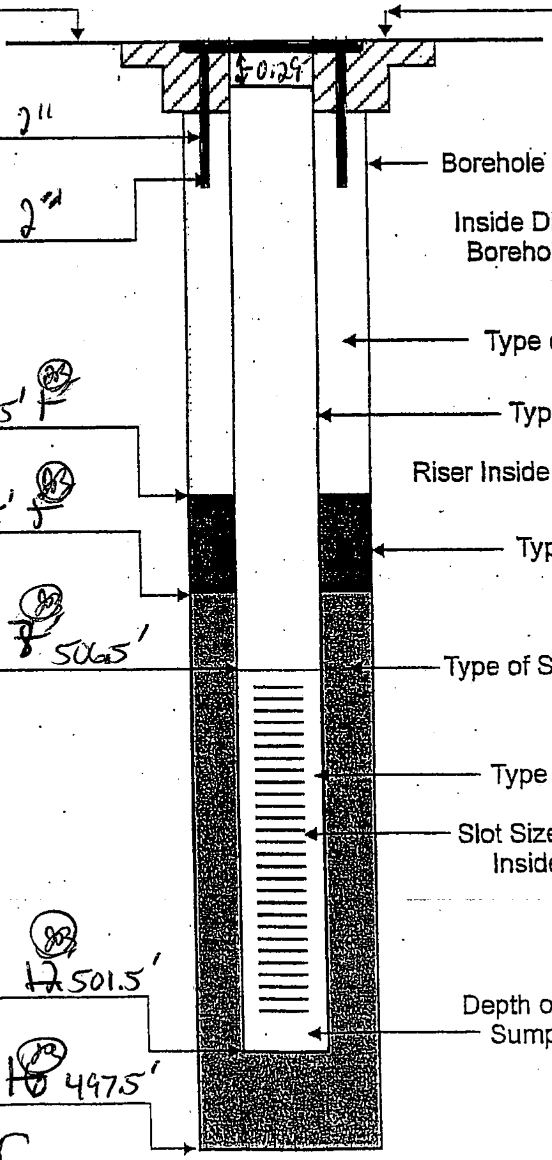
Depth/Elevation of Top of Well Seal: 1.0' BGS / 512.5' JR

Depth/Elevation of Top of Sand: 5.0' BGS / 508.5' JR

Depth/Elevation of Top of Screen: 7.0' BGS / ~~8~~ 506.5' JR

Depth/Elevation of Bottom of Screen: 12.0' BGS / ~~12~~ 501.5' JR

Depth/Elevation of Bottom of Boring: 16' BGS / ~~10~~ 497.5' JR



Type of Surface Seal: Concrete

Borehole Diameter: 2"

Inside Diameter of Borehole Casing: ~~2"~~ NA JR

Type of Backfill: Bentonite

Type of Riser: PVC Sch 40

Riser Inside Diameter: 1"

Type of Seal: Bentonite chips/powder

Type of Sand Pack: #0 US Silica sand

Type of Screen: PVC Sch 40

Slot Size x Length: 0.010" x 5'

Inside Diameter of Screen: 1"

Depth of Sediment Sump with Plug: NA/unknown

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

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Overburden Well Construction Diagram

Well No.: GS-7

Project No.: 3612082167	Project Name: Dina Burg - Distributing
NYSDEC	Project Area: ~~NA~~ S. Clinton Ave, Rochester, NY

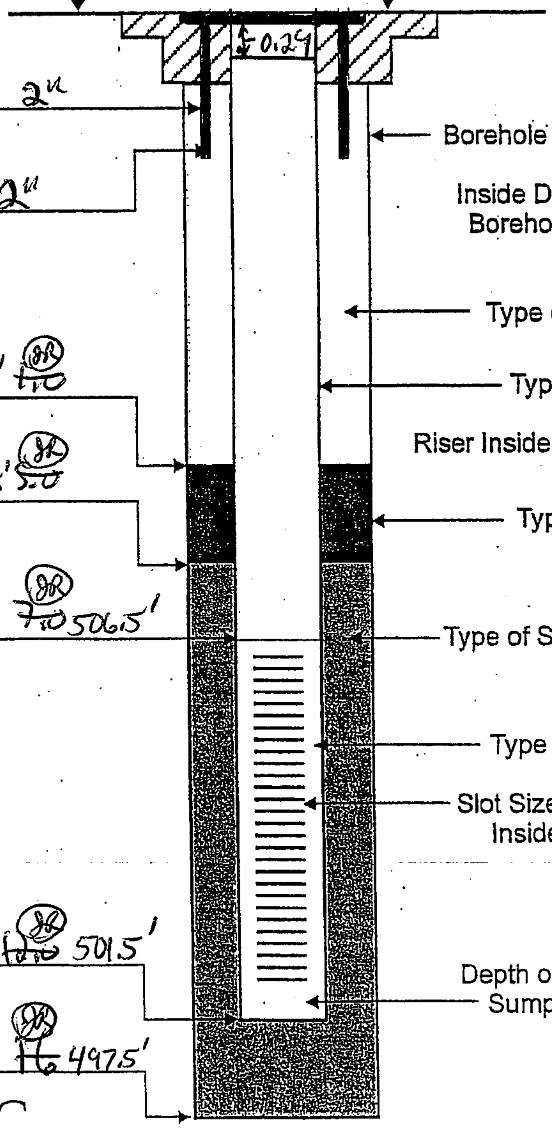
Contractor: Geologic NY
Driller: Joe Menzel
Method: GeoProbe
Logged By: M. Lounsbury
Date Started: 5/8/09
Completed: 5/8/09
Checked By: JKR
Date: 5/12/09
Well Development Date: NA

Not To Scale

Surface Casing Type: Flush mount aluminum

Ground Surface Elevation: 513.5'

Type of Surface Seal: Concrete



Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2"

Borehole Diameter: 7"

Inside Diameter of Borehole Casing: ~~7"~~ NA

Type of Backfill: Bentonite

Depth/Elevation of Top of Well Seal: 1.0' BGS / 512.5' ~~1.0~~ JR

Type of Riser: PVC Sch 40

Riser Inside Diameter: 1"

Depth/Elevation of Top of Sand: 5.0' BGS / 508.5' ~~5.0~~ JR

Type of Seal: Bentonite chips/powder

Depth/Elevation of Top of Screen: 7.0' BGS / ~~7.0~~ 506.5' JR

Type of Sand Pack: #0 US Silica Sand

Type of Screen: PVC Sch 40

Slot Size x Length: 0.010" x 5'

Inside Diameter of Screen: 1"

Depth/Elevation of Bottom of Screen: 12.0' BGS / ~~12.0~~ 501.5' JR

Depth of Sediment Sump with Plug: NA/UNKNOWN

Depth/Elevation of Bottom of Boring: 16' BGS / ~~16~~ 497.5' JR

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

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Overburden Well Construction Diagram

Well No.: GS-8

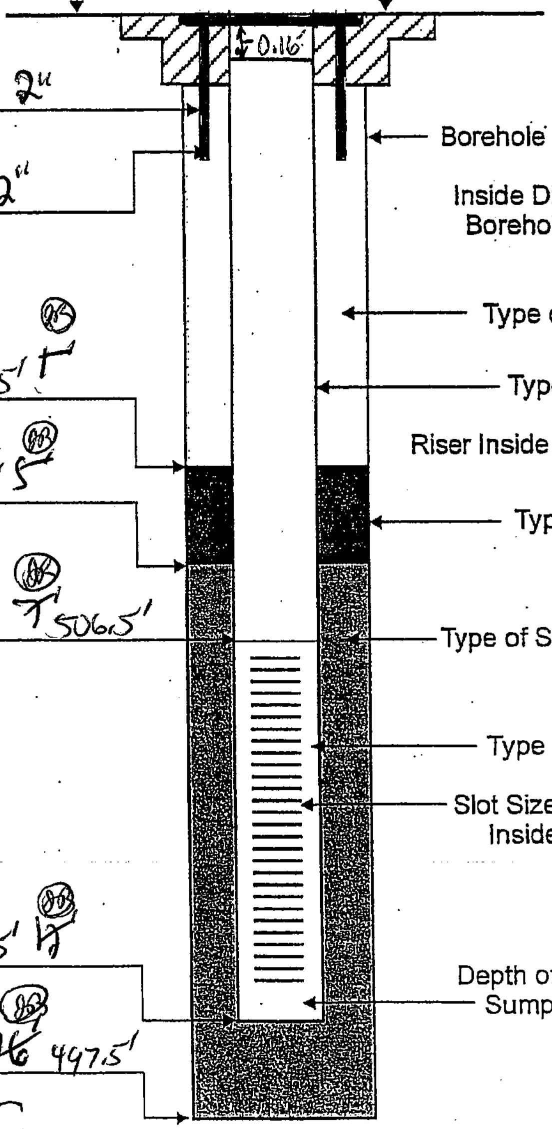
Project No.: 3617082107
NYSDEC
Project Name: Dinaburg Distributing
Project Area: ~~NA~~ S. Clinton Ave, Rochester NY
Contractor: Geologic NY
Driller: Joe Menzel
Method: GeoProbe
Logged By: M. Lounsbury
Date Started: 5/7/09
Completed: 5/7/09
Checked By: JKR
Date: 5/12/09
Well Development Date: NA

Not To Scale

Surface Casing Type: Flushmount aluminum

Ground Surface Elevation: 513.5'

Type of Surface Seal: Concrete



Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2"

Borehole Diameter: 2"

Inside Diameter of Borehole Casing: ~~2"~~ NA

Type of Backfill: Bentonite chips

Type of Riser: PVC Sch 40

Riser Inside Diameter: 1"

Depth/Elevation of Top of Well Seal: 1.0'BGS / 512.5' 1'

Depth/Elevation of Top of Sand: 5.0'BGS / 508.5' 5'

Type of Seal: Bentonite

Depth/Elevation of Top of Screen: 7.0'BGS / 7' 506.5'

Type of Sand Pack: #0 US Silica Sand

Type of Screen: PVC Sch 40

Slot Size x Length: 0.010 x 5'

Inside Diameter of Screen: 1"

Depth/Elevation of Bottom of Screen: 12.0'BGS 501.5' 12'

Depth/Elevation of Bottom of Boring: 16 BGS / 16 497.5'

Depth of Sediment Sump with Plug: NA/UNKNOWN

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

PORT2007022f.cdr

Overburden Well Construction Diagram

Well No.: GS-9

Project No.: 3612 08 2107

Project Name: Dona burg Distributing

NYSDEC

Project Area: ~~WA~~ Clinton Ave, Rochester, NY

Contractor: Geologic NY

Driller: Joe Menzel

Method: Geoprobe

Logged By: M Lounsbury

Date Started: 5/8/09

Completed: 5/8/09

Checked By: JKR

Date: 5/12/09

Well Development Date: NA

Not To Scale

Surface Casing Type: Flush mount aluminum

Ground Surface Elevation: 513.5'

Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2"

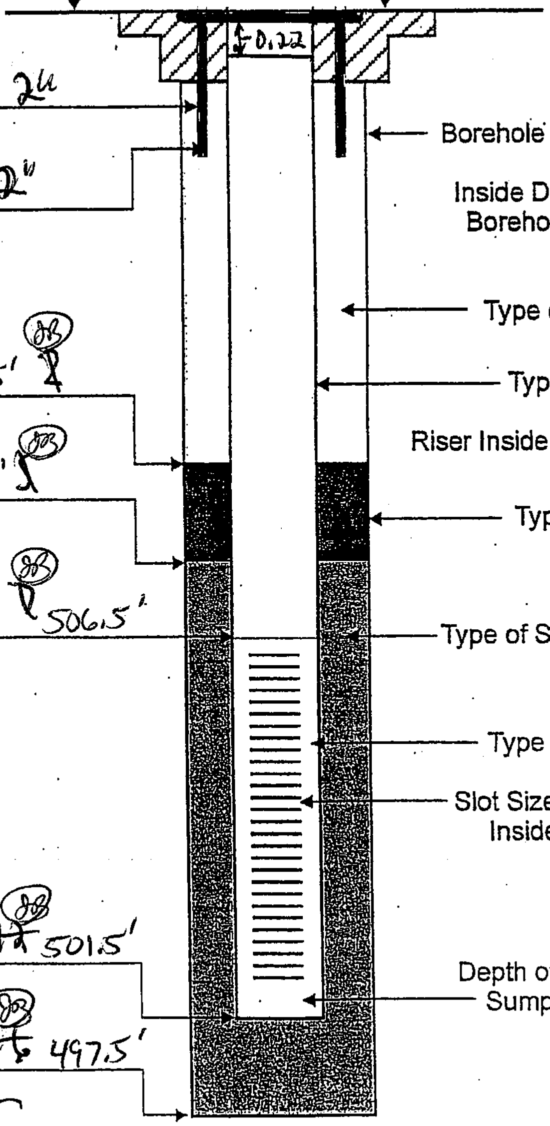
Depth/Elevation of Top of Well Seal: 2.0' BGS /511.5' JB

Depth/Elevation of Top of Sand: 5.0' BGS /508.5' JB

Depth/Elevation of Top of Screen: 7.0' BGS / 506.5' JB

Depth/Elevation of Bottom of Screen: 12.0' BGS / ~~12~~ 501.5' JB

Depth/Elevation of Bottom of Boring: 16' BGS / ~~16~~ 497.5' JB



Type of Surface Seal: Cement

Borehole Diameter: 2"

Inside Diameter of Borehole Casing: ~~2"~~ JB NA

Type of Backfill: ~~Bentonite~~ sa

Type of Riser: PVC Sch 40

Riser Inside Diameter: 1"

Type of Seal: Bentonite chips/powder

Type of Sand Pack: #0 US Silica

Type of Screen: PVC Sch 40

Slot Size x Length: 0.010" x 5'

Inside Diameter of Screen: 1"

Depth of Sediment Sump with Plug: ~~NA~~/unknown

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

PORT2007022f.cdr

Overburden Well Construction Diagram

Well No.: 6S10

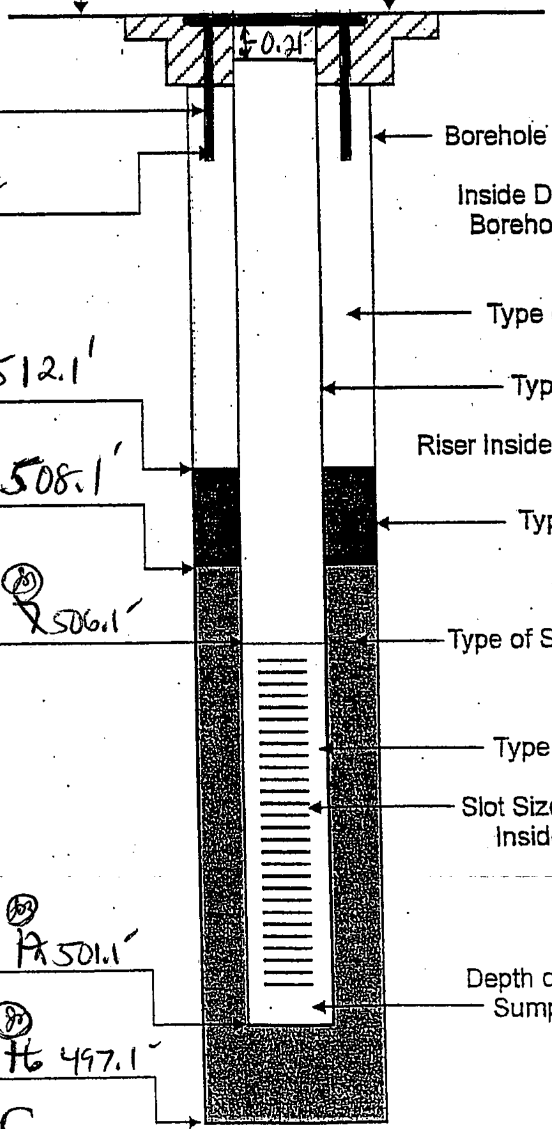
Project No.: 3612082107
NYSDEC
Project Name: Dry Cleaning Distributing
Project Area: ~~[illegible]~~ S. Clinton Ave.
Contractor: Geologic NY
Driller: Joe Monzel
Method: Geoprobe
Logged By: M. Lounsbury
Date Started: 5/8/09
Completed: 5/8/09
Checked By: JKR
Date: 5/12/09
Well Development Date: NA

Not To Scale

Surface Casing Type: Flush mount aluminum

Ground Surface Elevation: 513.1'

Type of Surface Seal: Concrete



Surface Casing Diameter: 2"

Inside Diameter of Surface Casing: 2"

Borehole Diameter: 7"

Inside Diameter of Borehole Casing: ~~7"~~ NA

Type of Backfill: Bentonite

Depth/Elevation of Top of Well Seal: 1.0'BGS / 512.1'

Type of Riser: PVC Sch 40

Riser Inside Diameter: 1"

Depth/Elevation of Top of Sand: 5.0'BGS / 508.1'

Type of Seal: Bentonite chips/powder

Depth/Elevation of Top of Screen: 7.0'BGS / ~~R~~ 506.1'

Type of Sand Pack: #0 US Silica sand

Type of Screen: PVC Sch 40 PVC

Slot Size x Length: 0.010" x 5'

Inside Diameter of Screen: ~~0.010~~ 1"

Depth/Elevation of Bottom of Screen: 12.0'BGS / ~~A~~ 501.1'

Depth of Sediment Sump with Plug: NA/UNKNOWN

Depth/Elevation of Bottom of Boring: 16'BGS / ~~16~~ 497.1'

JR 6/8/09

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

PORT2007022f.cdr

SOIL BORING LOG

Project Dinaburg Distributing

Boring/Well No. GW-1

Project No. 3612082107

Client NYS DEC

Site Dinaburg Distributing

Sheet No. 1 of 1

Logged By M. Lounsbury

Ground Elevation. Est 513.4 (Similar to MW13R)

Start Date 5/4/09

Finish Date 5/4/09

Drilling Contractor Geologic

Driller's Name Joe Menzel

Rig Type Geoprobe

Drilling Method Direct Push

Protection Level D

P.I.D. (eV) 580B -10.6

Casing Size ≈2" ~~2 NA~~

Auger Size NA

Soil Drilled 20' ~~NA~~

Rock Drilled NA

Total Depth ~~20~~ 20' BGS

Depth to Groundwater/Date ~8.0 5/4/09

Temp.Piez ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
2				Ground water Readings: pH-7.2				
4				Cond. 2.33 ms/cm Good				
6				D.O. - 0.4 mg/L Recharge Temp - 12.5				
8				orp - 25				*
10				Headspace - 54.0 ppm				828103-GW1 01209
12	NA	NA	NA	Drill to 12' to Collect H2O Sample		~~54.0~~ NA	54.0	
14				Ground water ~~Read~~ Readings: pH-7.9 ORP = -52				
16				Cond. 3.74 ms/cm Headspace -203 DO- 4.9				*
18				Temp=20.0 Very poor recharge				828103-GW1 02009
20				Drill to 20'		203		
				End of Boring Bottom of boring = 20' BGS				

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SOIL BORING LOG

Project Dinaburg Distributing	Boring/Well No. GW-2	Project No. 361208 2107

Client NYSDEC	Site Dinaburg Distributing	Sheet No. 1 of 1

Logged By M. Lounsbury	Ground Elevation Est 513.4 (similar to MW-13K)	Start Date 5/5/09	Finish Date 5/5/09

Drilling Contractor Geologic	Driller's Name Joe Menzel	Rig Type Geoprobe

Drilling Method Direct Push.	Protection Level D	P.I.D. (eV) 10.8	Casing Size ≈2" ~~NA~~	Auger Size NA

Soil Drilled 20 ~~NA~~	Rock Drilled NA	Total Depth ±20	Depth to Groundwater/Date NA	[✓ Temp.Piez] ☒	Well ☐	Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
	NA	NA	NA		NA	NA		
2				8-12'				
4				Dry - no shallow sample collected.				
6								
8								
10								
12				Groundwater				
14				pH-7.3 Orp -28				
				Cond-4.84				
16				Turb -71000 Headspace - 24 ppm			24ppm	
				Do-NA 828103-GW201909 ←			→	*
18				Temp-12.6 Slow Recharge				
20				m ~~19.3~~ 20.0				
				End of Day				

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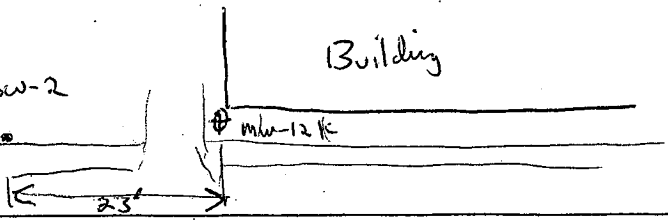


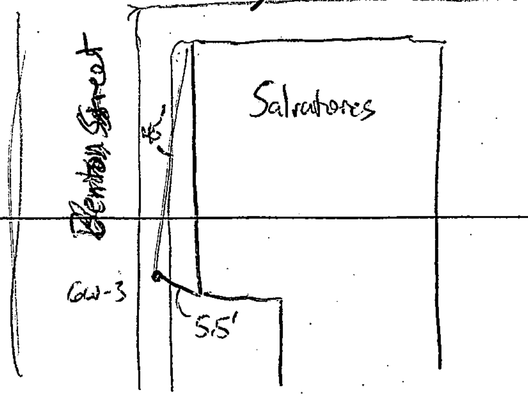
DR 5/12/09

PORT2007022w.mac

SOIL BORING LOG

Project Dinaburg Distributing		Boring/Well No. GW-3	Project No. 3612082107
Client NYSDEC	Site Dinaburg Distributing	Sheet No. 1 of 1	
Logged By M. Lounsbury	Ground Elevation ≈513.3 (similar to MW-04)	Start Date 5/4/09	Finish Date 5/4/09
Drilling Contractor GeologicNY	Driller's Name Joe Menzel	Rig Type Geoprobe	
Drilling Method Direct Push	Protection Level D	P.I.D. (eV) 10.8	Casing Size ≈2" ~~NA~~ Auger Size NA
Soil Drilled 20' ~~NA~~	Rock Drilled NA	Total Depth 20'	Depth to Groundwater/Date NA [✓ Temp Piez] ☐ Well ☒ Boring

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
	NA	NA	NA	Groundwater Readings; no water at	NA	NA		
2				pH - 7.4 Start. Drove				
4				Cond. 1.67 mS/cm to 20' Collected				
				turb. 71000 Sample and pulled				
6				DO 20.1 up to 8-12' -				
8				Temp 12.7 May be mixed				
				Orp -35 with Lower zone	828103-GW301209			*
10				water				
				Headspace 32			32	
12				Groundwater Readings.				
14				pH - 7.2				
16				Cond. 1.67 mS/cm				
				turb. 71000				
18				DO 20.1				
				Temp. 13.3				
20	Bottom of boring			Orp - 155	828103-GW302009			*
	= 20' BGS			Headspace 26			26	
				Very Good recharge				



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SOIL BORING LOG

Project Dinaburg ~~Distribu~~ Distributing

Boring/Well No. GW-~~3~~ 4

Project No. 3612080107

Client NYSDEC

Site Dinaburg Distributing

Sheet No. 1 of 1

Logged By M. Lounsbury

Ground Elevation Est. 512.6 (similar to MW-11S)

Start Date 5/5/09

Finish Date 5/5/09

Drilling Contractor Geologic

Driller's Name Joe Menzel

Rig Type Geoprobe

Drilling Method Direct Push

Protection Level D

P.I.D. (eV) 10.8

Casing Size ~~NA~~ ≈2"

Auger Size NA

Soil Drilled ~~NA~~ 20'

Rock Drilled NA

Total Depth 20'

Depth to Groundwater/Date —

[✓ Temp Piez] ☒ Well ☐ Boring ☒

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
	NA	NA	NA		NA	NA		
2								
4				8-12' Dry				
6								
8								
10								
12				Groundwater Readings: 16-20' PH - 7.2 Cond. - 1.44 mS/cm Turb - > 1000 DO - > 0.1 Temp - 11.7°C Orp = -133 Headspace - 0.5 ppm excellent recharge				
14								
16							0.5 ppm	
18						00		* 828108-~~GW4~~ GW402009
20				Bottom of boring = 20' BGS				

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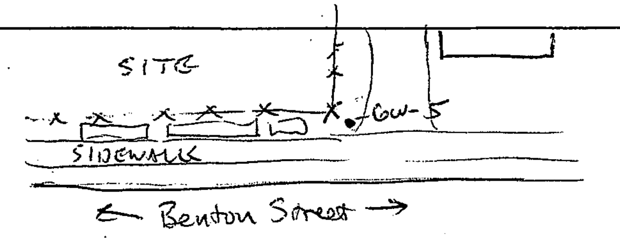
SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. GW-5
Project No. 3612082107
Client NYSDEC
Site Dinaburg Distributing
Sheet No. 1 of 1
Logged By M. Lounsbury
Ground Elevation Est 512.8' (Similar to GPW-02)
Start Date 5/4/09
Finish Date 5/4/09
Drilling Contractor Geologic
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.8
Casing Size ~~NA~~ 2"
Auger Size NA
Soil Drilled 20' ~~NA~~ JR
Rock Drilled NA
Total Depth 20'
Depth to Groundwater/Date —
[✓ Temp Piez] ☒ Well ☐ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
	NA	NA	NA	Groundwater Decalon 1 8-12'	NA	NA		
2				PH-7.8				
				Cond. 1.32 mS/cm				
4				DO- NA- Very Aerated				
6				Temp-20- Sun 828103-GW501209				*
8				Orp - 24				
				Headspace - 1.2				
10				Very Slow Recharge Rate				
12				Groundwater Decalon 15-19'				
14				PH-7.3				
				Cond. 1.61 mS/cm Orp - -125 828103-GW501909				
16				DO - <0.1 Headspace 1.0			1.0	*
				Temp-12.7 Very Good Recharge				
18				BOB = 20' BGS				
20								



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SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. GW-6
Project No. 361208 2107
Client NYSDEC
Site Dinaburg Distributing
Sheet No. 1 of 1
Logged By M. Lounsbury
Ground Elevation Est 512.7 (similar to MW-10S)
Start Date 5/5/09
Finish Date 5/5/09
Drilling Contractor Geologic
Driller's Name Joe Menzel
Rig Type Geoprobe
Drilling Method Direct Push
Protection Level D
P.I.D. (eV) 10.8
Casing Size N/A
Auger Size N/A
Soil Drilled 20' ~~NA~~
Rock Drilled NA
Total Depth 20' BGS
Depth to Groundwater/Date —
[✓ Temp Piez] ☐ Well ☐ Boring ☒

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
2 4 6 8 10 12	NA	NA	NA	8'-12' Dry				
14 16 18 20				Groundwater Reading 16'-20' pH - 7.1 ORP - -157 mV Cond. 1.20 mS/cm Headspace 3.2 Turb. >1000 DO - <0.1 Temp 13.3 °C excellent Recharge			3.2	828103-GW601909*
				Bottom of Boring = 20' BGS				

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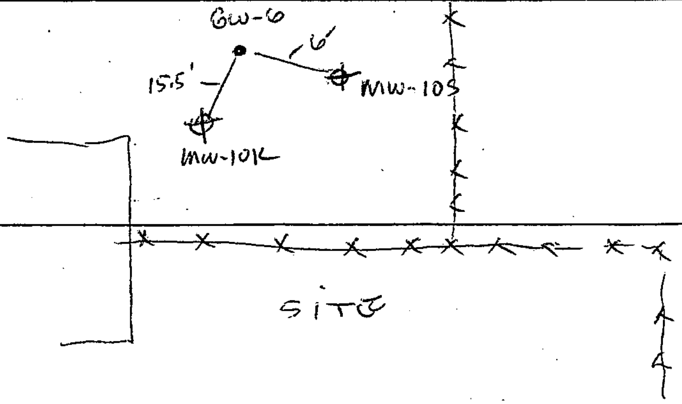
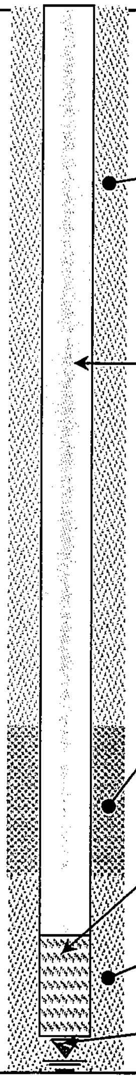


SOIL VAPOR IMPLANT SAMPLING RECORD

Boring ID: SV-1

Project No.: 3612082107
Project: Dinaburg Distributing
Checked By: JR 5/12/09
Client Name: NYSDEC
Logged By: M. Lounsbury
Protection Level: D
Ground Elevation: Est 513.7' (from MW-05)
Drilling Contractor: Geologic NY
Drilling Method: Geoprobe
Driller's Name: Joe Menzel
Installation Date/Time: 5/7/09 1100
Sample Date/Time: 5/7/09 1200
Start Time: 1100
End Time: 1345 ~~1200~~
Rig Type: Geoprobe
He Breakthrough %: NA
Initial He %: NA
Final He %: NA
Auger Size: NA

Depth (feet)	Recovery	Blow Counts	Graphic Log	Soil Vapor Diagram	Vapor Point Construction Notes
0					
	NA	NA			



Overburden Drilling Notes:

Start pressure - -29
Final pressure - -3

Duplicate -
Start - -29
Final - -3

PID-0 Duplicate Collected

Soil Vapor Point Construction Notes:

GV10809
NA
828103-GV10809
Canister #1555

GV10809D
828103-GV10809D
Canister #1552

Direct push to ≈ 8' BGS then pull back to expose sample area.
Not a permanent soil vapor sample point.

NA

Located in sidewalk in front of stairs to 1017 S. Clinton Ave.

Waterlevels in area ≈ 8-10' BGS

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FIGURE 4-11
SOIL VAPOR SAMPLING RECORD
NYSDEC QUALITY ASSURANCE PROJECT PLAN

SOIL VAPOR IMPLANT SAMPLING RECORD

Boring ID: SV-2

Project No.: 3612082107
Project: Dinaburg Distributing
Checked By: JR 5/12/09
Client Name: NYSDEC
Logged By: M. Lanbury
Protection Level: D
Ground Elevation: ~~Est~~ 513.3 (from MW-04)
Drilling Contractor: Geologic NY
Drilling Method: Geoprobe
Driller's Name: Joe Menzel
Installation Date/Time: 5/6/09 1145
Sample Date/Time: 5/6/09 1245
Start Time: ~~1147~~ 1150
End Time: 1245
Rig Type: Geoprobe
He Breakthrough %: NA
Initial He %: NA
Final He %: NA
Auger Size: NA

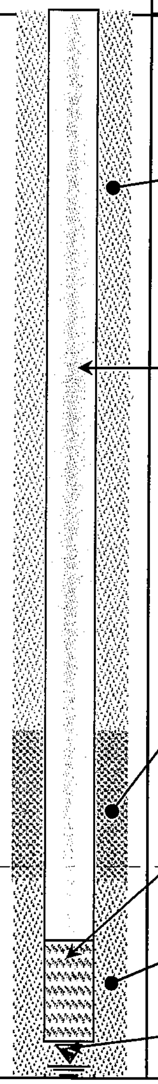
Depth (feet) 0	Recovery	Blow Counts	Graphic Log	Soil Vapor Diagram	Vapor Point Construction Notes
	NA	NA			

Overburden Drilling Notes:

do not need to do Helium test
Start -30 ~~Duplicate Start~~ -30
End -3 No Duplicate Here
Collect Sample- 828103-GV020709

Soil Vapor Point Construction Notes:

Canister # 1435



NA

Direct push to ≈ 7' BGS then pulled back to expose sample area. Not a permanent sample point.

NA

Located on south side of Benton street between building and sidewalk 46' from corner of building next to MW-12K.

NA

Water table in area ≈ 8-10' BGS

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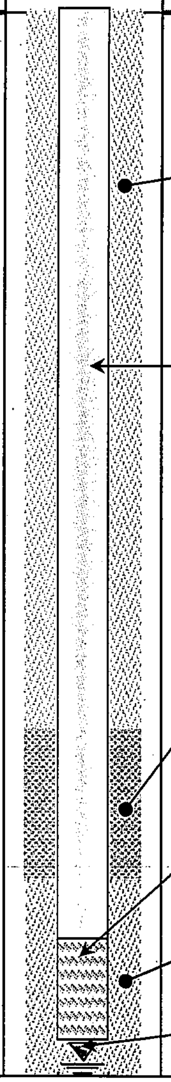
FIGURE 4-11
SOIL VAPOR SAMPLING RECORD
NYSDEC QUALITY ASSURANCE PROJECT PLAN

SOIL VAPOR IMPLANT SAMPLING RECORD

Boring ID: SV-3

Project No.: 3612082107
Project: Dinaburg Distributing
Checked By: JR 5/12/09
Client Name: NYSDEC
Logged By: M. Lounsbury
Protection Level: D
Ground Elevation: Est 513.0 (from MW-12S
Drilling Contractor: Geologic NY
Drilling Method: Geoprobe
Driller's Name: Joe Menzel
Installation Date/Time: 5/6/09 1020
Sample Date/Time: 5/6/09 1030
Start Time: 1050
End Time: 1110
Rig Type: Geoprobe
He Breakthrough %: 0 <1%
Initial He %: 100
Final He %: 60
Auger Size: NA

Depth (feet)	Recovery	Blow Counts	Graphic Log	Soil Vapor Diagram	Vapor Point Construction Notes
0	NA	NA			

Overburden Drilling Notes:

Slight residual Break through when purge volume with Helium detected <1% to 5.7%

11VB5 Collat Sample · 828103-GU30709

Soil Vapor Point Construction Notes:

Beginning Pressure -30
Ending Pressure -3
Canister # 1432

NA

Direct push to 6.8' BGS then pull back to expose sample area. Not a permanent sample point.

NA

Located in grass between the sidewalk and the street 15' northeast from corner of building next to MW-12K.

NA

6.8 = Bottom of Sample
Water Levels 8-10' BGS in area.

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FIGURE 4-11
SOIL VAPOR SAMPLING RECORD
NYSDEC QUALITY ASSURANCE PROJECT PLAN

SOIL VAPOR IMPLANT SAMPLING RECORD

Boring ID: GV-4 SV-4

Project No.: 3610082157
Project: Dinahun Dict.
Checked By: JR 5/12/09

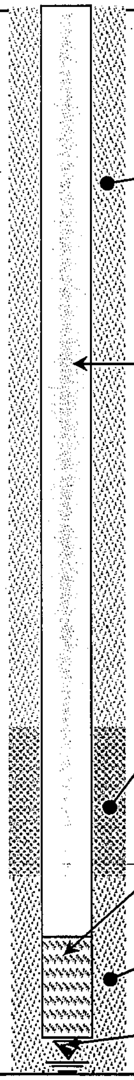
Client Name: NYSDEC
Logged By: McLoughlin
Protection Level: D
Ground Elevation: UNKNOWN

Drilling Contractor: MACTEC
Drilling Method: Core thru-Concrete
Driller's Name: J. Rawcliffe

Installation Date/Time: 5/7/09 1600
Sample Date/Time: 5/7/09 1630
Start Time: 1545
End Time: 1630
Rig Type: NA

He Breakthrough %: NA
Initial He %: NA
Final He %: NA
Auger Size: NA

Depth (feet) 0	Recovery	Blow Counts	Graphic Log	Soil Vapor Diagram	Vapor Point Construction Notes
	NA	NA			



Overburden Drilling Notes:

Start pressure -30
~~-30~~
end pressure -3
Vaccum possibly .005 inches of water

Soil Vapor Point Construction Notes:

Sample Collected Inside building 1010 Clinton Ave.

828103-GV40109
Cannister # 1445

Drilled through concrete slab inside building housing MachTak Computers Attempted to measure vacume beneath slab using magnehelic gauge. Read a possible vacuum of .005 inches of water but due to sensitivity of meter this may have been a false reading due to operator error.

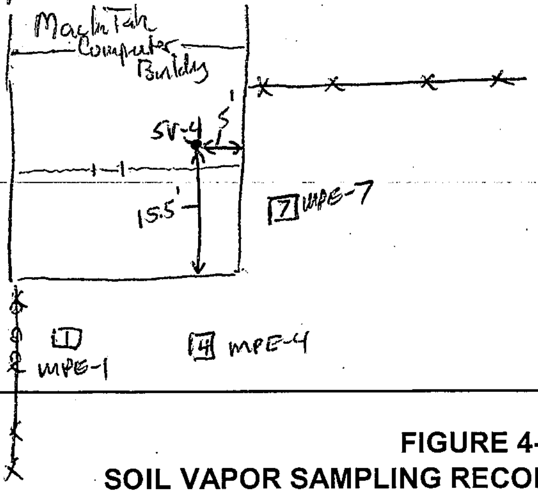


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FIGURE 4-11
SOIL VAPOR SAMPLING RECORD
NYSDEC QUALITY ASSURANCE PROJECT PLAN

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER: 3612082107-

PROJECT: NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER: 828103GPW0111309

SITE ID: GPW-01

SITE TYPE: WELL

DATE: 5-25-09

ACTIVITY: START 1110. END 1910.

SAMPLE TIME: 1900.

WATER LEVEL / PUMP SETTINGS

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

INITIAL DEPTH TO WATER: 8.41 FT

FINAL DEPTH TO WATER: <14.6 FT

DRAWDOWN VOLUME: .02 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED: .86 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

WELL DEPTH (TOR): 14.9 FT

SCREEN LENGTH: Unknown FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED: .02

PROTECTIVE CASING STICKUP (FROM GROUND): 0.0 FT

PID AMBIENT AIR: — PPM

PID WELL MOUTH: — PPM

PRESSURE TO PUMP: — PSI

REFILL SETTING: —

CASING / WELL DIFFER.: 0.75 FT

WELL DIAM.: 1 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR	✓		

DISCHARGE SETTING: —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1119	pump on								tubing @ ~13' bgs
1721	9.21	250	13.5	0.822	7.5	4.9	87.2	310	800
1126	12.15	200	13.0	0.601	7.8	5.8	103.	250	1000
1131	13.82	175	12.8	0.899	7.7	4.1	983	20	875
1135	Well Dry; waiting for 90% recharge and then will sample GPW-01 for VOCs.								
1850	8.48	pump on @ GPW-1							875
1855	11.19	175	12.3	0.487	7.8	3.8	130	60	
1900	11.59	Sample time @ GPW-01							
1905	13.48	175	12.1	1.08	7.8	5.1	49.2	40	
1907	pump off well dry again								

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☐ OTHER ____

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

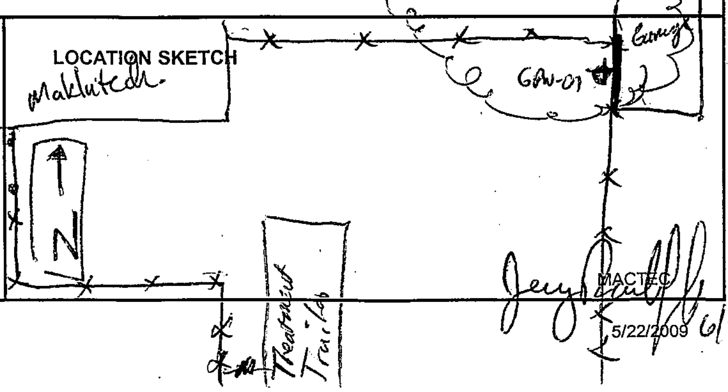
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☐ TOC		SM5310B	H2SO4 / 4 DEG. C	500 ML poly	☐
☐ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☐
☐ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☐
☐ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☐
☐ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☐
☐ CO2		SM4500	4 DEG. C	2 X 40 ML	☐
☐ Other		____	____	____	☐

NOTES:

Brandon Shaw

SIGNATURE: ____

LOCATION SKETCH



6/8/09

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828130GPW0201209

SITE ID GPW-02

SITE TYPE WELL

DATE 5-25-09

ACTIVITY START 1140 END 1845

SAMPLE TIME 1835

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 7.51 FT

FINAL DEPTH TO WATER <14.1 FT

DRAWDOWN VOLUME 0.03 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 1.1 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 14.1 FT

SCREEN LENGTH unknown FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .027

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.2 FT

WELL DIAM. 1 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR	✓		

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1147	pump on @ GPW-02								tubing @ ~13' bgs
1152	9.83	200	13.8	0.583	8.0	8.5	762	130	
1157	12.21	200	13.5	0.595	7.9	1.7	251	130	
1262	<14.0	200	13.2	0562	8.0	4.6	129	130	
1203	well Dry; will wait for 90% recharge								
1802	8.09								
1825	7.85	pump on again @ ~~MW~~ GPW-02							
1830	10.60	200	12.0	0.656	8.1	8.1	854	212	
1835	11.03	Sample time @ GPW-02							Sample time
1838	13.13	250	12.9	0.627	8.5	8.1	71000	210	
1839	well Dry again								

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☐ OTHER

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

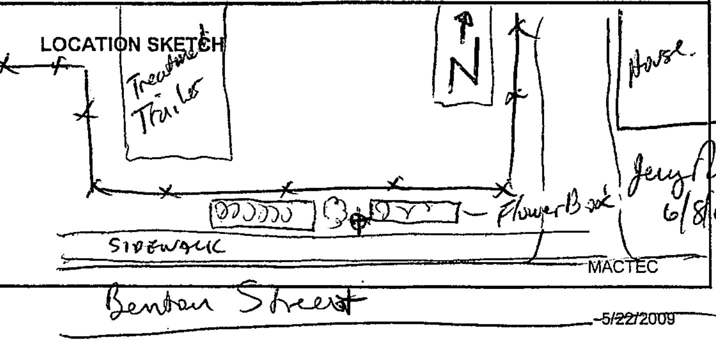
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☐ TOC		SM5310B	H2SO4 / 4 DEG. C	500 ML poly	☐
☐ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☐
☐ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☐
☐ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☐
☐ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☐
☐ CO2		SM4500	4 DEG. C	2 X 40 ML	☐
☐ Other					☐

NOTES:

Brandon Shaw

SIGNATURE:

LOCATION SKETCH



Jerry 6/8/09

MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828103MW010509

SITE ID MW-1

SITE TYPE WELL

DATE 5-26-09

ACTIVITY START 1115 END 1255

SAMPLE TIME 1235

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 9.43 FT

FINAL DEPTH TO WATER 12.43 FT

DRAWDOWN VOLUME 0.48 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 3.2 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 20.1 FT

SCREEN LENGTH unknown FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED 0.15

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.3 FT

WELL DIAM. 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR		✓	

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1124	pump on @ mw-1								Tubing set @ ~15'
1130	10.16	200.	14.3	0.281	8.0	3.4	92.3	-150	
1135	11.15	200.	13.8	0.274	8.0	0.5	150	-150	
1140	11.95	200.	13.7	0.276	8.0	0.7	134	-150	
1145	12.30	200	13.6	0.296	8.0	0.6	108	-150	
1150	12.56	200	13.5	0.324	7.9	0.6	68.5	-140	
1155	12.36	200	13.8	0.676	7.9	5.1	41.5	-120	
1200	12.40	200	13.6	0.711	7.8	4.6	23.9	-120	
1205	12.45	200	13.6	0.755	7.8	3.8	17.4	-120	
1210	12.41	200	13.8	0.815	7.8	3.6	10.1	-120	
1215	12.38	200	13.7	0.846	7.8	3.5	9.8	-120	
1220	12.41	200	13.6	0.848	7.8	3.7	8.1	-120	
1225	12.40	200	13.5	0.845	7.8	3.9	8.0	-120	
1230	12.38	200	13.5	0.840	7.8	3.8	7.4	-120	PID headspace
1235	Sample time @ MW-01								on purge
1249	pump off @ mw-01								
			14	0.840	7.8	3.8	7	-120.	water : 25ppm

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

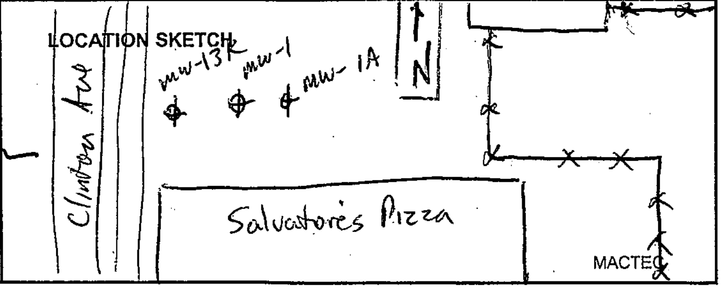
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☑ TOC w/ Alk, Cl⁻, nitrate, Sulfate		SM5310B	~~H2SO4 / 4 DEG. C~~ 05	~~500 ML poly~~	☑
☑ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑
☑ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑
☑ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☑
☑ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☑
☑ CO2		SM4500	4 DEG. C	2 X 40 ML	☑
☐ Other					☐

Jerry [illegible] 6/8/09

NOTES: purge water has 'black-flock'
-has Slight 'fuel-like' odor
PID on purgewater : 25ppm

Brandon Shaw

SIGNATURE:



FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-
PROJECT NYSDEC Dinaburg Ditributing
FIELD SAMPLE NUMBER 828103MW01A00709
SITE ID MW-01A
SITE TYPE WELL
DATE 5-26-09
ACTIVITY START 1255 END 1555
SAMPLE TIME 1545

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 5.92 FT
FINAL DEPTH TO WATER <7.3 FT
DRAWDOWN VOLUME .26 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})
TOTAL VOL. PURGED 1.4 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING
WELL DEPTH (TOR) 7.5 FT
SCREEN LENGTH unknown FT
RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .18

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0 FT
PID AMBIENT AIR — PPM
PID WELL MOUTH — PPM
PRESSURE TO PUMP — PSI
REFILL SETTING —

CASING / WELL DIFFER. 0.1 FT
WELL DIAM. 2 IN
WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR		✓	

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1256	Pump on @ MW-1A								tubing @ ~7'
1301	6.46	~150.	17.3	0.357	7.5	4.2	96.3	-100.	
1306	6.48	150	17.3	0.364	7.5	3.0	78.6	-110	
1311	6.71	150	17.2	0.416	7.6	3.7	47.6	-120	
1316	6.76	150	17.3	0.435	7.7	3.7	35.0	-130	3750
1321	6.80	150	17.7	0.465	7.7	4.0	25.1	-130	
1326	7.15	200	15.9	0.511	7.7	2.5	17.0	-130	increased purge
1328	<7.3	200	16.1	0.515	7.7	2.1	11.3	-140	rate to 200ml
1329	Well Dry; wait for 90% recharge								
1540	6.12								Lead SPIQ on
1545	pump on, sample time								purge water: 34 ppm
1550	pump off; filled 7 VOAs; portion of 1L plastic,								

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	
☑	VOC	USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑	
☑	TOC w/ Alk, Cl⁻, Sulfate, Nitrate	SM5310B	~~H2SO4 / 4 DEG. C~~ BS	~~500 ML poly~~	☑	
☑	~~Diss. Fe/ Mang~~ Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	~~☑~~	not collected.
☑	Alkalinity/chloride/sulfate/nitrate	SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑	
☑	~~Sulfide~~ BS	##	ZnAOC/4 DEG. C	1 Liter poly	~~☑~~	not collected.
☑	Methan/ethane/ethene	RSK175	HCl to pH <2	3 X 40 ML	☑	
☑	CO2	SM4500	4 DEG. C	2 X 40 ML	☑	
☐	Other				☐	

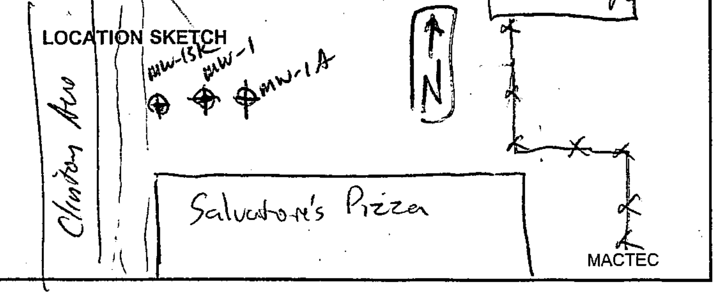
Jerry Rudolff 6/8/09

NOTES:

Brandon Shaw

SIGNATURE

LOCATION SKETCH



MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828103MW0301009

SITE ID MW-03

SITE TYPE WELL

DATE 5-26-09

ACTIVITY START 1600 END 1720

SAMPLE TIME 1700.

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 7.34. FT

FINAL DEPTH TO WATER 8.63 FT

DRAWDOWN VOLUME 0.21 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 2.4 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) ~14.5 FT

SCREEN LENGTH unknown FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .09

PROTECTIVE CASING STICKUP (FROM GROUND) 0.1 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.4 FT

WELL DIAM. 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR	✓		

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1615	Pump on								tubing @ ~10'
1620	7.75	200	13.2	0.678	8.1	3.8	9.3	140	
1625	8.03	200	12.7	0.631	8.1	3.6	7.6	140	
1630	8.18	200	12.6	0.644	8.1	3.2	7.3	140	
1635	8.36	200	12.5	0.649	8.0	2.2	6.9	140	
1640	8.44	200	12.5	0.659	8.0	1.4	6.1	140	
1645	8.52	200	12.5	0.661	8.0	1.4	7.8	140.	
1650	8.58	200	12.5	0.660	8.0	1.3	3.2	140	
1655	8.63	200.	12.4	0.664	8.0	1.3	4.9	140	
1700	Sample time		@ MW-03						
1716	pump off.								
			12	0.664	8.0	1	5	140	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☑ TOC w/ Alk, Cl⁻/Nitrate		SM5310B	~~H2SO4 / 4 DEG. C~~	~~500 ML poly~~	☑
☑ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑
☑ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑
☑ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☑
☑ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☑
☑ CO2		SM4500	4 DEG. C	2 X 40 ML	☑
☐ Other					☐

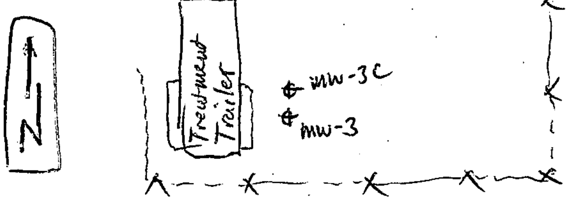
Jerry [illegible]
6/8/09

NOTES: Wells were mislabled - corrected labelling based on welldepths MW-3C (32.7' TOR) well depth

Brandon Shaw

SIGNATURE

LOCATION SKETCH



MACTEC

LOWFLOW.xlsx/Dinaburg

5/22/2009

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828103-MW03028509

SITE ID MW-3C

SITE TYPE WELL

DATE 5/26/09

ACTIVITY START 1530 END 1740

SAMPLE TIME 1715

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 13.57 FT

FINAL DEPTH TO WATER 14.32 FT

DRAWDOWN VOLUME .12 GAL

(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 1.9 GAL

(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT

☒ TOP OF WELL RISER

☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 32.7' FT

SCREEN LENGTH 10 FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .06

PROTECTIVE CASING STICKUP (FROM GROUND) 0 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP NA PSI

REFILL SETTING NA

CASING / WELL DIFFER. 0.35 FT

WELL DIAM. 2" IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR	X		

DISCHARGE SETTING NA

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1610	13.57	Start pump and set rate							lots of iron floc
1615	14.08	120	13.6	1.86	7.1	0.2	>1000	-47	
1630	14.23	130	12.7	1.84	7.1	0.5	100	-25	Cleaned out flow thru cell.
1635	14.26	—	12.7	1.83	7.1	<0.1	520	-32	
1640	14.26	130	12.6	1.83	7.1	<0.1	230	-27	Cleaned out flow thru cell
1645	14.29	130	12.6	1.84	7.1	1.1	31	-14	
1650	14.29	—	12.6	1.84	7.1	0.2	19	-15	
1655	14.31	130	12.5	1.84	7.1	<0.1	12	-18	
1700	14.31	—	12.4	1.84	7.1	<0.1	13	-21	
1705	14.32	130	12.4	1.84	7.1	<0.1	13	-23	
			12	1.84	7.1	<0.1	13	-20	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP

☒ GEOPUMP (peristaltic)

☐ QED BLADDER

TYPE OF TUBING

☒ HIGH DENSITY POLYETHYLENE

☒ OTHER Silastic

TYPE OF PUMP MATERIAL

☐ STAINLESS STEEL

☒ OTHER none

TYPE OF BLADDER MATERIAL

☐ TEFLON

☒ OTHER none

ANALYTICAL PARAMETERS

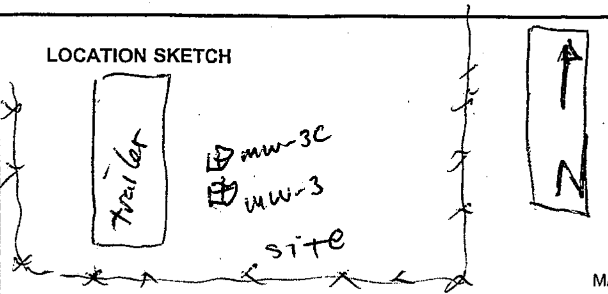
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	
☒ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☒	
☒ TOC		SM5310B	~~H2SO4 / 4 DEG. C~~	~~500 ML poly~~	☒	with Alk/Chlor/sulfate/nitrat
☒ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☒	
☒ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☒	
☒ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☒	
☒ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☒	
☒ CO2		SM4500	4 DEG. C	2 X 40 ML	☒	
☐ Other					☐	

NOTES: Wells are mislabelled

✓ BAS 06/11/09

SIGNATURE:

LOCATION SKETCH



MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828130MW0401809

SITE ID MW-04

SITE TYPE WELL

DATE 5-25-09

ACTIVITY START 1550 END 1655

SAMPLE TIME 1645

WATER LEVEL / PUMP SETTINGS

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0 FT

CASING / WELL DIFFER. 0.4 FT

INITIAL DEPTH TO WATER 9.87 FT

WELL DEPTH (TOR) 23.1 FT

PID AMBIENT AIR — PPM

WELL DIAM. 2 IN

FINAL DEPTH TO WATER 10.07 FT

SCREEN LENGTH unknown FT

PID WELL MOUTH — PPM

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR		✓	

DRAWDOWN VOLUME .03 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .006

PRESSURE TO PUMP — PSI

TOTAL VOL. PURGED 4.4 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

REFILL SETTING —

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1350	pump on @ MW-04								pump @ ~18' bgs
1552	10.06	300	12.8	0.819	7.8	3.1	455	150	
1557	10.07	300	13.0	0.811	7.7	0.9	218	140.	
1602	10.07	300	13.1	0.836	7.7	0.4	201	120	
1607	10.07	300	13.1	0.897	7.6	0.2	163	110	
1612	10.07	300	13.2	0.899	7.6	0.1	145	110	
1617	10.07	300.	13.2	0.914	7.7	0.1	122	100	
1622	10.07	300	13.3	0.938	7.6	<0.1	108	90	
1627	10.07	300	13.4	0.960	7.6	<0.1	80.6	80	
1632	10.07	300	13.4	0.971	7.6	<0.1	71.2	60	
1637	10.17	300.	13.5	0.980	7.6	<0.1	62.3	50	
1642	10.07	300	13.5	0.991	7.6	<0.1	57.3	50	
1645	Sample time		13.6	0.994	7.6	<0.1	54.9	40.	
1655	pump off @ MW-04								
			14	0.994	7.6	<0.1	55	40	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

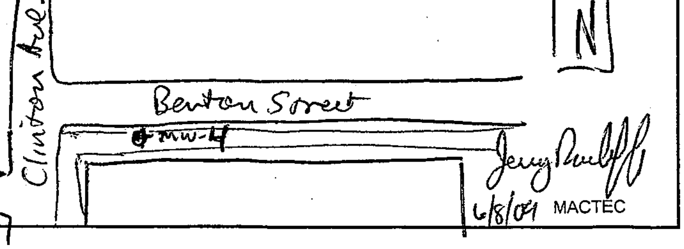
ANALYTICAL PARAMETERS

	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC	USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☑ TOC w/ Alk, Cl, sulfate, nitrate	SM5310B	~~H2SO4 / 4 DEG. C~~ BS	~~500 ML poly~~	☑
☑ Diss. Fe/ Mang Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑
☑ Alkalinity/chloride/sulfate/nitrate	SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑
☑ Sulfide	##	ZnAOC/4 DEG. C	1 Liter poly	☑
☑ Methan/ethane/ethene	RSK175	HCl to pH <2	3 X 40 ML	☑
☑ CO2	SM4500	4 DEG. C	2 X 40 ML	☑
☐ Other				☐

NOTES: Some 'orange-flock' in purge water.

SIGNATURE: Brandon Shaw

LOCATION SKETCH



6/8/09 MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828103MW0501809

SITE ID MW-05

SITE TYPE WELL

DATE 5-25-09

ACTIVITY START 1215 END 1345

SAMPLE TIME 1330

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 10.17 FT

FINAL DEPTH TO WATER 10.22 FT

DRAWDOWN VOLUME <0.1 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 5.8 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 22.7 FT

SCREEN LENGTH Unknown FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED —

PROTECTIVE CASING STICKUP (FROM GROUND) 0.2 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.3 FT

WELL DIAM. 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR		✓	

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1220	pump on @ mw-05								pump @ ~18'
1227	10.22	325	12.1	2.69	7.9	9.8	68.2	190	
1232	10.22	325	11.8	2.79	7.9	2.1	52.4	200	
1237	10.22	325	11.8	2.79	7.8	2.1	50.2	200	
1242	10.22	325	11.8	2.79	7.8	2.0	58.0	200	
1247	10.22	325	12.0	2.60	7.7	1.8	120	200	
1252	10.22	325	11.9	2.54	7.7	2.0	161	190	
1257	10.22	325	12.0	2.35	7.6	1.8	140.	200	
1302	10.22	325	12.1	2.30	7.6	1.0	126	200	
1307	10.22	325	12.1	2.17	7.5	0.9	82.1	200	
1312	10.22	325	12.1	2.11	7.5	0.8	74.9	200	
1317	10.22	325	12.2	2.10	7.5	0.6	73.9	200	
1322	10.22	325	12.2	2.09	7.5	0.5	70.4	200	
1327	10.22	325	12.3	2.08	7.5	0.4	68.5	200	
1330	Sample time								
1332	pump off								
			12	2.08	7.5	0.4	68	200.	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

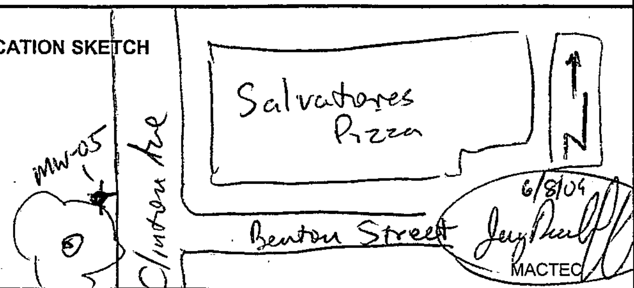
	METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC	USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☐ TOC	SM5310B	H2SO4 / 4 DEG. C	500 ML poly	☐
☐ Diss. Fe/ Mang Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☐
☐ Alkalinity/chloride/sulfate/nitrate	SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☐
☐ Sulfide	##	ZnAOC/4 DEG. C	1 Liter poly	☐
☐ Methan/ethane/ethene	RSK175	HCl to pH <2	3 X 40 ML	☐
☐ CO2	SM4500	4 DEG. C	2 X 40 ML	☐
☐ Other				☐

NOTES:

Brandon Shaw

SIGNATURE:

LOCATION SKETCH



6/8/09
MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828130MW06011609

SITE ID MW-06

SITE TYPE WELL

DATE 5-25-09

ACTIVITY START 1335 END 1545

SAMPLE TIME 1530.

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 8.28 FT

FINAL DEPTH TO WATER 8.54 FT

DRAWDOWN VOLUME .04 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 3.2 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 19.9 FT

SCREEN LENGTH Unknown FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .01

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.5 FT

WELL DIAM. 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR		✓	

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1440	Pump on @ mw-06								pump @ ~16'
1448	8.51	275	13.0	3.40	7.5	5.6	11.4	160	
1453	8.56	275	12.4	3.30	7.5	3.9	23.3	130	
1458	8.53	275	12.6	3.30	7.5	2.8	20.9	110	
1503	8.54	275	12.3	3.28	7.5	2.9	15.8	90	
1508	8.53	275	12.3	3.29	7.5	2.5	10.0	80	
1513	8.54	275	12.4	3.29	7.5	2.4	9.8	80	
1518	8.54	275	12.4	3.29	7.5	2.3	9.1	80	
1523	8.53	275	12.3	3.29	7.5	2.2	8.3	80	
1528	8.54	275	12.4	3.29	7.5	2.0	8.8	80.	
1530	Sample time @ mw-06.								
1543	pump off @ mw-06								
			12	3.29	7.5	2	9	80.	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

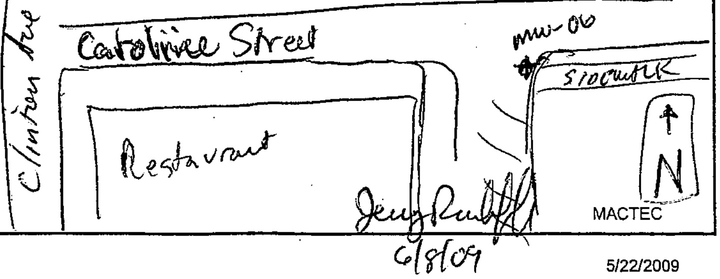
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☑ TOC - w/ pH/cl/Nitrate Sulfate		SM5310B	~~H2SO4 / 4 DEG. C~~ BS	~~500 ML poly~~	☑
☑ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑
☑ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑
☑ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☑
☑ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☑
☑ CO2		SM4500	4 DEG. C	2 X 40 ML	☑
☐ Other					☐

NOTES: purge water has "orange-flock".

Brandon Shaw

SIGNATURE:

LOCATION SKETCH



Jerry Rud
6/8/09

MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828103-MW08K01709

SITE ID MW-8K

SITE TYPE WELL

DATE 5/26/09

ACTIVITY START 1050 END 1245

SAMPLE TIME 1220

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 7.12 FT

FINAL DEPTH TO WATER 9.14 FT

DRAWDOWN VOLUME 0.32 GAL

(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 2.2 GAL

(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☒ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 18.8' FT

SCREEN LENGTH ~10 FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED ~~0~~.15

PROTECTIVE CASING STICKUP (FROM GROUND) 0 FT

PID AMBIENT AIR 0.4 PPM

PID WELL MOUTH 1.0 PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.35 FT

WELL DIAM. 2" IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	☒		
CASING	☒		
LOCKED	☒		
COLLAR	☒		

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1117	7.20	Start pump and set rate							
1120	7.41	250	13.7	0.96	7.5	2.3	35	214	
1125	8.21	150	12.5	0.96	7.4	<0.1	22	210	
1130	8.29	—	12.5	0.96	7.4	<0.1	17	210	
1135	8.44	150	12.5	0.96	7.4	<0.1	14	209	
1140	8.57	—	12.5	0.95	7.4	<0.1	12	208	
1145	8.64	150	12.5	0.94	7.4	<0.1	8	205	
1150	8.74	—	12.5	0.92	7.5	0.2	7	202	
1155	8.88	150	12.5	0.91	7.5	0.5	7	200	
1200	8.98	—	12.6	0.92	7.5	0.4	10	199	
1205	9.02	150	12.6	0.93	7.5	0.3	10	199	
1210	9.14	—	12.5	0.94	7.5	0.2	10	198	
			12	0.94	7.5	1.2	10	200	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☒ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☒ HIGH DENSITY POLYETHYLENE
☐ OTHER

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☒ OTHER None

TYPE OF BLADDER MATERIAL
☐ TEFLON
☒ OTHER None

ANALYTICAL PARAMETERS

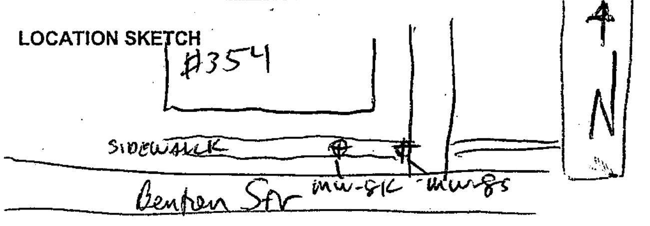
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	
☒ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☒	
☒ TOC		SM5310B	~~H2SO4 / 4 DEG. C~~	~~500 ML poly~~	☒	with Alk/Chlo/Sulf/nitrate
☒ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☒	
☒ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☒	
☒ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☒	
☒ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☒	
☒ CO2		SM4500	4 DEG. C	2 X 40 ML	☒	
☐ Other					☐	

NOTES:

✓ BAS 06/11/09

SIGNATURE:

LOCATION SKETCH



MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828130MW09K01809

SITE ID MW-09K

SITE TYPE WELL

DATE 5-25-09

ACTIVITY START 1335 END

SAMPLE TIME 1420.

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER ~~9.87~~ 9.78 FT

FINAL DEPTH TO WATER 9.79 FT

DRAWDOWN VOLUME <0.01 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 4.1 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 23.6 FT

SCREEN LENGTH unknown

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED —

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.2 FT

WELL DIAM. 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR		✓	

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1336	Pump on @ MW-09K.								pump set @ ~18'
1337	9.79	350	13.7	1.67	7.8	3.0	53.4	210	
1342	9.79	350	13.3	2.08	7.7	0.9	9.7	-20	
1347	9.79	350	13.4	2.58	7.5	0.3	63.4	-40	
1352	9.79	350	13.3	2.51	7.5	0.2	36.7	-50	
1357	9.79	350	13.3	2.47	7.4	<0.1	9.3	-50	
1402	9.79	350.	13.4	2.33	7.4	<0.1	10.3	-50	
1407	9.79	350	13.4	2.26	7.4	<0.1	9.6	-40	
1412	9.79	350	13.4	2.19	7.4	<0.1	9.1	-40	
1417	9.79	350	13.5	2.16	7.4	<0.1	8.3	-40.	
1420	Sample time @ MW-09K.								
1435	pump off @ MW-09K								
			14	2.16	7.4	<0.1	8	-40.	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

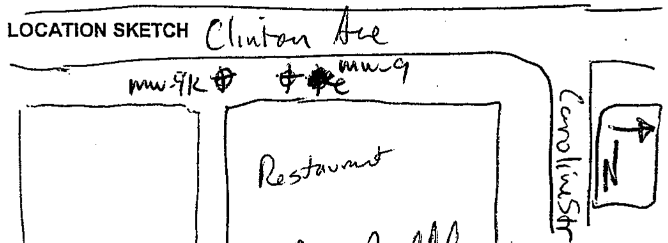
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑	VOC	USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☑	TOC - in 1 L poly bottle	SM5310B	~~H2SO4 / 4 DEG. C~~	~~500 ML poly~~	☑
☑	Diss. Fe/ Mang Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑
☑	Alkalinity/chloride/sulfate/nitrate	SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑
☑	Sulfide	##	ZnAOC/4 DEG. C	1 Liter poly	☑
☑	Methan/ethane/ethene	RSK175	HCl to pH <2	3 X 40 ML	☑
☑	CO2	SM4500	4 DEG. C	2 X 40 ML	☑
☐	Other				☐

NOTES: Purge water has orange-flock in it.

Brandon Shaw

SIGNATURE:

LOCATION SKETCH



6/8/09

MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 825103-MW10K01809

SITE ID MW-10K

SITE TYPE WELL

DATE 5/26/09

ACTIVITY START 1255 END 1540

SAMPLE TIME 1520

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 8.44 FT

FINAL DEPTH TO WATER 15.61 FT

DRAWDOWN VOLUME 1.1 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 4.1 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 21.7' FT

SCREEN LENGTH ~10' FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .27

PROTECTIVE CASING STICKUP (FROM GROUND) 0 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP NA PSI

REFILL SETTING NA

CASING / WELL DIFFER. 0.42 FT

WELL DIAM. 2" IN

DISCHARGE SETTING NA

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED	✓		
COLLAR	✓		

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1303	8.44	Start pump and set rate							
1308	9.39	140	14.6	1.54	7.0	0.6	280	-4	
1315	10.41	—	14.1	1.53	6.9	<0.1	190	-13	
1320	10.95	140	14.2	1.52	6.9	<0.1	160	-17	
1325	11.40	—	14.0	1.52	6.9	<0.1	150	-20	
1330	11.63	120	13.5	1.55	6.9	0.2	150	-22	
1335	11.81	—	13.5	1.55	6.9	0.3	140	-26	
1340	11.98	130	13.5	1.55	6.9	0.4	120	-27	
1345	12.15	—	13.6	1.55	7.0	0.4	120	-28	
1350	12.31	130	13.5	1.54	7.0	0.4	120	-26	
1355	12.51	—	13.6	1.53	7.0	0.4	130	-24	
1400	12.72	130	13.6	1.52	7.0	0.4	110	-24	
1405	12.86	—	13.6	1.51	7.0	0.4	110	-24	
1410	13.10	130	13.6	1.51	7.0	0.3	110	-25	
1415	13.38	—	13.7	1.51	7.0	0.4	120	-25	
1430	14.08	120	13.7	1.50	7.0	0.3	110	-25	
1435	14.37	—	13.8	1.50	7.0	0.3	100	-26	
1440	14.66	110	13.8	1.57	7.0	0.3	90	-26	
1445	14.87	—	13.7	1.51	7.0	0.3	83 ~~80~~	-26	
1450	15.04	110	13.8	1.51	7.0	0.3	79	-27	
1455	15.20	—	13.9	1.52	7.0	0.3	71	-28	
1500	15.40	110	14.0	1.52	7.0	0.2	63	-28	
1505	15.61	110	14.0	1.53	7.0	0.3	60	-28	
			14	1.53	7.0	0.3	60	-30	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☒ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☒ HIGH DENSITY POLYETHYLENE
☒ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER None

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER None

ANALYTICAL PARAMETERS

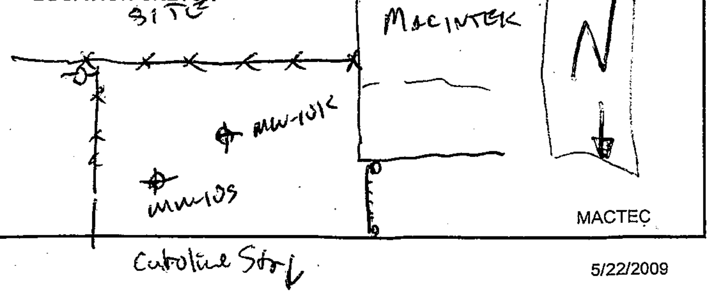
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑	
☑ TOC		SM5310B	~~H2SO4 / 4 DEG. C~~	~~500 ML poly~~	☑	with Alk/Chlor/Sul/Nitrate
☑ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑	
☑ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑	
☑ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☑	
☑ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☑	
☑ CO2		SM4500	4 DEG. C	2 X 40 ML	☑	
☐ Other					☐	

NOTES: Purged for more than 2 hours parameters stable except for drawdown Going to collect sample.

✓ BAS 06/01/09

SIGNATURE:

LOCATION SKETCH



MACTEC

LOWFLOW.xlsx/Dinaburg

5/22/2009

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828103-MW11S01209

SITE ID mw-11S

SITE TYPE WELL

DATE 5/26/09

ACTIVITY START 0840 END 1810

SAMPLE TIME 1755

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 7.46 FT

FINAL DEPTH TO WATER 12.8 FT

DRAWDOWN VOLUME 0.8 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 3.2 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☒ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) ≈13.4 FT

SCREEN LENGTH 10' FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED 0.25

PROTECTIVE CASING STICKUP (FROM GROUND) 0 FT

PID AMBIENT AIR 0.0 PPM

PID WELL MOUTH 0.8 PPM

PRESSURE TO PUMP NA PSI

REFILL SETTING NA

CASING / WELL DIFFER. 0.21 FT

WELL DIAM. 2" IN

WELL INTERGRITY:

	YES	NO	N/A
CAP		✓	
CASING	✓		
LOCKED	✓		
COLLAR	✓		

DISCHARGE SETTING NA

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
0917	7.46	Start pump and set rate							
0920	7.68	220	11.7	1.14	7.1	6.6	51	234	660 460
0925	7.97	120	11.4	1.15	7.2	3.6	37	204	
0930	8.18	130	11.5	1.18	7.2	2.9	—	200	
0935	8.52	130	11.5	1.19	7.3	2.4	27	197	1950
0940	8.95	—	11.4	1.17	7.3	2.3	43	195	
0945	9.25	150	11.4	1.13	7.3	2.4	42	194	
0950	9.45	—	11.4	1.08	7.3	1.7	17	193	
0955	9.68	150	11.4	1.05	7.4	1.1	10	193	
1000	9.96	—	11.4	1.02	7.4	0.7	9	190	
1005	10.24	150	11.4	1.01	7.4	1.0	9	190	
1010	10.51	—	11.3	1.00	7.4	1.0	13	189	
1015	10.74	150	11.1	1.10	7.3	2.9	74	190	
1020	10.98	—	11.2	1.11	7.3	3.0	66	191	
1030	11.44	150	11.2	1.07	7.4	1.6	23	188	8250
Going to increase rate purge dry and sample recharge									
1040	Purged to ≈12.9' BGS will sample when recharged to ≈8'								
			11	1.07	7.4	1.6	23	190	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☒ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☒ HIGH DENSITY POLYETHYLENE
☒ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☒ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☒ OTHER none

ANALYTICAL PARAMETERS

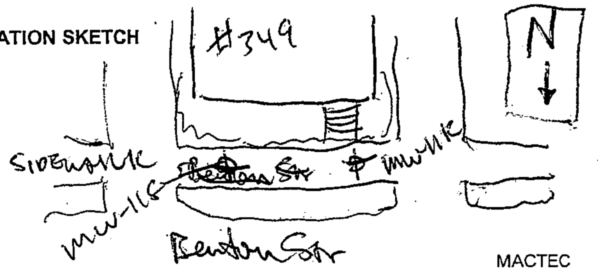
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	
☒ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☒	
☒ TOC		SM5310B	H2SO4 / 4 DEG. C	~~500 ML poly~~ ⑧	☒	with Alk/Chlor/Sulf./Nitrate
☒ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☒	
☒ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☒	
☒ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☒	
☒ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☒	
☒ CO2		SM4500	4 DEG. C	2 X 40 ML	☒	
☐ Other					☐	

NOTES: Purged dry - returned later and sampled recharge. ✓

BAS 06/11/09.

SIGNATURE:

LOCATION SKETCH



MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828130MW12S01009

SITE ID MW-12S

SITE TYPE WELL

DATE 5-25-09

ACTIVITY START 1705 END 1810.

SAMPLE TIME 1750.

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 8.08. FT

FINAL DEPTH TO WATER 9.48 FT

DRAWDOWN VOLUME .22 GAL

(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 2.2 GAL

(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT

☑ TOP OF WELL RISER

☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 13.7 FT

SCREEN LENGTH ~10 FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED 0.1

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0. FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.45 FT

WELL DIAM. 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR	✓		

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1705	Pump on @ MW-12S								tubing @ ~10'
1707	8.41	300	11.7	1.33	7.5	6.2	1.9	180.	600
1712	8.50	200	11.9	1.20	7.4	3.0	2.4	180	1000
1717	8.83	175	12.0	1.21	7.4	2.8	2.9	180	
1722	8.97	175	12.0	1.21	7.4	2.2	1.2	180	
1727	9.21	175	11.8	1.22	7.4	2.1	1.1	180	
1732	9.28	175	11.7	1.24	7.4	2.5	1.8	180	
1737	9.35	175	11.8	1.26	7.4	2.7	1.3	180	
1742	9.39	175	11.9	1.27	7.4	2.8	1.8	180	
1747	9.41	175	12.0	1.29	7.4	2.9	1.4	180.	
1750	Sample time @ MW-12S								
1809	Pump off @ MW-12S								
			12	1.29	7.4	3	1	180.	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- ☑ GEOPUMP (peristaltic)
- ☐ QED BLADDER

TYPE OF TUBING
- ☑ HIGH DENSITY POLYETHYLENE
- ☑ OTHER Silastic

TYPE OF PUMP MATERIAL
- ☐ STAINLESS STEEL
- ☑ OTHER none

TYPE OF BLADDER MATERIAL
- ☐ TEFLON
- ☑ OTHER none

ANALYTICAL PARAMETERS

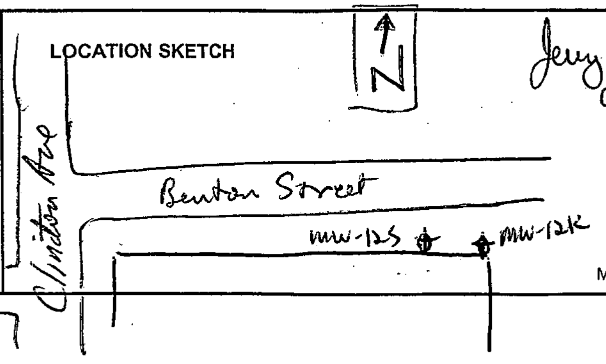
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☑ TOC		SM5310B w/Alk, Cl, nit, Sulfate	~~H2SO4 / 4 DEG. C~~ 05	~~500 ML poly~~	☑
☑ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑
☑ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑
☑ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☑
☑ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☑
☑ CO2		SM4500	4 DEG. C	2 X 40 ML	☑
☐ Other					☐

NOTES:

Brandon Shaw

SIGNATURE:

LOCATION SKETCH



6/8/09

MACTEC

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 528103MW12K01609 D, MS, MSD

SITE ID MW-12K

SITE TYPE WELL

DATE 5-26-09

ACTIVITY START 0830 END 1010

SAMPLE TIME 0920

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 9.15 FT

FINAL DEPTH TO WATER 9.80 FT

DRAWDOWN VOLUME .10 GAL
(initial - final x 0.16 (2-inch) or x 0.65 (4-inch))

TOTAL VOL. PURGED 2.5 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) ~19.5 FT

SCREEN LENGTH ~10 FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .04

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.35 FT

WELL DIAM. 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR	✓		

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
0847	Pump on @ MW-12K								tubing @ ~16' bgs
0850	947	300.	12.0	1.08	7.2	4.1	20.6	230	
0855	9.63	300	11.3	1.10	7.3	2.8	14.5	130	
0900	9.74	300	11.1	1.06	7.3	2.3	6.0	110	
0905	9.79	300.	11.0	1.05	7.3	2.3	4.0	90	
0910	9.80	300	11.0	1.05	7.3	2.2	3.1	90	
0915	9.80	300.	11.0	1.05	7.3	2.2	2.0	80	
0920	Sample time								
0954	pump off								
			11	1.09	7.3	2	2	80	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

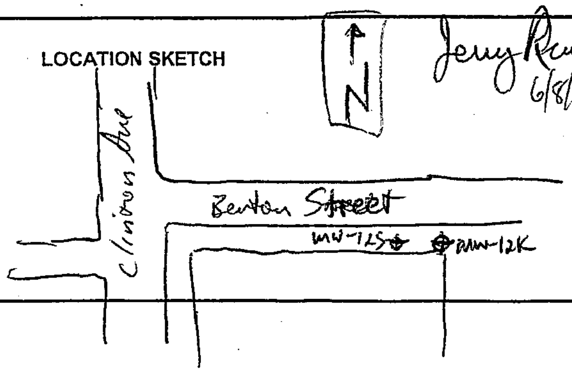
		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☑ TOC w/ Alk, Cl⁻, Nitrate		SM5310B	~~H2SO4 / 4 DEG. C~~ BS	~~500 ML poly~~	☐
☑ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑
☑ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑
☑ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☑
☑ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☑
☑ CO2		SM4500	4 DEG. C	2 X 40 ML	☑
☐ Other					☐

NOTES: Collected Dup, MS & MSD here also.

Brandon Shaw

SIGNATURE:

LOCATION SKETCH



Jerry Ratcliff 6/8/09

MACTEC

LOWFLOW.xlsx/Dinaburg

5/22/2009

FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828103MW13K01609

SITE ID MW-13K

SITE TYPE WELL

DATE 5-26-09

ACTIVITY START 1010 END 1115

SAMPLE TIME 1100

WATER LEVEL / PUMP SETTINGS

INITIAL DEPTH TO WATER 9.51 FT

FINAL DEPTH TO WATER 9.56 FT

DRAWDOWN VOLUME .008 GAL
(initial - final x 0.16 {2-inch} or x 0.65 {4-inch})

TOTAL VOL. PURGED 3.4 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

WELL DEPTH (TOR) 21.2 FT

SCREEN LENGTH ~10' FT

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .02

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0 FT

PID AMBIENT AIR — PPM

PID WELL MOUTH — PPM

PRESSURE TO PUMP — PSI

REFILL SETTING —

CASING / WELL DIFFER. 0.3 FT

WELL DIAM. 2 IN

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR	✓		

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1020	pump on								tubing @ ~16' bgs
1022	9.55	325	13.7	2.37	7.5	5.2	6.7	30	
1027	9.56	325	12.7	2.46	7.4	1.4	9.5	0	
1032	9.56	325	12.4	2.59	7.4	2.1	11.9	-20	
1037	9.56	325	12.4	2.48	7.4	3.3	9.3	-20	
1042	9.56	325	12.4	2.46	7.4	2.7	8.1	-30	
1047	9.56	325	12.4	2.40	7.4	0.9	9.7	-30	
1052	9.56	325	12.4	2.36	7.4	0.5	9.1	-30	
1057	9.56	325	12.4	2.34	7.4	0.3	9.0		
1100	Sample time @ MW-13K								
1109	pump off								
			12	2.34	7.4	0.3	9	-30	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☑ TOC w/ Alk, Cl, sulfate, nitrate		SM5310B	~~H2SO4 / 4 DEG. C~~ NS	~~500 ML poly~~	☑
☑ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑
☑ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑
☑ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☑
☑ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☑
☑ CO2		SM4500	4 DEG. C	2 X 40 ML	☑
☐ Other					☐

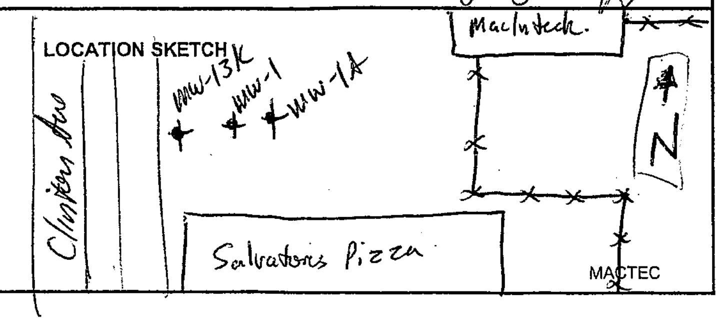
6/8/09

NOTES:

Brandon Shaw

SIGNATURE:

LOCATION SKETCH



FIELD DATA RECORD - LOW FLOW GROUNDWATER SAMPLING

JOB NUMBER 3612082107-

PROJECT NYSDEC Dinaburg Ditributing

FIELD SAMPLE NUMBER 828103MW14K01909

SITE ID Mw-14K

SITE TYPE WELL

DATE 5-26-09

ACTIVITY START 1400 END 1515

SAMPLE TIME 1500

WATER LEVEL / PUMP SETTINGS

MEASUREMENT POINT
☑ TOP OF WELL RISER
☐ TOP OF PROTECTIVE CASING

PROTECTIVE CASING STICKUP (FROM GROUND) 0.0 FT

CASING / WELL DIFFER. 0.4 FT

INITIAL DEPTH TO WATER 8.92 FT

WELL DEPTH (TOR) 24.0 FT

PID AMBIENT AIR — PPM

WELL DIAM. 2 IN

FINAL DEPTH TO WATER 8.96 FT

SCREEN LENGTH ~10' FT

PID WELL MOUTH — PPM

WELL INTERGRITY:

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED		✓	
COLLAR	✓		

DRAWDOWN VOLUME <0.01 GAL
(initial - final x 0.16 (2-inch) or x 0.65 (4-inch))

RATIO OF DRAWDOWN VOLUME TO TOTAL VOLUME PURGED .002

PRESSURE TO PUMP — PSI

TOTAL VOL. PURGED 4.7 GAL
(purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter)

REFILL SETTING —

DISCHARGE SETTING —

PURGE DATA

TIME	DEPTH TO WATER (ft)	PURGE RATE (ml/m)	TEMP. (deg. c)	SPECIFIC CONDUCTANCE (mS/cm)	pH (units)	DISS. O2 (mg/L)	TURBIDITY (ntu)	REDOX (mv)	COMMENTS
1405	Pump on @ mw-14K								tubing @ ~19'
1407	8.96	325	12.8	0.806	8.1	0.6	17.0	100	
1412	8.96	325	12.6	0.806	8.1	<0.1	47.8	96	
1417	8.96	325	12.6	0.805	8.1	<0.1	23.1	90	
1422	8.96	325	12.7	0.805	8.1	<0.1	44.2	80	
1427	8.96	325	12.7	0.822	8.1	<0.1	11.3	60	
1432	8.96	325	12.6	0.835	7.9	<0.1	20.7	-10	
1437	8.96	325	12.6	0.927	7.7	<0.1	33.8	-30	
1442	8.96	325	12.6	1.09	7.7	<0.1	12.6	-40	
1447	8.96	325	12.7	1.27	7.6	<0.1	3.3	-50	
1452	8.96	325	12.7	1.29	7.6	<0.1	2.0	-50	
1457	8.96	325	12.7	1.29	7.6	<0.1	2.9	-50	purge water headspace is 307 ppm
1500	Sample time @ mw-14K								
1510	pump off @ mw-14K								
			13	1.29	7.6	<0.1	3	-50	

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
☑ GEOPUMP (peristaltic)
☐ QED BLADDER

TYPE OF TUBING
☑ HIGH DENSITY POLYETHYLENE
☑ OTHER Silastic

TYPE OF PUMP MATERIAL
☐ STAINLESS STEEL
☑ OTHER none

TYPE OF BLADDER MATERIAL
☐ TEFLON
☑ OTHER none

ANALYTICAL PARAMETERS

		METHOD NUMBER	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☑ VOC		USEPA-8260B	HCL / 4 DEG. C	2 X 40 ML	☑
☑ TOC w/ Alk, Cl⁻, sulfate, nitrate		SM5310B	~~H2SO4 / 4 DEG. C~~ BS	~~500 ML poly~~	☑
☑ Diss. Fe/ Mang	Field Filtered	USEPA 6010B	HNO3 to pH <2	500 ml poly	☑
☑ Alkalinity/chloride/sulfate/nitrate		SM2320B/SM4500 Cl C/300	4 DEG. C	1 Liter poly	☑
☑ Sulfide		##	ZnAOC/4 DEG. C	1 Liter poly	☑
☑ Methan/ethane/ethene		RSK175	HCl to pH <2	3 X 40 ML	☑
☑ CO2		SM4500	4 DEG. C	2 X 40 ML	☑
☐ Other					☐

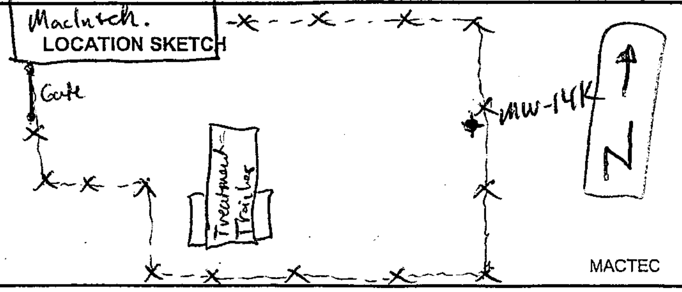
Jerry Radcliffe 6/8/09

NOTES: Solvent odor on purge water

Brandon Shaw

SIGNATURE:

LOCATION SKETCH



MACTEC

SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. MW-121C
Project No. 3612082107

Client NYSDEC
Site Rochester NY, Clinton Ave
Sheet No. 1 of 2

Logged By J. Rawcliffe
Ground Elevation 513.09
Start Date 5/4/09
Finish Date 5/4/09

Drilling Contractor Geologic NY
Driller's Name Scott Breeds
Rig Type Truckmounted CME

Drilling Method HSA
Protection Level D
P.I.D. (eV) 10.0
Casing Size NA
Auger Size 4 1/4"

Soil Drilled 19.3
Rock Drilled 0.2
Total Depth 19.5
Depth to Groundwater/Date 5-7-09 : 8.84' (TOR)
8.48' TOR 6/3/09
Piez ☐ Well ☒ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
1 2 3 4				Topsoil 0-1.0 1-5' BGS Darkbrown fill		0.1	NA	NA
5 6 7	S1 1230 5-7 1.0/2.0	9 10 15 15	~~9~~ ~~10~~ 25 ~~15~~	Top 0.3 Brown to darkbrown fine to coarse sandy fill with some silt coal, coal ash, brick Bottom 0.7 Reddish brown fine sandy silt with traces of medium to coarse sand and gravel, fine stratification, moist, (lacustrine deposits)	Fill SM	0.1 0.2	— —	NA
8 9								
10 11 12	S2 1245 1.3/2.0 10-12'	8 12 9 12	21	Top 0.4 Gray to grayish brown fine sandy silt matrix with some gravel and a little fine to coarse sand moist. Bottom 0.9' Reddish brown to reddish gray brown silt with traces of fine to medium sand and occasional coarser material. - grades to silt with traces of fine sand, foliated well stratified (lacustrine)	SM	0.0	— —	NA

MACTEC
511 Congress Steet
Portland, ME 04101

BAS 05-13-2009

PORT2007022w.mac

SOIL BORING LOG

Project Dinaburg Distributing
Boring/Well No. MW-12K
Project No. 3612082107

Client NYSDEC
Site Clinton Ave, Rochester, NY
Sheet No. 2 of 2

Logged By J. Rawcliffe
Ground Elevation 513.09
Start Date 5/4/09
Finish Date 5/4/09

Drilling Contractor Geologic NY
Driller's Name Scott Breeds
Rig Type Truckmounted CME

Drilling Method HSA
Protection Level D
P.I.D. (eV) 10.0
Casing Size NA
Auger Size 4 1/4 ID

Soil Drilled 19.3
Rock Drilled 0.2
Total Depth 19.5
Depth to Groundwater/Date 5-7-09: 8.84' (TOR). 8.48' TOR 6/3/09
Piez ☐ Well ☒ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
14				Change @ ≈ 14.5-15' BGS to till.				
15	S3 1310 15-17 1.5/2.0	25 25 20 23	45	Top 0.3 Grayish to slightly reddish brown fine sand and silt with fines of medium sand. Very moist, massive. Bottom 0.2 Gray to grayish brown fine sand and silt matrix with some medium to coarse sand and gravel. Very moist to wet. (Till)		0 0.1	- —	NA
17								
18				Encountered boulders/bedrock at ≈ 17.5' BGS.				
19				Augered through cobbles or weathered bedrock from 17.5 to 19.5.				
20				Becomes much firmer/hard at ≈19.3' BGS Apparent top of competant bedrock at 19.3'.				
21								
22				Bottom of boring 19.5' BGS Refusal with augers in bedrock.				
23								
24								
25								

Notes: No elevated PID readings on split spoon samples or drill cuttings.

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BAS 05-13-2009

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Overburden Well Construction Diagram

Well No.: MW-12K

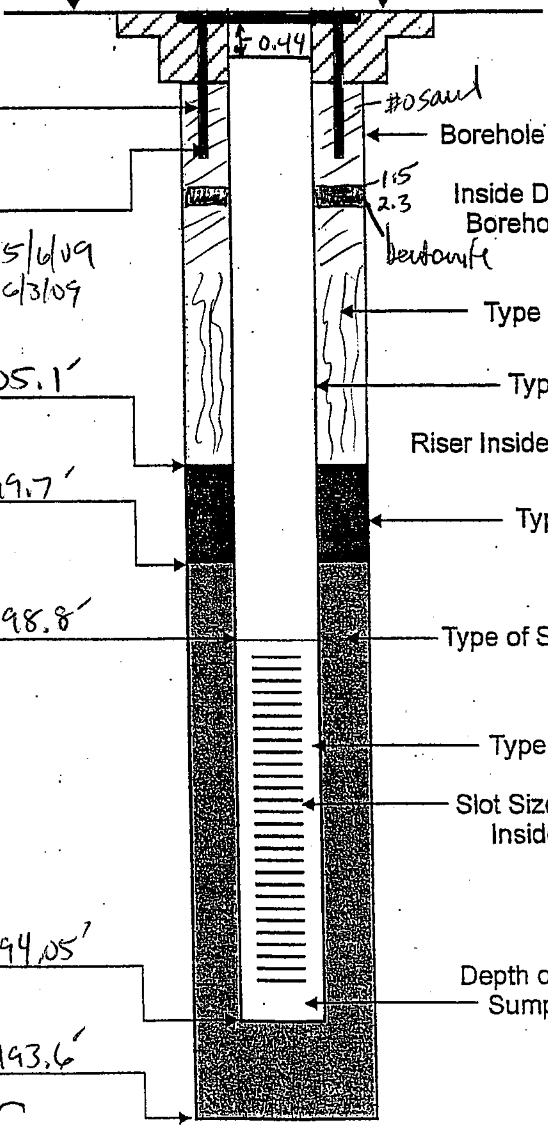
Project No.: 3612082107
NYSDEC
Project Name: Orinabury Distributing
Project Area: Clinton Ave, Rochester, NY
Contractor: Geologic NY
Driller: Scott Breeds
Method: HSA
Logged By: J. Rawcliffe
Date Started: 5/4/09
Completed: 5/4/09
Checked By: BTS
Date: 05-13-09
Well Development Date: 5/7/09

Not To Scale

Surface Casing Type: Flush Mount steel

Ground Surface Elevation: 513.1

Type of Surface Seal: cement



Surface Casing Diameter: 8"

Inside Diameter of Surface Casing: 8"

GW = 9.16' TOR 5/6/09
8.48' TOR 6/3/09

Depth/Elevation of Top of Well Seal: 8' BGS / 505.1'

Depth/Elevation of Top of Sand: 13.4' BGS / 499.7'

Depth/Elevation of Top of Screen: 14.3' BGS / 498.8'

Depth/Elevation of Bottom of Screen: 19.05' BGS / 494.05'

Depth/Elevation of Bottom of Boring: 19.5' BGS / 493.6'

Borehole Diameter: 8"

Inside Diameter of Borehole Casing: NA

Type of Backfill: Clean soil and #0 sand, bentonite chips

Type of Riser: Sch 40 PVC

Riser Inside Diameter: 2"

Type of Seal: Bentonite Chips

Type of Sand Pack: #0 US Silica sand

Type of Screen: Sch 40 PVC

Slot Size x Length: 0.01" x 5'

Inside Diameter of Screen: 2"

Depth of Sediment Sump with Plug: 19.2' BGS

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

WELL DEVELOPMENT RECORD

Project: Dinaburg Distribution	Well Installation Date: 5/4/09		Project No. 3612082107
Client: NYSDEC	Well Development Date: 5/7/09	Logged by: J. Rawcliff	Checked by: BAS
Well/Site I.D.: MW-12K	Weather: Drizzle overcast 50-60°F	Start Date: 5/7/09	Finish Date: 5/7/09
		Start Time: 1010	Finish Time: 1350

Well Construction Record Data:

Well Diameter 2 in.

Bottom of Screen 19.05 ft.

Sediment Sump/Plug 19.2 ft.

Screen Length 4.8 ft.

From Ground Surface ☒ From Top of Riser ☐

Fluids Lost during Drilling 0 gal.

Protective Casing Stick-up 0 ft. Protective Casing/Well Diff. 0.44 ft.

PID Readings: Ambient Air — ppm; Well Mouth — ppm

Well Levels:

Initial 8.84 ft.

End of Development 11.8 ft.

24 Hours after Development 8.98 ft.

Sediment:

TOR Well Depth before Development 18.7 ft. (from top of PVC)

TOR Well Depth after Development 18.75 ft.

TOR Sediment Depth Removed 0.05 ft.

HT of Water Column 9.89 ft. x ☐ 1.68* gal./ft. ☐ ____ = 5.24 gal./vol.

19.05 - 9.16 = 9.89

Sat seal pack 6.1'

*for 4" HSA Installed Wells

Equipment:

- ☐ Dedicated Submersible Pump
- ☐ Surge Block
- ☐ Bailer ☐ 2" ☐ ________
- ☒ ~~Grundfos~~ Whale Pump 2" _____ 4" _____

Approximate Recharge Rage ≈0.45 gpm

Total Gallons Removed 75 gal.

Well Development Criteria Met:

Notes: Purged dry after 3 gallons

	Yes	No
■ Well water clear to unaided eye	☐	☒
■ Sediment thickness remaining in well is <1.0% of screen length	☒	☐
■ Total water removed = a minimum of 5x calculated well volume plus 5x drilling fluid lost	☒	☐
■ Turbidity < 5NTUs	☐	☒
■ <10% change in field parameters (less than)	☒	☐

End of Well Development Sample (1 pint) Collected? Yes ☐ No ☒

Water Parameter Measurements

Record at start, twice during and at the end of development (minimum):

Start 1021

Time	Volume	Total Gallons	pH	Temp. °C	Conductance mS/cm	Turbidity	Pumping Rate
1023	<1	3	7.1	10.2	1.13	>1000	≈ 1.4GPM
1057	2.5	13	7.2	10.3	1.17	>1000	↓
1130	4.4	23	7.1	10.4	1.20	360	
1202	6.3	33	7.2	10.5	1.22	635	
1221	8.2	43	7.1	10.7	1.22	630	
1250	10.1	53	7.1	10.7	1.24	600	
1307	12	63	7.1	10.6	1.23	200	
1336	13.9	73	7.1	10.7	1.25	320	

Well Developer's Signature Jerry Rawcliff

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FIGURE 4-9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

WELL DEVELOPMENT RECORD

Project: Duanbury Distributing	Well Installation Date: 5/6/09		Project No. 3612082107
Client: NYSDEC	Well Development Date: 5/7/09	Logged by: J. Ravcliffe	Checked by: BAS
Well/Site I.D.: MW-12S	Weather: cloudy, 50-60°F, calm	Start Date: 5/7/09	Finish Date: 5/8/09
		Start Time: 1410	Finish Time: 0945

Well Construction Record Data:

Bottom of Screen 13.3 ft.

Sediment Sump/Plug 13.7 ft.

Screen Length 4.8 ft.

From Ground Surface ☐ From Top of Riser ☒

Well Diameter 2 in.

Fluids Lost during Drilling 0 gal.

Protective Casing Stick-up 0.0 ft.

Protective Casing/Well Diff. 0.49 ft.

PID Readings: Ambient Air — ppm; Well Mouth — ppm

Well Levels:

Initial 7.61 ft. TOR

End of Development 7.94 ft.

24 Hours after Development NA ft.

Sediment:

Well Depth before Development 13.7 ft. (from top of PVC)

Well Depth after Development 13.7 ft.

Sediment Depth Removed 0 ft.

HT of Water Column 6.6' ft. x ☐ 1.68* gal./ft. ☐ ______ = 4.5 gal./vol.

6.6' in PVC 6.2 in sump

*for 4" HSA Installed Wells

Equipment:

- ☐ Dedicated Submersible Pump
- ☐ Surge Block
- ☐ Bailer ☐ 2" ☐ ________
- ☑ ~~Grundfos~~ Whale Pump 2" _____ 4" _____

Approximate Recharge Rage est. .06 gpm

Total Gallons Removed 19 gal.

Well Development Criteria Met:

Notes: Stop development THUR afternoon 5/7/09 resume 5/8/09

5/8/09 initial WL = 6.66' TOR

End of Well Development Sample (1 pint) Collected? Yes ☐ No ☒

	Yes	No
■ Well water clear to unaided eye	☒	☐
■ Sediment thickness remaining in well is <1.0% of screen length	☒	☐
■ Total water removed = a minimum of 5x calculated well volume plus 5x drilling fluid lost	☐	☒
■ Turbidity < 5NTUs	☐	☒
■ less than 10% change in field parameters	☒	☐

Water Parameter Measurements

Record at start, twice during and at the end of development (minimum):

Time	Volume	Total Gallons	pH	Temp.	Conductance mS/cm	Turbidity	Pumping Rate
1416	<1	3	7.2	10.3	1.52	93	1.2GPM
1730	2.2	10	7.2	12.3	1.61	95	↓
1750 ~~17~~	2.7	12	Complete	Development	for	DAY	—
0820-0828	3.1	14	7.1	9.7	1.59	55	
0945	4.2	19	7.2	9.8	1.52	38	

Well Developer's Signature Jerry Rawcliffe

Purged dry repeatedly - very low recharge

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FIGURE 4-9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

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Overburden Well Construction Diagram

Well No.: MW-12S

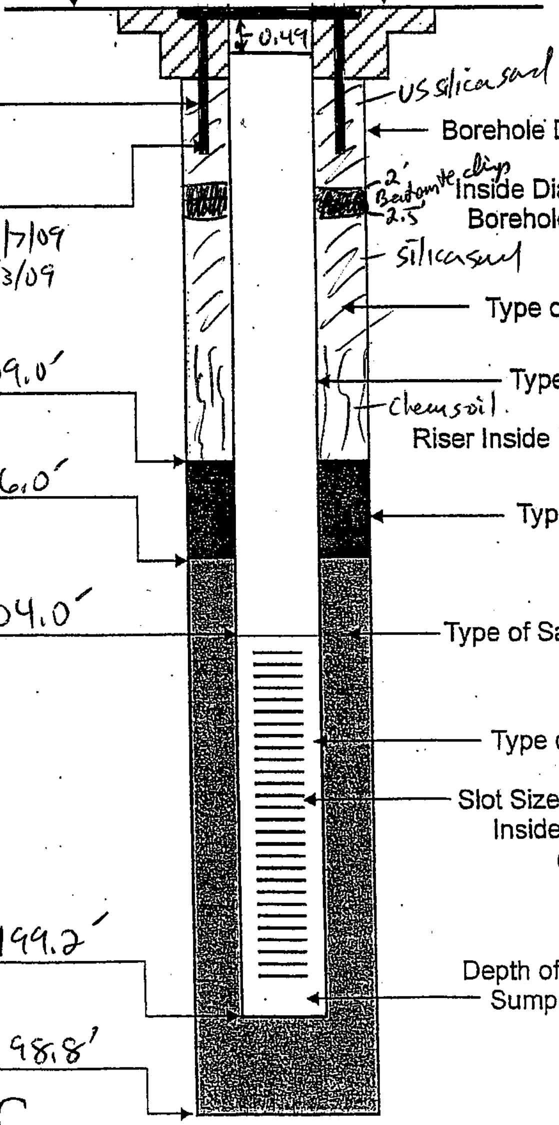
Project No.: 3612082107
NYSDEC
Project Name: Dinaburg Distributing
Project Area: Clinton Ave, Rochester, NY
Contractor: Geologic NY
Driller: Scott Breeds
Method: HSA
Logged By: J. Rawcliffe
Date Started: 5/6/09
Completed: 5/6/09
Checked By: BAS
Date: 05-13-09
Well Development Date: 5/7/09

Not To Scale

Surface Casing Type: Steel Flush mount

Ground Surface Elevation: 513.0

Type of Surface Seal: Cement



Surface Casing Diameter: 8"

Borehole Diameter: 8"

Inside Diameter of Surface Casing: 8"

Inside Diameter of Borehole Casing: NA

GW = 7.61' TOR 5/7/09
6.76' TOR 6/3/09

Type of Backfill: cleansoil and #0 sand

Depth/Elevation of Top of Well Seal: 4.0' BGS / 509.0'

Type of Riser: Sch 40 PVC

Riser Inside Diameter: 2"

Depth/Elevation of Top of Sand: 7.0' BGS / 506.0'

Type of Seal: Bentonite chip

Depth/Elevation of Top of Screen: 9.0' BGS / 504.0'

Type of Sand Pack: #0 US Silica

Type of Screen: Sch 40 PVC

Slot Size x Length: 0.01" x 5'

Inside Diameter of Screen: 2"

Depth/Elevation of Bottom of Screen: 13.8' BGS / 499.2'

Depth of Sediment Sump with Plug: 14.2' BGS

Depth/Elevation of Bottom of Boring: 14.2' BGS / 498.8'

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

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SOIL BORING LOG

Project Dinaburg Distributing	Boring/Well No. MW-13K	Project No. 3612082107
Client NYSDEC	Site Clinton Ave, Rochester, NY	Sheet No. 1 of 2

Logged By J. Rawcliffe	Ground Elevation 513.41	Start Date 5/5/09	Finish Date 5/5/09

Drilling Contractor Geologic NY	Driller's Name Scott Breeds	Rig Type Truck mounted CME

Drilling Method HSA / 4" Drive + Wash	Protection Level D	P.I.D. (eV) TG-5808/10.0	Casing Size 4"	Auger Size 4¼ ID

Soil Drilled 19.6	Rock Drilled 1.9	Total Depth 21.5	Depth to Groundwater/Date 9.54 5/6/09 9.08 TOR 6/3/09	Piez ☐	Well ☒	Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
				0-0.4 Asphalt.		0	NA	
1				0.4-3' Brown fine to coarse sand and gravel fill with some cobbles.				
2						0.3		
3				3- Brown fine sand with some silt and a little to traces of medium to coarse sand	SM	3.2		
4								
5	S1 0905 4.5-65 1.0/2.0	15 25 30 50	45	Brown to slightly yellowish brown fine sand and silt matrix with some gravel and a little medium to coarse sand. (Fill?).		3.4		
6						3.0		
7				Encountered something hard at ≈6.5-7' BGS cobble or concrete rubble? Augered through a series of cobbles				
8						0		
9						0.2		
10	S2 0945 9.5-11.5 1.2/2.0	28 22 18 25	40	Brown to olive grayish brown becoming reddish brown at the ~~tip~~. Gravel with fine to coarse sand and silt. Wet, gravel is very angular, old fuel-like odor (Either Fill or gravelly till)	GM	4.4		
11						130		
						340		
12				Estimated change to till with sandy silt matrix. (12-12.5' BGS)				

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SOIL BORING LOG

Project: Dinaburg Distributing
Boring/Well No.: MW-13K
Project No.: 3612082107
Client: NYSDEC
Site: Clinton Ave, Rochester, NY
Sheet No. 2 of 2
Logged By: J. Rawcliffe
Ground Elevation: 513.41
Start Date: 5/5/09
Finish Date: 5/5/09
Drilling Contractor: GeologicNY
Driller's Name: Scott Breeds
Rig Type: Truck mounted CME
Drilling Method: HSA/4" Drive & Wash
Protection Level: D
P.I.D. (eV): 10.0
Casing Size: 4"
Auger Size: 4 1/4"
Soil Drilled: 19.6
Rock Drilled: 1.9
Total Depth: 21.5
Depth to Groundwater/Date: 9.54 5/6/09
9.08' TOR 6/3/09
Piez ☐ Well ☒ Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm)		Lab Tests ID Sample
						PI Meter Field Scan	PI Meter Head Space	
14								
15	S3 1015 14.5-16.5 0.8/2.0	14 11 12 17	23	Reddish brown silt and fine sand matrix with a little medium to coarse sand and traces of gravel. (Till). Very moist	SM/GM	55 32	-	*
16								
17				Switching to 4" casing.				
18								
19								
20	S4 1200 0/0.1 19.5-19.6	50/0.1'	–	No recovery. Refusal on possible bedrock at 19.6' BGS.			85 ppm on drill water	
21				Used tri cone roller bit to drill from 19.6 to 21.5' into rock. 21.2-21.4 encountered fracture started loosing water. 21.5' Bottom of boring.				
22								
23								
24								
25								

There appears to be a gravelly wet unit overlying till that has some possible residual fuel contamination

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Overburden Well Construction Diagram

Well No.: MW-13K

Project No.: 3612082107

NYSDEC

Project Name: Dinaburg Distributing

Project Area: Clinton Ave, Rochester NY.

Contractor: Geologic NY

Driller: Scott Breeds

Method: HSA / 4". Drive & Wash

Logged By: J. Rawcliffe

Date Started: 5/5/09

Completed: 5/5/09

Checked By: BAS

Date: 05-13-09

Well Development Date: 5/6/09

Not To Scale

Surface Casing Type: Flush mount steel casing

Ground Surface Elevation: 513.4

Surface Casing Diameter: 8"

Inside Diameter of Surface Casing: 8"

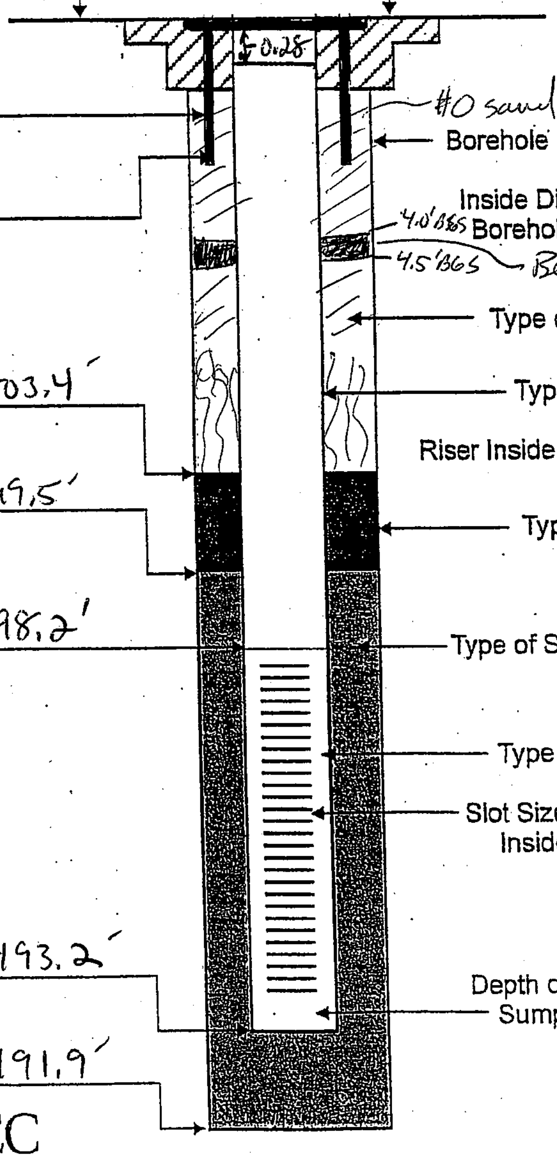
Depth/Elevation of Top of Well Seal: 10.0' BGS / 503.4'

Depth/Elevation of Top of Sand: 13.9' BGS / 499.5'

Depth/Elevation of Top of Screen: 15.2' BGS / 498.2'

Depth/Elevation of Bottom of Screen: 20.2' BGS / 493.2'

Depth/Elevation of Bottom of Boring: 21.5' BGS / 491.9'



Type of Surface Seal: Cement

Borehole Diameter: 8" 0-14' BGS 4" 14-21.5' BGS

Inside Diameter of Borehole Casing: N/A ~~8" 0-14 4" 14'-21.5'~~ BGS

Type of Backfill: Cave & #0 sand

Type of Riser: Sch 40 PVC

Riser Inside Diameter: 2"

Type of Seal: Bentonite chip

Type of Sand Pack: #0 Silica (US Silica Filpro)

Type of Screen: Sch 40 PVC

Slot Size x Length: 0.01" x 5'

Inside Diameter of Screen: 2"

Depth of Sediment Sump with Plug: 20.5' BGS

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FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

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WELL DEVELOPMENT RECORD

Project: Dinatavy Distribution	Well Installation Date: 05-05-2009		Project No. 3612082107
Client: NYSDEC	Well Development Date: 5/6/09	Logged by: JKR	Checked by: BAS
Well/Site I.D.: MW-13K	Weather: Partly cloudy, 55-60°F	Start Date: 5/6/09	Finish Date: 5/6/08
		Start Time: 1630	Finish Time: 1840

Well Construction Record Data:

Well Diameter 2 in.

Bottom of Screen 19.9 ft.

Sediment Sump/Plug 20.25 ft.

From Ground Surface ☐ From Top of Riser ☒

Screen Length 5 ft.

Fluids Lost during Drilling 30 gal.

Protective Casing Stick-up 0 ft.

Protective Casing/Well Diff. 0.29 ft.

PID Readings: Ambient Air — ppm; Well Mouth — ppm

Well Levels:

Initial 9.54 ft. TOR

End of Development 13.1 ft.

24 Hours after Development 9.60 ft. 5/8/09 1305

Sediment:

Well Depth before Development 20.25 ft. (from top of PVC)

Well Depth after Development 20.25 ft.

Sediment Depth Removed 0 ft.

HT of Water Column 10.7 ft. x ☐ ~~1.68* gal./ft.~~ ☒ .19 = 2 gal./vol.

*for 4" HSA Installed Wells

Equipment:

- ☐ Dedicated Submersible Pump
- ☐ Surge Block
- ☐ Bailer ☐ 2" ☐ ______
- ☒ ~~Grundfos~~ Whale Pump 2" x 4" ____

Approximate Recharge Rage 1.4 gpm

Total Gallons Removed 155 gal.

Well Development Criteria Met:

Notes: 1 saturated well volume with sandpack at 25% porosity ≈ 2 gallons

End of Well Development Sample (1 pint) Collected? Yes ☐ No ☒

	Yes	No
■ Well water clear to unaided eye	☒	☐
■ Sediment thickness remaining in well is <1.0% of screen length	☒	☐
■ Total water removed = a minimum of 5x calculated well volume plus 5x drilling fluid lost	☒	☐
■ Turbidity < 5NTUs	☐	☒
■ <10% change in field parameters	☒	☐

Water Parameter Measurements

Record at start, twice during and at the end of development (minimum):

Time	Volume	Total Gallons	pH	Temp. °C	Conductance mS/cm	Turbidity	Pumping Rate
1637 Start	1.5	3	7.1	12.3	0.010	>1000	≈1-1.5GPM
1653	11.5	23	7.1	11.9	1.59	>1000	↓
1707	21.5	43	7.1	11.9	1.58	370	
1721	31.5	63	7.1	12.0	1.60	196	
1734	41.5	83	7.0	11.9	1.61	135	
1751	51.5	103	7.0	11.9	1.62	32	
1806	61.5	123	7.0	11.9	1.62	25	
1823	71.5	143	7.0	11.9	1.62	9.2	
1833	77.5	155	7.0	11.9	1.63	8.8	

Well Developer's Signature Jerry Rudolph

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FIGURE 4-9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

SOIL BORING LOG

Project Dinaburg Distributing	Boring/Well No. MW-14K	Project No. 3612082107

Client NYSDEC	Site Clinton Ave ~~[illegible] Ave~~ Rochester, NY	Sheet No. 1 of 2

Logged By J. Rawcliffe	Ground Elevation 513.04	Start Date 5/6/09	Finish Date 5/7/09

Drilling Contractor Geologic NY	Driller's Name Scott Breeds	Rig Type Truck Mounted CME

Drilling Method HSA / 4" Drive & Wash	Protection Level D	P.I.D. (eV) 10.0	Casing Size 4"	Auger Size 4¼" ID

Soil Drilled 22.4'	Rock Drilled 2'	Total Depth 24.4'	Depth to Groundwater/Date 8.98' (TOR), 5-8-09 8.60' TOR 6/3/09	Piez ☐	Well ☒	Boring ☒

Depth(Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm)		Lab Tests ID Sample
						PI Meter Field Scan	PI Meter Head Space	
1 2 3 4				Augered to 4.5' BGS through sand and gravel fill. Brown gravel with medium to coarse sand and a little fine sand and cobbles. (Fill)	GP	0 0 0	NA	NA
5 6	S1 1115 4.5-6.5 0/2.0	14 10 12 17	22	No recovery. appear to have pushed a cobble				
7 8 9				Change @ ≈ 7.5' to finer grained silty fine sand Brown to light reddish brown moist.		0	5.2	PID
10 11 12	S2 1120 9.5-11.5 1.5/2.0	20 17 21 19	38	Top 0.6 Brown to yellowish brown fine to medium sand with some coarse sand and gravel and a little silt, Moist, mottled. - (High PID at interface) 22ppm Bottom 0.9' Reddish brown silt and fine sand matrix with a little medium to coarse sand and gravel. Moist, massive. (Till) Switching to 4" casing.	SP/SM SM	3.2 9.8 22 4.2	Head Drill	space on water

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SOIL BORING LOG

Project: Dinaburg Distributing		Boring/Well No.: MW-14K	Project No.: 3612082107	
Client: NYSDEC	Site: Clinton Ave, Rochester, N.Y.	Sheet No. 2 of 2		
Logged By: J. Rawcliffe	Ground Elevation: 513.04	Start Date: 5/6/09	Finish Date: 5/7/09	
Drilling Contractor: Geologic NY	Driller's Name: Scott Breeds	Rig Type: Truck mounted CME		
Drilling Method: HSA/4" Drive & Wash	Protection Level: D	P.I.D. (eV): 10.0	Casing Size: 4" ID	Auger Size: 4 1/4" ID
Soil Drilled: 22.4'	Rock Drilled: 2'	Total Depth: 24.4'	Depth to Groundwater/Date: 8.98' (TOR), 5-8-09 8.60' TOR 6/3/09	Piez ☐ Well ☒ Boring ☒

Depth (Feet)	Sample No. & Penetration/ Recovery (Feet)	SPT Blows/6" or Core Rec./Rqd. %	SPT-N (Blows/Ft.)	Sample Description	USCS Group Symbol	Monitoring (ppm) PI Meter Field Scan	Monitoring (ppm) PI Meter Head Space	Lab Tests ID Sample
14								NA
15 16	S3 1325 14.5-16.5 1.6/2.0	18 22 17 30	39	Reddish brown to reddish gray fine sand and silt. Wet, well stratified with layers 2-5 mm clay/silt lenses and fine sand layers. Grades to Reddish olive gray (lacustrine) fine sand and silt matrix with medium to coarse sand and a little gravel. Wet, dense, mostly massive with occational sandy lenses. (Till)	SM ~~28~~ ~~85~~ GM/SM ~~180~~	28 85 180		
17 18 19							54 ppm = PID Headspace on drill water.	
20 21	S4 1505 19.5-21.5 0.7/2.0	28 32 50 27	72	Slightly reddish olive gray to reddish brown fine sand and silt with gravel and some to a little medium to coarse sand and gravel cobbles (Till). Pieces of cobble or coarse gravel in tip.		19 28 100		
22				Driller ill - stopping for the day. 5/7/09 1115 Resumed drilling at MW-14K			18 ppm = PID Headspace on drill water.	
23 24 25				Top of bedrock = 22.4' BGS Encountered fracture at ≈ 24.2' BGS and started losing water. Drilled to 24.4' But can't wash cuttings out of borehole. Bottom of boring 24.4' BGS				

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Overburden Well Construction Diagram

Well No.: MW-14K

Project No.: 3612082107.

NYSDEC

Project Name: Dinaburg Distributing

Project Area: Clinton Ave, Rochester, NY

Contractor: Geologic NY

Driller: Scott Breeds/J. Mowell

Method: HSA / 4" Drive & Wash

Logged By: J. Rawcliffe

Date Started: 5/6/09

Completed: 5/7/09

Checked By: BAS

Date: 05-13-09

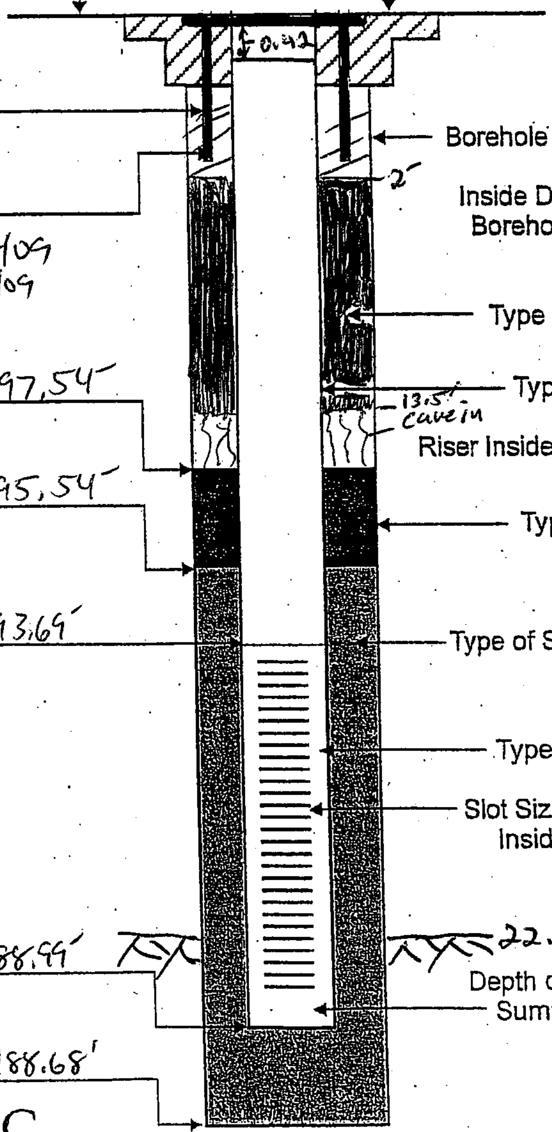
Well Development Date: 5/8/09

Not To Scale

Surface Casing Type: Flushmount steel

Ground Surface Elevation: 513.04

Type of Surface Seal: Cement



Surface Casing Diameter: 8"

Inside Diameter of Surface Casing: 8"

Borehole Diameter: 0-10'/8", 10-24'/4"

Inside Diameter of Borehole Casing: NA

GW=8.99' TOR 5/8/09
8.60' TOR 6/3/09

Depth/Elevation of Top of Well Seal: 15.5' BGS / 497.54'

Type of Backfill: Bentonite chips

Type of Riser: Sch 40 PVC

Depth/Elevation of Top of Sand: 17.5' BGS / 495.54'

Riser Inside Diameter: 2"

Type of Seal: Bentonite chips

Depth/Elevation of Top of Screen: 19.35' BGS / 493.69'

Type of Sand Pack: #0 US Silica

Type of Screen: Sch 40 PVC

Slot Size x Length: 0.01" x 5'

Inside Diameter of Screen: 2"

Depth/Elevation of Bottom of Screen: 24.05' BGS / 488.99'

Depth of Sediment Sump with Plug: 24.4' BGS

Depth/Elevation of Bottom of Boring: 24.4' BGS / 488.68'

MACTEC
511 Congress Street
Portland, ME 04101

FIGURE 4-7
OVERBURDEN MONITORING WELL CONSTRUCTION DIAGRAM
NYSDEC QUALITY ASSURANCE PROJECT PLAN

PORT2007022f.cdr

WELL DEVELOPMENT RECORD

Project: Dinaburg Distributing	Well Installation Date: 5/7/09		Project No. 3612082107
Client: NYSDEC	Well Development Date: 5/8/09	Logged by: JKR	Checked by: BAS
Well/Site I.D.: MW-14K	Weather: Sunny to partly cloudy 60 - 70°F.	Start Date: 5/8/09	Finish Date: 5/8/09
		Start Time: 1010	Finish Time: 1235

Well Construction Record Data:

Bottom of Screen JR 23.7 ~~24.05~~ ft.
Sediment Sump/Plug 0.35 ft.
Screen Length 4.8 ft.
] From Ground Surface ☐ From Top of Riser ☒

Well Diameter 2" in.
Fluids Lost during Drilling 30 gal.

Protective Casing Stick-up 0 ft.
Protective Casing/Well Diff. 0.42 ft.
PID Readings: Ambient Air 0 ppm
Well Mouth 0.2 ppm

Well Levels:

Initial 8.98 TOR ft.
End of Development 9.29 ft.
24 Hours after Development UNK ft.

Sediment:

Well Depth before Development 24.0 ft. (from top of PVC)
Well Depth after Development 24.0 ft.
Sediment Depth Removed 0 ft.

HT of Water Column 4" Borehole ft. x ☐ 1.68* gal./ft. ☐ = 3.3 gal./vol.
sandpack 25% porosity 2" well calculated saturated volume
*for 4" HSA Installed Wells

Equipment:

☐ Dedicated Submersible Pump
☐ Surge Block
☐ Bailer ☐ 2" ☐ ________
☒ ~~Grundfos~~ whale Pump 2" ______ 4" ______

Approximate Recharge Rage 1.5 gpm
Total Gallons Removed 170 gal.

Well Development Criteria Met: Yes

Notes: ______________________________

	Yes	No
■ Well water clear to unaided eye	☒	☐
■ Sediment thickness remaining in well is <1.0% of screen length	☒	☐
■ Total water removed = a minimum of 5x calculated well volume plus 5x drilling fluid lost	☒	☐
■ Turbidity < 5NTUs	☒	☐
■ 10% change in field parameters	☒	☐

End of Well Development Sample (1 pint) Collected? Yes ☐ No ☒

Water Parameter Measurements 1013 Start purging

Record at start, twice during and at the end of development (minimum):

Time	Volume	Total Gallons	pH	Temp. (°C)	Conductance (mS/cm)	Turbidity	Pumping Rate
1017	0.9	3	7.4	12.3	1.08	220	1.5 (est)
1033 - 1048	7	23	7.2	11.9	1.44	20	69 ppm headspace
1106	16	53	7.2	11.9	1.50	6.9	reading on water
1123	23.6	78	7.2	11.9	1.51	1.6	
1143	31.2	103	7.2	11.9	1.53	1.5	
1206	38.8	128	7.2	11.9	1.55	1.0	
1223	46.4	153	7.2	12.0	1.56	0.8	PID = 170 ppm

Headspace on development water

Well Developer's Signature ______________________

MACTEC
511 Congress Steet
Portland, ME 04101

Battery died at 1022 got new supply and resume purging at 1033

FIGURE 4-9
WELL DEVELOPMENT RECORD
NYSDEC QUALITY ASSURANCE PROGRAM PLAN

MW-1

NOTHNAGLE DRILLING
1821 Scottsville-Mumford Road
SCOTTSVILLE, NEW YORK 14546
Phone (716) 538-2328
Fax (716) 538-2357

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Test Boring No. B-1
Page 1 of 1
ND Job # 0527

Project Dinaburg Distributing, 1012 South Clinton Avenue, Rochester, New York
Client The Sear-Brown Group, 85 Metro Park, Rochester, New York 14623
Elevation ______ Start 2/1/95 Completed 2/1/95 Driller N. Short
Water Level - During Drilling ______ Inspector ______
Water Level - At Completion ______
Seasonal and climatic changes may alter observed water levels.

	C	Blows on Sampler				Sample			
		0"/6"	6"/12"	12"/18"	18"/24"	N	Rec.	No	Depth
0									
		24	13						
				14	6	27	17"	1	1'0"-3'0"
		3	5						
5				6	10	11	16"	2	3'0"-5'0"
		6	10						
				17	18	27	11"	3	5'0"-7'0"
		27	38						
				47	49	85	16"	4	7'0"-9'0"
10		9	10						
				9	15	19	16"	5	9'0"-11'0"
		17	21						
				25	26	46	15"	6	11'0"-13'0"
		9	10						
15				16	17	26	14"	7	13'0"-15'0"
		6	12						
				13	15	25	21"	8	15'0"-17'0"
		12	20						
				27	20	47	16"	9	17'0"-19'0"
20		23	28						
				43	100/1	71	4"	10	19'0"-20'7"
25									
30									
35									
40									

Soil and Rock Information Remarks

Asphalt	0'6"
Gravel	1'0"
Compact brown moist medium to fine sand, some silt, trace fine gravel	3'0"
Firm brown-gray moist medium to fine sand, some silt, trace clay and fine gravel Compact gray wet (trace coarse to fine gravel) Very dense gray moist	9'0"
Firm brown-red moist medium to fine sand, some silt and coarse to fine gravel, trace clay	11'0"
Dense gray-brown wet fine sand, some silt, trace medium to fine gravel and clay Compact gray-red-brown moist Firm gray-red-brown moist Dense gray-red-brown moist Very dense gray moist	20'3"
Very dense gray moist weathered bedrock fragments Advanced augers to refusal	20'7"

Boring terminated at 20'7"
Advanced test boring with hollow stem auger casing
Well installed in completed borehole. See attached well detail

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. wt. 30" Ea. Blow
C=No. of Blows to Drive ______ Casing ______ with ______ lb. wt. ______ Ea. Blow

MW-1A

NOTHNAGLE DRILLING
1821 Scottsville-Mumford Road
SCOTTSVILLE, NEW YORK 14546
Phone (716) 538-2328
Fax (716) 538-2357

Test Boring No. B-1A
Page 1 of 1
ND Job # 0527

Project Dinaburg Distributing, 1012 South Clinton Avenue, Rochester, New York
Client The Sear-Brown Group, 85 Metro Park, Rochester, New York 14623
Elevation ______ Start 2/2/95 Completed 2/2/95 Driller N. Short
Water Level - During Drilling ______ Inspector ______
Water Level - At Completion ______
Seasonal and climatic changes may alter observed water levels.

	C	Blows on Sampler				Sample			
		0" / 6"	6" / 12"	12" / 18"	18" / 24"	N	Rec.	No	Depth
0									
5		16	23						
				43	51	66	12"	1	4'0"-6'0"
		28	16						
				13	13	29	18"	2	6'0"-8'0"
10									
15									
20									
25									
30									
35									
40									

Soil and Rock Information Remarks

Asphalt 0'6"
Gravel 1'0"
Very dense brown moist fine sand, some silt and coarse to fine gravel
Compact brown wet (little coarse to fine gravel, trace clay) 8'0"

Boring terminated at 8'0"
Advanced test boring with hollow stem auger casing
Well installed in completed borehole. See attached well detail

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. wt. 30" Ea. Blow
C=No. of Blows to Drive ______ Casing ______ with ______ lb. wt. ______ Ea. Blow

MW-2

NOTHNAGLE DRILLING
1821 Scottsville-Mumford Road
SCOTTSVILLE, NEW YORK 14546
Phone (716) 538-2328
Fax (716) 538-2357

Test Boring No. B-2
Page 1 of 1
ND Job # 0527

Project Dinaburg Distributing, 1012 South Clinton Avenue, Rochester, New York
Client The Sear-Brown Group, 85 Metro Park, Rochester, New York 14623
Elevation ______ Start 2/2/95 Completed 2/6/95 Driller K. Busch
Water Level - During Drilling ______ Inspector ______
Water Level - At Completion ______
Seasonal and climatic changes may alter observed water levels.

	C	Blows on Sampler				Sample			
0		0" / 6"	6" / 12"	12" / 18"	18" / 24"	N	Rec.	No	Depth
		5	6						
				12	13	18	4"	1	1'0"-3'0"
		4	4						
5				9	21	13	12"	2	3'0"-5'0"
		14	19						
				29	30	48	14"	3	5'0"-7'0"
		100/2				100/2	2"	4	7'0"-7'2"
10		23	32						
				35	100/4	67	12"	5	9'0"-10'10"
		63	53						
				49	40	102	12"	6	11'0"-13'0"
		43	68						
15				100/4		168/10	16"	7	13'0"-14'4"
		83	100/4			100/4	12"	8	15'0"-15'10"
		48	84						
				100/3		184/9	15"	9	17'0"-18'3"
20		25	100/4			100/4	8"	10	19'0"-19'10"
		63	100/2			100/2	3"	11	21'0"-21'8"
25									
30									
35									
40									

Soil and Rock Information
Remarks

Concrete	0'4"
Firm brown-black moist medium to fine sand, some silt, trace clay (odor noted) Firm brown-black moist (trace fill, brick and concrete)	5'0"
Dense black-brown moist medium to fine sand, some silt, trace fine gravel	5'2"
Dense brown wet medium to fine sand, some silt, little coarse to fine gravel Very dense brown wet Very dense brown wet	10'10"
Very dense brown wet fine sand, some silt, trace clay and fine gravel Very dense red-brown moist (little clay and fine gravel) Very dense red-brown wet (odor noted) Very dense red-brown wet Very dense red-brown wet Very dense red-brown wet Advanced augers to refusal	22'4"

Boring terminated at 22'4"
Advanced test boring with hollow stem auger casing
Well installed in completed borehole. See attached well detail

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. wt. 30" Ea. Blow
C=No. of Blows to Drive ______ Casing ______ with ______ lb. wt. ______ Ea. Blow

MW-3

NOTHNAGLE DRILLING
1821 Scottsville-Mumford Road
SCOTTSVILLE, NEW YORK 14546
Phone (716) 538-2328
Fax (716) 538-2357

Test Boring No. B-3
Page 1 of 1
ND Job # 0527

Project Dinaburg Distributing, 1012 South Clinton Avenue, Rochester, New York
Client The Sear-Brown Group, 85 Metro Park, Rochester, New York 14623
Elevation ______ Start 2/6/95 Completed 2/6/95 Driller N. Short
Water Level - During Drilling ______ Inspector ______
Water Level - At Completion ______
Seasonal and climatic changes may alter observed water levels.

		Blows on Sampler				Sample			
0	C	0" / 6"	6" / 12"	12" / 18"	18" / 24"	N	Rec.	No	Depth
		5	6						
				8	6	14	12"	1	1'0"-3'0"
		3	8						
5				8	9	16	12"	2	3'0"-5'0"
		4	6						
				8	14	14	16"	3	5'0"-7'0"
		7	8						
				10	10	18	16"	4	7'0"-9'0"
10		5	7						
				11	11	18	18"	5	9'0"-11'0"
		14	19						
				31	32	50	14"	6	11'0"-13'0"
		14	15						
15				16	17	31	16"	7	13'0"-15'0"
		15	17						
				19	25	36	20"	8	15'0"-17'0"
		18	18						
				27	13	45	0"	9	17'0"-19'0"
20		8	8						
				12	22	20	6"	10	19'0"-21'0"
		68	100/3			100/3	3"	11	21'0"-21'9"
25									
30									
35									
40									

Soil and Rock Information Remarks

Asphalt 0'4"
Gravel 1'0"
Firm black moist coarse to fine sand, some silt 2'0"
Firm brown moist medium to fine sand, some silt, trace coarse to fine gravel
Firm brown moist
Firm brown moist (trace clay)
Firm red-brown moist
Firm gray wet
Dense gray wet
Compact red-brown wet
Compact red-brown-gray wet (some coarse to fine gravel)
No recovery sample No. 9
Firm gray wet
Very dense gray wet 21'6"
Very dense gray wet weathered bedrock fragments
Advanced augers to refusal 21'9"

Boring terminated at 21'9"
Advanced test boring with hollow stem auger casing
Well installed in completed borehole. See attached well detail

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. wt. 30" Ea. Blow
C=No. of Blows to Drive ______ Casing ______ with ______ lb. wt. ______ Ea. Blow

MW-3C-A

NOTHNAGLE DRILLING
1821 Scottsville-Mumford Road
SCOTTSVILLE, NEW YORK 14546
Phone (716) 538-2328
Fax (716) 538-2357

Test Boring No. B-3A
Page 1 of 1
ND Job # 1001

Project Dinaburg Site, 1012 South Clinton Avenue, Rochester, New York
Client The Sear Brown Group, 85 Metro Park, Rochester, New York 14623
Elevation ____ Start 10/14/97 Completed 10/14/97 Driller S. Loranty
Water Level - During Drilling 14'0" Inspector P. Smith
Water Level - At Completion ____
Seasonal and climatic changes may alter observed water levels.

	C	Blows on Sampler 0"/6"	6"/12"	12"/18"	18"/24"	Sample N	Rec.	No	Depth
0									
		8	7						
				3	5	10	12"	1	1'0"-3'0"
		3	6						
5				7	5	13	12"	2	3'0"-5'0"
		5	5						
				9	8	14	16"	3	5'0"-7'0"
		9	7						
				7	7	14	2"	4	7'0"-9'0"
10		7	8						
				13	20	21	18"	5	9'0"-11'0"
		18	18						
				25	24	43	20"	6	11'0"-13'0"
		13	13						
15				15	8	28	18"	7	13'0"-15'0"
		6	11						
				50	100/3	61	16"	8	15'0"-16'9"
20									
25									
30									
35									
40									

Soil and Rock Information Remarks	
Asphalt and gravel	1'0"
Loose black moist coarse to fine sand, some silt (fill)	2'7"
Loose brown moist fine sand, some silt (odor noted) Firm brown moist (odor noted)	4'6"
Firm brown moist coarse to fine sand, some silt, trace gravel and clay Firm brown moist Firm brown moist Firm gray moist	10'0"
Firm red-brown moist fine sand, some silt and gravel, trace clay (odor noted) Dense red-brown moist Compact gray wet (trace gravel) (odor noted) Very dense gray wet	15'10"
Very dense red-brown moist silt, some clay and fine sand (odor noted)	16'4"
Very dense gray fine sand, some silt and gravel (odor noted) Encountered boulder 16'9" Advanced augers to refusal	17'4"

Boring terminated at 17'4"
Advanced test boring with hollow stem auger casing.
Boring grout abandoned on completion.

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. wt. 30" Ea. Blow
C=No. of Blows to Drive ____ Casing ____ with ____ lb. wt. ____ Ea. Blow

NOTHNAGLE DRILLING
1821 Scottsville-Mumford Road
SCOTTSVILLE, NEW YORK 14546
Phone (716) 538-2328
Fax (716) 538-2357

MW-3C-B

Test Boring No. B-3B
Page 1 of 1
ND Job # 1001

Project Dinaburg Site, 1012 South Clinton Avenue, Rochester, New York
Client The Sear Brown Group, 85 Metro Park, Rochester, New York 14623
Elevation ______ Start 10/14/97 Completed 10/14/97 Driller S. Loranty
Water Level - During Drilling ______ Inspector P. Smith
Water Level - At Completion ______
Seasonal and climatic changes may alter observed water levels.

	C	Blows on Sampler				Sample				Soil and Rock Information Remarks
0		0" / 6"	6" / 12"	12" / 18"	18" / 24"	N	Rec.	No	Depth	
		1	1							Loose gray moist fine sand, some silt
5				3	6	4	12"	1	3'0"-5'0"	5'0"
		2	10							Compact gray wet silt, some coarse to fine gravel and sand
10				16	10	26	12"	2	8'0"-10'0"	
		100/1				100/1	0"	3	13'0"-13'1"	No recovery sample no. 3 Encountered boulder 13'1"
15										
										Advanced augers to refusal 18'4"
20										
										Boring terminated at 18'4" Advanced test boring with hollow stem auger casing. Boring grout abandoned on completion. Note: Boring moved 1/2 way between B-3 and B-3A
25										
30										
35										
40										

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. wt. 30" Ea. Blow
C=No. of Blows to Drive ______ Casing ______ with ______ lb. wt. ______ Ea. Blow

MW-3C-C

NOTHNAGLE DRILLING
1821 Scottsville-Mumford Road
SCOTTSVILLE, NEW YORK 14546
Phone (716) 538-2328
Fax (716) 538-2357

Test Boring No. MW-3C
Page 1 of 1
ND Job # 1001

Project Dinaburg Site, 1012 South Clinton Avenue, Rochester, New York
Client The Sear Brown Group, 85 Metro Park, Rochester, New York 14623
Elevation 514.1 Start 10/15/97 Completed 10/15/97 Driller S. Loranty
Water Level - During Drilling 18'0" Inspector P. Smith
Water Level - At Completion
Seasonal and climatic changes may alter observed water levels.

		Blows on Sampler				Sample				Soil and Rock Information Remarks
0	C	0" 6"	6" 12"	12" 18"	18" 24"	N	Rec.	No	Depth	
5										
10										
		5	14							Dense red-brown-gray moist sand
15				17	24	41	20"	1	13'0"-15'0"	and gravel, some silt, trace clay
										Extremely difficult drilling
										15'0"-18'0"
										18'0"
		21	19							
20				20	21	39	18"	2	18'0"-20'0"	Compact gray wet gravel, some silt
		26	40							
				40	35	80	16"	3	20'0"-22'0"	Very dense gray wet
		100/5				100/5	3"	4	22'0"-22'5"	Very dense gray moist
									Run #1	Advanced augers to refusal 22'7"
25									22'7"-27'7"	Medium hard gray dolomite mildly
									Rec. 56"	fractured horizontally
									R.Q.D. 66%	
30									Run #2	(Mud filled fracture with
									27'7"-32'7"	odor noted 32'4") 32'7"
									Rec. 58"	Boring terminated at 32'7"
									R.Q.D. 86%	Advanced test boring with hollow
										stem auger casing.
35										Cored with Series "M" double tubed
										core barrel and diamond bit.
										Well installed in completed borehole.
										See attached well diagram.
										Note: Boring moved 5.0' north of
40										boring B-3.

N=No. of Blows to Drive 2" Spoon 12" with 140 lb. wt. 30" Ea. Blow
C=No. of Blows to Drive ______ Casing ______ with ______ lb. wt. ______ Ea. Blow

URS Corporation	**TEST BORING LOG**
	BORING NO: MW-10K
PROJECT: Dinaburg Distributing Site, Rochester, New York	SHEET: 1 of 1
CLIENT: NYSDEC	JOB NO.: 05.000.35798.02
BORING CONTRACTOR: Buffalo Drilling Co.	BORING LOCATION: N=1145249.96 E=1412155.07

GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION: 512.84 DATUM = 512.49
DATE	TIME	LEVEL	TYPE	TYPE		Split spoon	NX		DATE STARTED: October 24, 2000
11/27/00		503.49	TOP OF RISER	DIA.		2"	2.0		DATE FINISHED: October 24, 2000
				WT.		140 #			DRILLER: Don Rimbeck
				FALL		30"			GEOLOGIST: Tim Burmeier
				* POCKET PENETROMETER READING					REVIEWED BY: DUANE LENHARDT

DEPTH FEET	SAMPLE					DESCRIPTION				REMARKS	
	STRATA	NO.	TYPE	BLOWS PER 6"	REC% RQD%	COLOR	CONSIST HARD	MATERIAL DESCRIPTION	USCS	PID	Moist
		1	24	× 17 7 6	65	GRAY BROWN	MED DENSE	ASPHALT PAVING (0-4") FILL: RE-WORKED SILTY SAND, TRACE COAL	FILL	0	MOIST
		2	16	5 7 9 16	5					0	
5		3	26	6 12 14 6	70	RED BROWN		FINE SAND - ANGULAR QUARTZ	SP	UP TO 1.8	
		4	24	7 12 12 7	90		VERY STIFF TO HARD	CLAYEY SILT W/F. SAND W/TRACE F. GRAVEL	ML	0.9	VERY MOIST
10		5	44	2 15 29 42	55			- VERY THIN SAND LAYERS		UP TO 2.0	WET
		6	39	10 17 22 14	50			- DOLOSTONE & SANDST. FRAGS		1.5 TO 2.0	MOIST
		7	50	9 22 28 33	95			CLAYEY SILT W/GRAY MOTTLES		04	MOIST TO WET
15		8	31	11 14 17 29	85			- CLAY CONTENT INCREASES		0.2	MOIST
		9	83	17 41 42 38	60					0.2	DRILL STRING WET TO 14'
20		10	45	16 25 20 3	60			- W/ ABUNDANT DOLOSTONE FRAGMENTS		0.2	
		11	33	11 18 15 50/5	100	MED GRAY	HARD	WEATHERED BEDROCK - DOLOSTONE FRAGS & SILT	VBR	0.2	
		12	C-1		86/13		HARD	LOCKPORT GROUP DOLOSTONE, FINELY CRYSTALLINE MOSTLY FEATURELESS W/THIN SL. WAVY BEDDING AT 24-25 FT			
25		13	C-2		↓						
								BORING TOTAL DEPTH = 25'			
		14									
30		15									
		16									
		17									
35		18									

Comments: Boring advanced with a CME -55 rig	PROJECT NO. 05.000.35798.02
using 4-1/4 inch hollow-stem augers. Continuous sampling	BORING NO. MW-10K
accomplished with a 2-inch split barrel sampler.	

ABSCOPE ENVIRONMENTAL INC.
Former Dinaburg Distributing
Rochester, New York

Subsurface Log
MPE-1

Project Name: Dinaburg
Location: 1012 S. Clinton, Rochester
Boring Number: MPE-1
Drilling Method: 6 1/4 HSA
Sample Method: 2-inch Split Spoon

Owner: NYSDEC
Permit No.: NA
Log By: A Kearns
Driller: Geologic

Date: 10/31/2005

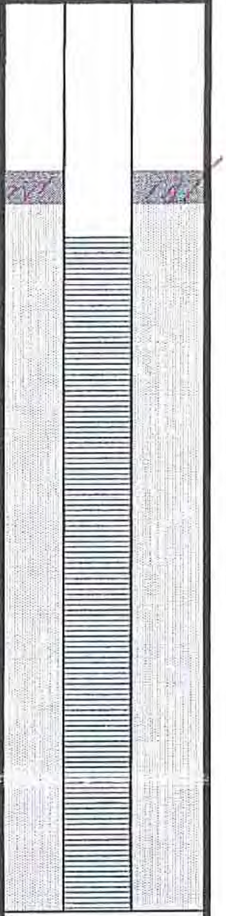
Borehole Dia: 10 inch

Construction Details

Total Well Depth: 13.5 ft
Screen Interval: 13.5-3.5
Sand Pack Interval: 13.5-3.0
Completion Details: 4-inch diameter Sch 40 PVC Screen (10-slot) and Riser

Bentonite Interval: 3.0-2.5
Cement/Grout Interval: NA
Sand Pack Type: #00N Morie

▤ Backfill
▦ Cement/Grout
▨ Bentonite
░ Sand

Depth (ft)	Sample Depth (ft)	Blow Counts	Lithology: Burmeister Classification System	Well Schematic
			Concrete	
	0.5-2.0	7-6-6	Asphalt Brown Fine SAND Brown Fine SAND and SILT	
	NC	NA		
5	5-7	5-10 19-10	Light Brown SILT, trace fine Sand Brown SILT, some fine Sand, trace Clay moist	
	7-9	28-30 38-41	Brown SILT, some fine to medium Sand, very moist Brown SILT and CLAY wet	
10	9-11	8-17 31-47	Brown SILT, trace Clay Brown SILT and CLAY, some fine to medium Sand Brown SILT, little Clay and medium Gravel	
	11-13	4-4 50/0.4	Brown SILT, little fine Sand, trace Clay Augered through boulder from 11-13.5	
15				

ABSCOPE ENVIRONMENTAL INC.
Former Dinaburg Distributing
Rochester, New York

Subsurface Log
MPE-4

Project Name: Dinaburg
Location: 1012 S. Clinton, Rochester
Boring Number: MPE-4
Drilling Method: 6 1/4 HSA
Sample Method: 2-inch Split Spoon

Owner: NYSDEC
Permit No.: NA
Log By: A Kearns
Driller: Geologic

Date: 11/1/2005

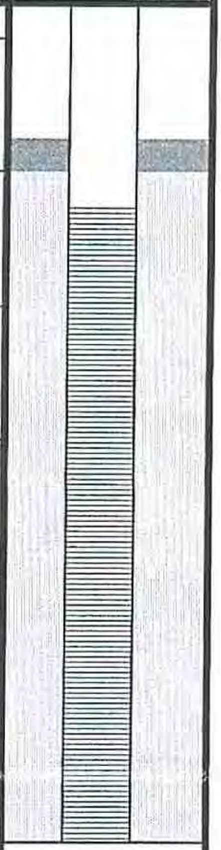
Borehole Dia: 10 inch

Construction Details

Total Well Depth: 12.5 feet
Screen Interval: 12.5-3
Sand Pack Interval: 12.5-2.5
Completion Details: 4-inch diameter Sch 40 PVC Screen (10-slot) and Riser

Bentonite Interval: 2.5-2.0
Cement/Grout Interval: NA
Sand Pack Type: #00N Morie

▤ Backfill
▦ Cement/Grout
▨ Bentonite
░ Sand

Depth (ft)	Sample Depth (ft)	Blow Counts	Lithology: Burmeister Classification System	Well Schematic
				
	0.5-2.5	50/0.3	Fine to coarse SAND and GRAVEL, trace concrete	
	NC	NA		
5	5-7	5-5 7-6	Brown SILT, some fine to coarse Gravel Brown SILT, some Clay	
	7-9	12-17 11-15	Brown SILT, some Clay Fine to medium SAND, little Silt Brown SAND and SILT Brown SILT and CLAY, some fine Sand and fine Gravel,wet	
10	9-11	16-17 15-16	Brown SILT and fine SAND Brown SILT and CLAY with fine to coarse Gravel some cobbles	
	11-12.5	25-30 50/0.3	Brown SILT and fine SAND, some fine to coarse Gravel	
15				

ABSCOPE ENVIRONMENTAL INC.
Former Dinaburg Distributing
Rochester, New York

Subsurface Log
MPE-5

Project Name: Dinaburg
Location: 1012 S. Clinton, Rochester
Boring Number: MPE-5
Drilling Method: 6 1/4 HSA
Sample Method: 2-inch Split Spoon

Owner: NYSDEC
Permit No.: NA
Log By: A Kearns
Driller: Geologic

Date: 11/1/2005

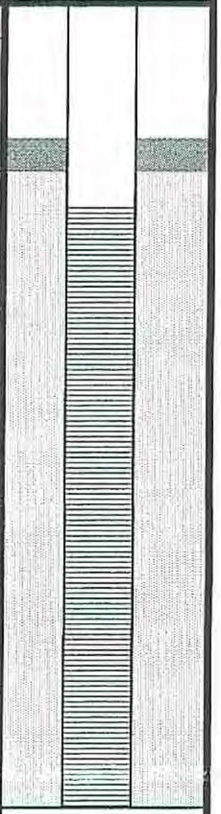
Borehole Dia: 10 inch

Construction Details

Total Well Depth: 11.5 feet
Screen Interval: 11.5-3
Sand Pack Interval: 11.5-2.5
Completion Details: 4-inch diameter Sch 40 PVC Screen (10-slot) and Riser

Bentonite Interval: 2.5-2.0
Cement/Grout Interval: NA
Sand Pack Type: #00N Morie

▤ Backfill
▒ Cement/Grout
▨ Bentonite
░ Sand

Depth (ft)	Sample Depth (ft)	Blow Counts	Lithology: Burmeister Classification System	Well Schematic
			Concrete	
	0.5-2.5	5-4 4-3	Black fine to coarse SAND and SILT, some fine Gravel	
	NC	NA		
5	5-7	11-12 14-14	Black fine to coarse SAND and SILT, some fine Gravel Brown SILT Light Brown SILT Fine to coarse GRAVEL, little Silt	
	7-9	16-18 28-30	Light Brown SILT, little fine Sand and fine to coarse Gravel Brown SILT, little Clay and medium to coarse Gravel, wet	
10	9-11	14-12 17-15	Brown SILT, some Clay, little medium Gravel Brown fine SAND and SILT	
	11-11.5	14	Brown fine SAND and SILT	
15				

ABSCOPE ENVIRONMENTAL INC.
Former Dinaburg Distributing
Rochester, New York

Subsurface Log
MPE-6

Project Name: Dinaburg
Location: 1012 S. Clinton, Rochester
Boring Number: MPE-6
Drilling Method: 6 1/4 HSA
Sample Method: 2-inch Split Spoon

Owner: NYSDEC
Permit No.: NA
Log By: A Kearns
Driller: Geologic

Date: 10/31/2005

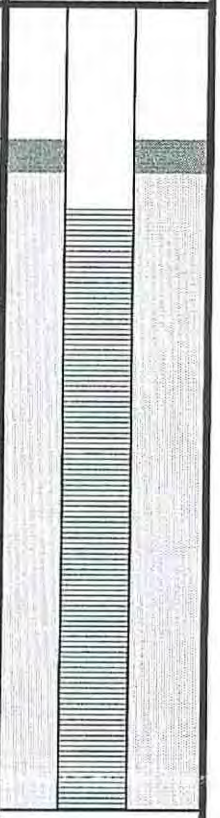
Borehole Dia: 10 inch

Construction Details

Total Well Depth: 12 feet
Screen Interval: 12-3
Sand Pack Interval: 12-2.5
Completion Details: 4-inch diameter Sch 40 PVC Screen (10-slot) and Riser

Bentonite Interval: 2.5-2.0
Cement/Grout Interval: NA
Sand Pack Type: #00N Morie

▤ Backfill
▩ Cement/Grout
▨ Bentonite
░ Sand

Depth (ft)	Sample Depth (ft)	Blow Counts	Lithology: Burmeister Classification System	Well Schematic
	0-2	9-12 18-14	Brown fine to coarse SAND and Gravel	
	NC	NA		
5	5-7	8-19 21-26	Brown fine to medium SAND and GRAVEL, little Silt very moist	
	7-9	25-30 33-15	Brown fine to coarse SAND and GRAVEL some SILT wet	
10	9-11	9-4 8-7	Fine to Coarse GRAVEL, some Silt andfine to coarse SAND	
	11-12	11-12	Fine to Coarse SAND and GRAVEL, some Silt and Clay	
15				

ABSCOPE ENVIRONMENTAL INC.
Former Dinaburg Distributing
Rochester, New York

Subsurface Log
MPE-7

Project Name: Dinaburg
Location: 1012 S. Clinton, Rochester
Boring Number: MPE-7
Drilling Method: 6 1/4 HSA
Sample Method: 2-inch Split Spoon

Owner: NYSDEC
Permit No.: NA
Log By: A Kearns
Driller: Geologic

Date: 10/31/2005

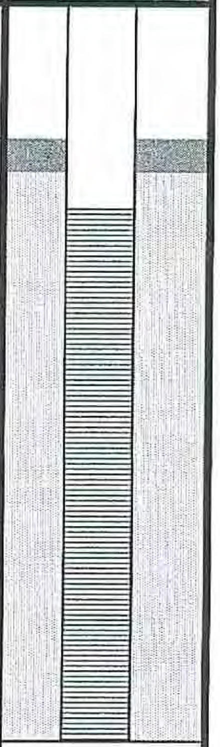
Borehole Dia: 10 inch

Construction Details

Total Well Depth: 11 feet
Screen Interval: 11-3
Sand Pack Interval: 11-2.5
Completion Details: 4-inch Diameter Sch 40 PVC Screen (10-slot) and Riser

Bentonite Interval: 2.5-2.0
Cement/Grout Interval: NA
Sand Pack Type: #00N Morie

▤ Backfill
▒ Cement/Grout
▨ Bentonite
░ Sand

Depth (ft)	Sample Depth (ft)	Blow Counts	Lithology: Burmeister Classification System	Well Schematic
	0-2	9-9 12-15	Brown fine to coarse SAND and GRAVEL, some Silt	
	NC	NA		
5	5-7	8-8 9-12	Brown fine to coarse SAND and GRAVEL, some Silt Brown fine SAND and SILT Brown SILT, trace Clay	
	7-9	17-22 50/0.2	Brown fine SAND and SILT, trace Clay and and fine to coarse Gravel	
10	9-11	7-11 16-24	Brown fine SAND and SILT, some fine to coarse Gravel trace Clay wet	
15				

ABSCOPE ENVIRONMENTAL INC.
Former Dinaburg Distributing
Rochester, New York

Subsurface Log
MPE-11

Date: 11/2/2005

Project Name: Dinaburg
Location: 1012 S. Clinton, Rochester
Boring Number: MPE-11
Drilling Method: 6-1/4 HSA
Sample Method: split-spoon

Owner: NYSDEC

Log By: A. Kearns
Driller: Geologic

Borehole Dia: 10 inch

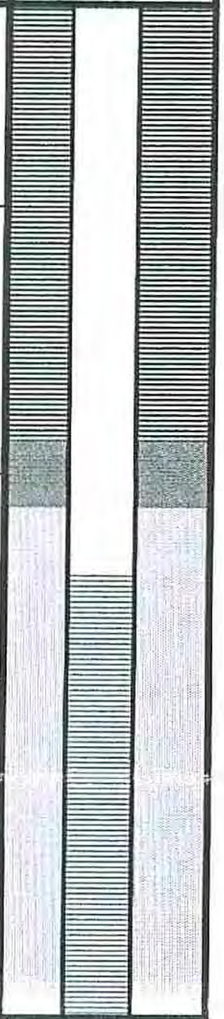
Construction Details

Total Well Depth: 10 feet
Screen Interval: 10-6
Sand Pack Interval: 10-5.5
Completion Details: 4-inch Diameter Sch 40 PVC Screen (10-slot) and Riser

Bentonite Interval: 5.5-5.0
Cement/Grout Interval: NA
Sand Pack Type: #00N Morie

▤ Backfill
▒ Cement/Grout
▨ Bentonite
░ Sand

Depth (ft)	Sample Depth (ft)	Blows	Lithology: Burmeister Classification System	Well Schematic
1	0-2	4-8-22-10	Brown fine to coarse SAND and GRAVEL Concrete	
2			Brown SILT and SAND, some fine to medium Gravel	
3				
4				
5			Brown SILT and Fine SAND, some coarse Gravel	
6	5-7	23	Yellow SILT and Fine SAND	
7			Brown Fine SAND, little Silt Concrete	
8			Brown SILT and CLAY, little fine to medium Gravel	
9	8-10	14-14-10-7		
10				



ABSCOPE ENVIRONMENTAL INC.
Former Dinaburg Distributing
Rochester, New York

Subsurface Log
MPE-16

Date: 10/28/2005

Project Name: Dinaburg
Location: 1012 S. Clinton, Rochester
Boring Number: MPE-16
Drilling Method: 6 1/4 HSA
Sample Method: 2-inch Split Spoon

Owner: NYSDEC
Permit No.: NA
Log By: M. Rinaldo-Lee
Driller: Geologic

Borehole Dia: 10 inch

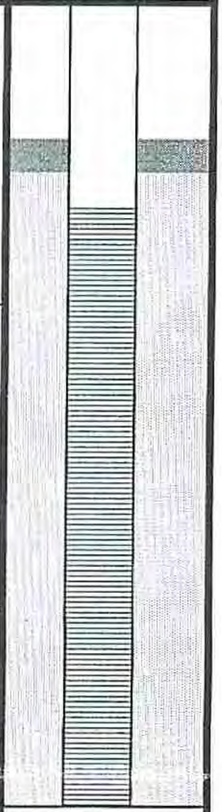
Construction Details

Total Well Depth: 12 feet
Screen Interval: 12-3
Sand Pack Interval: 12-2.5
Completion Details: 4-inch Diameter Sch 40 PVC Screen (10-slot) and Riser

Bentonite Interval: 2.5-2.0
Cement/Grout Interval: NA
Sand Pack Type: #00N Morie

▤ Backfill
▩ Cement/Grout
▨ Bentonite
░ Sand

Depth (ft)	Sample Depth (ft)	Blow Counts	Lithology: Burmeister Classification System	Well Schematic
	0-2	2-3-3-5	Brown SILT and fine to coarse SAND occassional roots	
	NC	NA		
5	5-7	5-3-5-9	Brown SILT, little fine Sand, occassional organic matter lenses of medium sand: Fill	
	7-9	14-17-41-38		
10	9-11	23-27-24-30	Red-Brown SILT, fine SAND and embedded coarse SAND some embedded Gravel	
	11-12	26-29	Red-Brown fine SAND, little Silt, embedded Gravel	
15				



ABSCOPE ENVIRONMENTAL INC.
Former Dinaburg Distributing
Rochester, New York

Subsurface Log
GWE-1

Date: 11/7/2005

Project Name: Dinaburg
Location: 1012 S. Clinton, Rochester
Boring Number: GWE-1
Drilling Method: 6-1/4 HSA
Sample Method: split-spoon

Owner: NYSDEC
Log By: A. Kearns
Driller: Geologic

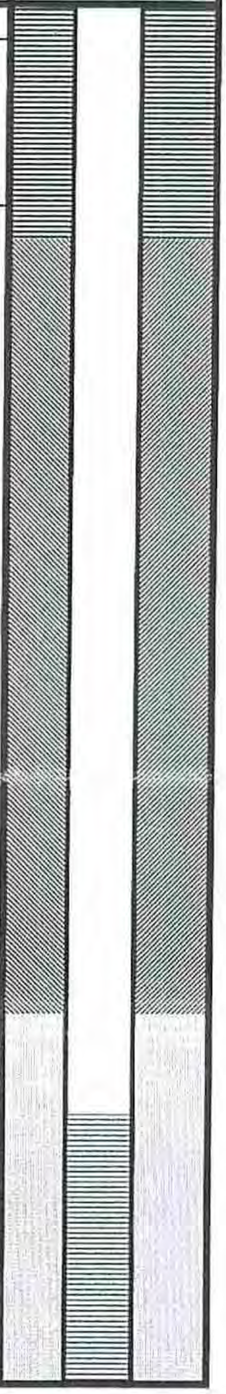
Borehole Dia: 10 inch

Construction Details

Total Well Depth: 20.7
Screen Interval: 20.7-17.7
Sand Pack Interval: 20.7-15.7
Completion Details: 4-inch Diameter Sch 40 PVC Screen (10-slot) and Riser

Bentonite Interval: 15.7-5.5
Cement/Grout Interval:
Sand Pack Type: #00N Morie

▤ Backfill
▦ Cement/Grout
▨ Bentonite
░ Sand

Depth (ft)	Sample Depth (ft)	Blows	Lithology: Burmeister Classification System	Well Schematic
			Asphalt	
	0.5-2.5	10-22-14-19	Fine to coarse GRAVEL and SAND Brown SILT trace fine to coarse Gravel Auger refusal at 5 feet Move location and auger to 5 feet	
			Brown SILT and CLAY, some fine to coarse Gravel	
5	5-7	5-9-14-23		
	7-9	18-20-24-24	wet at 8 feet	
10	9-11	16-15-18-22	Brown SILT, some Clay and fine to coarse Gravel	
	11-13	25-36-50/.2	Brown SILT some fine SAND, little fine to coarse gravel and Clay	
15	13-15	10-9-13-16		
	15-17	7-15-33-34	Brown SILT and fine SAND, some Clay, little fine to coarse Gravel	
	17-19	50/.4	Brown SILT and CLAY, some fine to coarse Gravel little fine Sand	
20	19-21	23-30-50/.3	Brown SILT and CLAY, little fine to coarse Gravel Bedrock refusal at 20.7	

ABSCOPE ENVIRONMENTAL INC.
Former Dinaburg Distributing
Rochester, New York

Subsurface Log GWE-3

Project Name: Dinaburg
Location: 1012 S. Clinton, Rochester
Boring Number: GWE-3
Drilling Method: 6-1/4 HSA
Sample Method: split-spoon

Owner: NYSDEC

Log By: A. Kearns
Driller: Geologic

Date: 11/4/2005

Borehole Dia: 10 inch

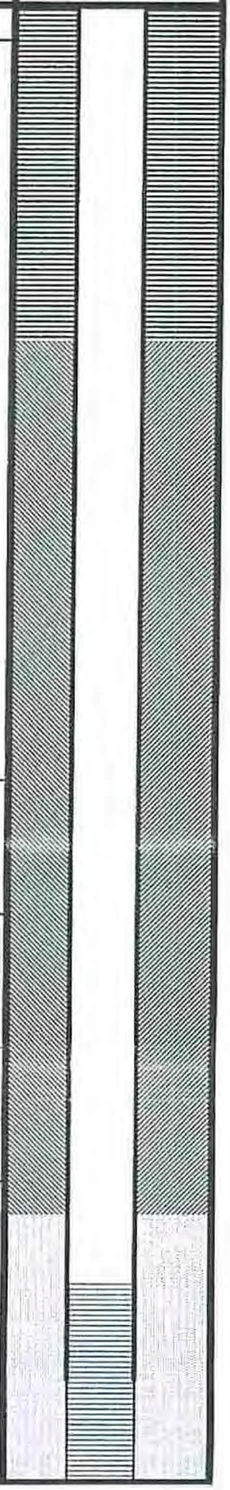
Construction Details

Total Well Depth: 22
Screen Interval: 22-19
Sand Pack Interval: 22-17
Completion Details: 4-inch Diameter Sch 40 PVC Screen (10-slot) and Riser

Bentonite Interval: 17-5
Cement/Grout Interval: NA
Sand Pack Type: #00N Morie

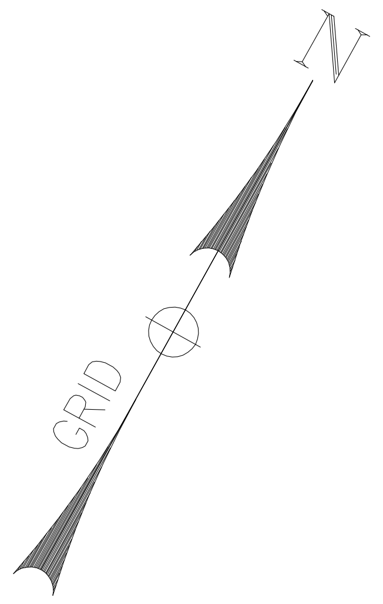
▤ Backfill
▩ Cement/Grout
▨ Bentonite
░ Sand

Depth (ft)	Depth (ft)	Blows	Lithology: Burmeister Classification System	Well Schematic
			Asphalt	
			Brown SILT, trace Clay	
5				
10				
	11-13	12-16-17-23	Brown SILT, little fine to coarse Gravel and fine Sand	
15	13-15	22-22-33-29	Brown SILT, some fine to coarse Gravel, trace fine sand	
	15-17	9-7-12-23	Brown SILT and CLAY	
	17-19	27-50/0.3	Brown SILT, some fine to coarse Gravel	
20	19-21	17-17-17-18	Brown SILT and fine to coarse GRAVEL, some fine to coarse Sand	
	21-23	38-50/0	fine to coarse SAND and GRAVEL, some Silt Auger refusal at 22 feet	



APPENDIX D

SITE SURVEY RESULTS



SAMPLE TABLE - NOVEMBER 2000

DESIGNATION	NORTHING	EASTING	ELEVATION		
			RISER	CASE	GROUND
MW-01	1145163.2	1412088.1	513.06	513.36	513.4
MW-01A	1145167.7	1412095.5	513.05	513.43	513.5
MW-02	1145236.7	1412179.6	513.46	513.87	*513.85
MW-03	1145186.4	1412205.0	512.72	513.17	513.1
MW-03C	1145182.3	1412208.2	513.10	513.36	513.3
MW-04	1145082.5	1412145.9	513.01	513.38	513.3
MW-05	1145059.9	1412071.4	513.49	513.78	513.7
MW-06	1145321.3	1412126.5	511.54	512.06	512.1
MW-8K	1145200.5	1412282.8	512.24	512.61	512.6
MW-8S	1145202.9	1412286.3	512.27	512.54	512.5
MW-9K	1145215.1	1412036.0	513.01	513.26	513.3
MW-9S	1145222.5	1412032.2	512.87	513.24	513.2
MW-10K	1145250.0	1412155.1	512.49	512.90	512.8
MW-10S	1145262.1	1412157.0	512.25	512.74	512.7
MW-11K	1145145.6	1412256.6	512.12	512.61	512.6
MW-11S	1145152.0	1412267.5	512.36	512.58	512.6
GPW 1	1145251.1	1412214.9	512.60	512.92	512.9
GPW 2	1145177.7	1412238.4	512.60	512.84	512.8
PZ-01	1145215.4	1412174.3	513.11	513.80	*513.82
PZ-02	1145221.2	1412184.6	513.24	513.70	*513.72
RW-01	1145219.6	1412181.2	513.27	513.74	*513.73

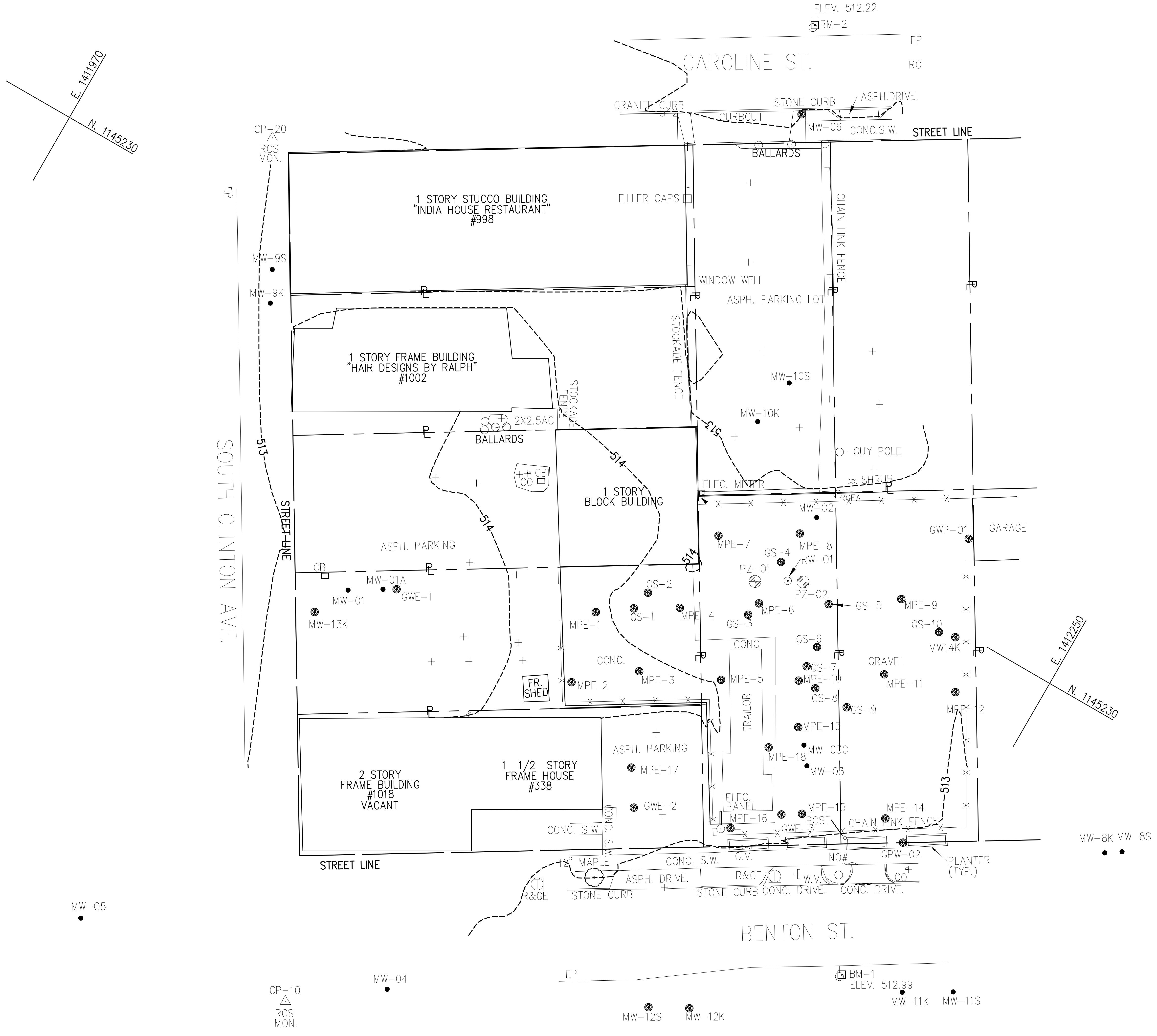
*ELEVATION INSIDE BUILDING

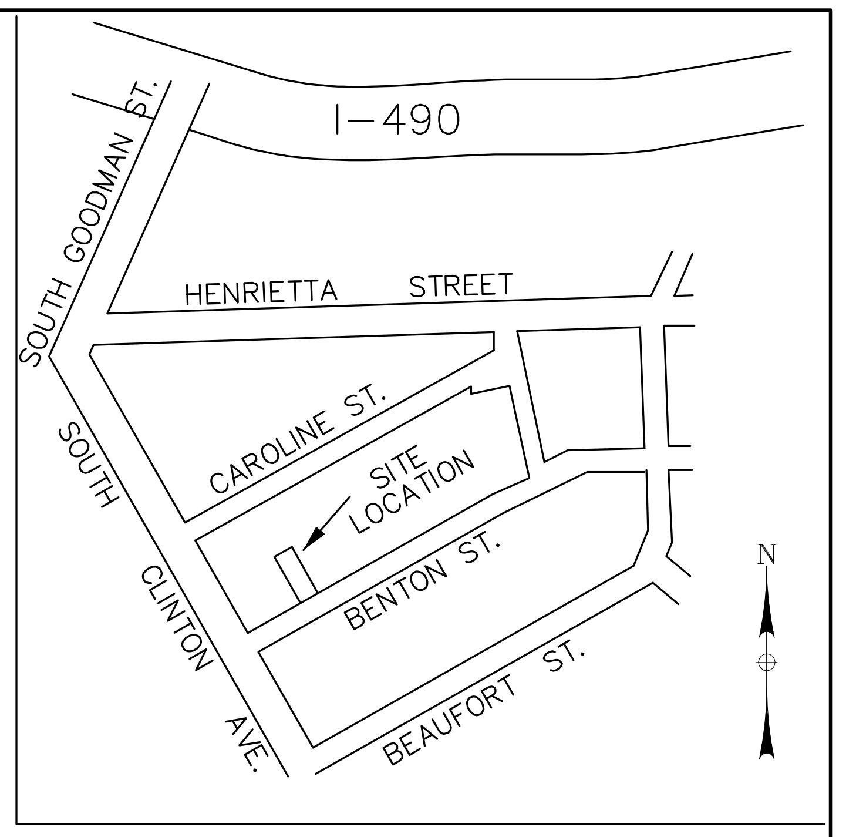
SAMPLE TABLE - MAY 2009

DESIGNATION	NORTHING	EASTING	ELEVATION		
			RISER	CASE	GROUND
MW-12K	1145115.8	1412213.0	512.67	513.09	513.1
MW-12S	1145111.0	1412204.1	512.53	513.01	513.0
MW-13K	1145154.4	1412083.7	513.13	513.41	513.4
MW-14K	1145228.2	1412224.1	512.66	513.04	513.0
GS-1	1145194.6	1412151.6	513.38	513.75	513.8
GS-2	1145199.7	1412152.7	513.59	513.85	513.9
GS-3	1145207.4	1412176.9	513.49	513.70	513.7
GS-4	1145222.8	1412177.4	513.43	513.67	513.7
GS-5	1145219.6	1412192.8	513.38	513.61	513.6
GS-6	1145209.0	1412195.7	513.22	513.51	513.5
GS-7	1145203.6	1412195.8	513.25	513.54	513.5
GS-8	1145200.0	1412200.4	513.37	513.53	513.5
GS-9	1145199.8	1412209.5	513.23	513.45	513.5
GS-10	1145227.3	1412219.9	512.90	513.11	513.1
MPE-10	1145199.5	1412195.7	513.15	513.57	513.6
MPE-6	1145211.3	1412177.8	513.26	513.67	513.7

SAMPLE TABLE - JULY 2009

DESIGNATION	NORTHING	EASTING	ELEVATION		
			RISER	CASE	GROUND
GPW-1	1145251.0	1412214.7	512.55	513.40	513.4
GPW-2	1145177.7	1412238.3	512.51	512.72	512.7
GWE-1	1145169.4	1412098.4	512.98	513.43	513.4
GWE-2	1145152.0	1412176.3	512.94	513.35	513.4
GWE-3	1145168.7	1412208.7	513.27	513.52	513.5
MW-6	1145321.2	1412126.4	511.50	512.01	512.0
MPE-1	1145189.1	1412143.9	513.40	513.91	513.9
MPE-2	1145171.1	1412147.4	513.42	514.02	514.0
MPE-3	1145181.8	1412160.5	513.41	513.86	513.9
MPE-4	1145200.5	1412161.4	513.39	513.76	513.8
MPE-5	1145190.1	1412179.2	513.43	513.82	513.8
MPE-6	1145211.2	1412177.8	513.22	513.63	513.6
MPE-7	1145220.7	1412160.8	513.30	513.86	513.9
MPE-8	1145231.2	1412177.9	513.48	513.91	513.9
MPE-9	1145229.7	1412207.8	513.14	513.64	513.6
MPE-10	1145199.6	1412195.9	513.12	513.54	513.5
MPE-11	1145211.5	1412213.4	513.02	513.35	513.4
MPE-12	1145216.5	1412230.9	512.90	513.24	513.2
MPE-13	1145189.5	1412201.5	512.89	513.21	513.2
MPE-14	1145180.7	1412231.5	512.23	512.69	512.7
MPE-15	1145171.4	1412213.0	512.97	513.30	513.3
MPE-16	1145159.5	1412199.5	513.31	513.60	513.6
MPE-17	1145160.2	1412170.8	512.97	513.47	513.5
MPE-18	1145181.5	1412197.7	513.12	513.55	513.6





LOCATION SKETCH
NOT TO SCALE

SURVEY NOTES:
ALL LOCATIONS SHOWN HEREON ARE REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (N.A.D. 83). THROUGH TIES TO THE FOLLOWING CONTROL MONUMENTS ACCOMPLISHED USING PROCEDURES NECESSARY TO ACHIEVE AN ACCURACY OF NOT LESS THAN 1 PART IN 10,000:

HERSCHELL (USC & GS 1925)
N. 1144331.49 E. 1411314.95

LINDEN (USC & GS)
N. 1145154.27 E. 1409101.88

THE VERTICAL INFORMATION SHOWN HEREON IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). THROUGH CONTROL TIES TO MONUMENT:

LINDEN (USC & GS)
ELEV. 520.66 FEET

CONTOUR INTERVAL IS 1/2 FOOT.
ALL UTILITY LOCATIONS ARE FROM SURFACE EVIDENCE ONLY.
PROPERTY LINES AND STREET LINES ARE APPROXIMATE AND BASED ON TAX MAP INFORMATION ONLY.

LEGEND

EP	EDGE OF PAVEMENT
CB ☐	CATCH BASIN
S.W.	SIDEWALK
-⊙-	UTILITY POLE
CO ▫	CLEANOUT
GV ⋈	GAS VALVE
WV ╫	WATER VALVE
RC	CROWN OF PAVEMENT
ASPH.	ASPHALT
MW●	MONITORING WELL
BM ⊡	BENCH MARK
○	LIGHT POLE
⊕	PZ SAMPLE SITE
⊗	GPW SAMPLE SITE
⊙	RW SAMPLE SITE
Ⓦ	MAY 2009 WELL LOCATIONS
🄴	ELECTRIC METER

POPLI DESIGN GROUP
ARCHITECTURE + ENGINEERING
555 Penbrooke Drive
Penfield NY 14526
585 388 2060 [tel]
[fax] 585 388 2070

TITLE: TOPOGRAPHIC & LOCATION SURVEY

PROJECT:
FORMER DINABURG DISTRIBUTING, INC
BENTON ST.
ROCHESTER, N.Y.

PREPARED FOR: MACTEC
Engineering and Consulting, Inc.
511 Congress Street
Portland, Maine 04101

MICHAEL ANTHONY VENTURO
50079
7/17
2009

REVISIONS		
5/09	TOPO UPDATE AND WELL LOCATIONS	JFP
7/09	ADDITIONAL WELL LOCATIONS	JFP

DATE:	SCALE:	DRAWN BY:	DRAWING NO.:
NOVEMBER, 2000	1" = 20'	SRR	3280. 09

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

APPENDIX E

DATA USABILITY SUMMARY REPORT AND COMPLETE ANALYTICAL RESULTS

DATA USABILITY SUMMARY REPORT IN SUPPORT OF THE REMEDIAL INVESSTIGATION
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK

1.0 INTRODUCTION

Soil, groundwater, and air samples were collected at the Dinaburg Distributing Site (Site) in Rochester, New York. Soil and groundwater samples were submitted to Chemtech Laboratories in Mountainside, NJ for analysis. Air samples were submitted to Contest Analytical Laboratories in East Longmeadow, MA for analysis. Results were reported in the following Sample Delivery Groups (SDGs): A2663, A2664, A2708, A2948, A2898, and LIMT-25188. A listing of samples included in this Data Usability Summary Report is presented in Table 1. A summary of the analytical results is presented in Table 2. Tentatively identified compounds (TICs) were reported for samples analyzed for VOCs by Method 8260B. TICs are presented in Table 3. Samples were analyzed for one or more of the following methods:

- Volatile Organic Compounds (VOCs) by USEPA Method 8260B
- Volatile Organic Compounds (VOCs) in air by Method TO-15
- Dissolved iron and manganese by USEPA Method 6010B
- Alkalinity by Method SM 2320B
- Total Organic Carbon (TOC) by Method SM5310B
- Sulfide by Method 9034
- Chloride, sulfate, nitrate, and nitrite by Method 300
- Methane, ethane, and ethene by Method RSK-175
- Carbon dioxide by Method SM 2320B

Deliverables for the off-site laboratory analyses included a Category B deliverable as defined in the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocols (NYSDEC, 2005) for all SDGs.

A project chemist review was completed based on NYSDEC Division of Environmental Remediation guidance for Data Usability Summary Reports (NYSDEC, 2002) for SDGs A2663, A2664, A2708, A2948, A2898, and LIMT-25188. Laboratory QC limits were used during the data evaluation unless noted otherwise. The project chemist review included evaluations of sample collection, data package completeness, holding times, QC data (blanks, instrument calibrations, duplicates, surrogate recovery, and spike recovery), data transcription, electronic data reporting, calculations, and data qualification.

The following laboratory or data validation qualifiers are used in the final data presentation.

U = target analyte is not detected at the reported detection limit
J = concentration is estimated
UJ = target analyte is not detected at the reported detection limit and is estimated
D = result is reported from a diluted analysis
JN = estimated concentration/tentative identification (TICs)

Results are interpreted to be usable as reported by the laboratory unless discussed in the following sections.

2.0 VOLATILE ORGANIC COMPOUNDS (VOCS) by Method 8260B

VOC - Hold Time

SDG A2664

The following samples had target compounds that were above the analytical range of the instrument and were re-analyzed at a dilution. The dilution analysis was performed 2 days outside of the 14-day hold time. Results reported from theses dilution analyses were qualified estimated (J).

Field Sample ID	Lab ID	Sample Date	Analysis Date
828103-GW101209	A2664-01DL	5/4/2009	5/20/2009
828103-GW102009	A2664-11DL	5/4/2009	5/20/2009
828103-GW301209	A2664-03DL	5/4/2009	5/20/2009
828103-GW302009	A2664-04DL	5/4/2009	5/20/2009
828103-GW201909	A2664-02DL	5/5/2009	5/20/2009

Sample 828103-GW501209 was also re-analyzed outside of the hold time (see internal standard section of DUSR below) and final results were qualified estimated (J/UJ).

VOC – Surrogates

SDG A2664

The surrogate percent recovery of 4-bromofluorobenzene in sample 828103-GW501209RE (76) was below the lower control limit. Results for all analytes were qualified estimated (J/UJ).

SDG A2898

The surrogate percent recovery of 1,2-dichloroethane-d4 in sample 828103-MW03C02809 (144) was above the upper control limit. Detections were qualified estimated (J).

VOC – Blanks

SDG A2664

Trip blank 828103-MWTB01 was analyzed on May 15, 2009 and had detections of tetrachloroethene (38 μg/L), cis-1,2-dichloroethene (2.7 μg/L) and trichloroethene (5.8 μg/L). Sample 828103-GW102009 was analyzed prior to the trip blank and had elevated levels of tetrachloroethene (2400 E μg/L), cis-1,2-dichloroethene (1100 E μg/L) and trichloroethene (1700 E μg/L). The laboratory suspected carry over from the analysis of 828103-GW102009 and re-analyzed the trip blank on May 19, 2009. There were no detections in the re-analysis of the trip blank. Based on professional judgment no samples were qualified due to this trip blank.

SDG A2898

Trip blank 828103-MWTB03 had detections of the following compounds:

Compound	Concentration (μg/L)	5X Action level
1,2,4-Trichlorobenzene	4.1	20.5
Tetrachloroethene	0.78	3.9

The following samples were qualified:

Field Sample ID	Lab ID	compound	final_result (μg/L)	qualifier	lab_result (μg/L)	lab_qualifier
828103-MW13K01609	A2898-17	1,2,4-Trichlorobenzene	4	U	4	
828103-MW0501809	A2898-06RE	Tetrachloroethene	1	U	0.88	J
828103-MW0601609	A2898-07	Tetrachloroethene	1.1	U	1.1	

Hexachlorbutadiene (3.4 μg/L) and 1,2,3-trichlorobenzene (3.4 μg/L) were also reported as TICs in the trip blank. These compounds were also reported as TICs in sample 828103-MW13K01609 and were removed from the final data set for this sample.

VOC – Matrix Spikes (MS) and Matrix Spike Duplicate (MSD)

SDG A2663

Soil sample 828103-GS51109 was submitted for matrix spike analysis.. The following compounds had percent recoveries below the lower laboratory control limit: chloroethane (55, 57), carbon disulfide (55, 55), methylene chloride (64), 4-methyl-2-pentanone (33, 35). These compounds were qualified estimated (UJ) in sample 828103-GS51109 and may be biased low.

VOC - Initial and Continuing Calibration Standards

SDG A2663

The continuing calibration analyzed on May 21, 2009 had a percent difference greater than the control limit of 20 for acetone (-22), carbon disulfide (-21), and tetrachloroethene (-28). These compounds were qualified estimated (J/UJ) in the following samples:

828103-GS51509
828103-GS121309
828103-GS131209
828103-GS131609

SDG A2664

The continuing calibration analyzed on May 19, 2009 had a percent difference greater than the control limit of 20 for tetrachloroethene (21). Tetrachloroethene was qualified estimated (UJ/J) in the following associated samples:

828103-GW402009
828103-GW501209

The continuing calibration analyzed on May 20, 2009 had a percent difference greater than the control limit of 20 for tetrachloroethene (-24). Tetrachloroethene was qualified estimated (J) in the following associated samples:

Field Sample ID	Lab ID	Dilution Factor
828103-GW101209	A2664-01DL	50
828103-GW102009	A2664-11DL	50
828103-GW201909	A2664-02DL	10
828103-GW301209	A2664-03DL	5
828103-GW302009	A2664-04DL	5

SDG A2708

The continuing calibration analyzed on May 14, 2009 had a percent difference greater than the control limit of 20 for trichlorofluoromethane (-21) and methylcyclohexane (-23). Trichlorofluoromethane and methylcyclohexane was qualified estimated (UJ) in the following associated samples:

Field Sample ID	Lab ID
828103-GS41109	A2708-01
828103-GS41609	A2708-02
828103-GS61009D	A2708-03
828103-GS61009	A2708-06
828103-GS61509	A2708-07
828103-GS71209	A2708-08
828103-GS71609	A2708-09
828103-GS91509	A2708-13
828103-GS101209	A2708-14

The continuing calibration analyzed on May 19, 2009 had a percent difference greater than the control limit of 20 for carbon disulfide (-24). Carbon disulfide was qualified estimated (UJ) in sample MW13K14KIDW09.

SDG A2898

The continuing calibration analyzed on June 5, 2009 (12:59) had a percent difference greater than the control limit of 20 for 1,1,2-trichlorotrifluorethane (-23). 1,1,2-Trichlorotrifluorethane was qualified estimated (UJ) in the following associated samples:

Field Sample ID	Lab ID
828103-MW10K01809	A2898-10
828103-MW14K01909	A2898-18
828103GPW0201209	A2898-20
828103GPW0101309	A2898-21

The continuing calibration analyzed on June 5, 2009 (00:36) had a percent difference greater than the control limit of 20 for tetrachloroethene (-31). Tetrachloroethene was qualified estimated (UJ/J) in the following associated samples:

Field Sample ID	Lab ID
828103-MW0501809	A2898-06RE
828103-MW09K01809	A2898-09
828103-MW11S01209	A2898-11
828103-MW12S01009	A2898-12
828103-MW12K01609	A2898-13
828103-MW12K01609D	A2898-16

The continuing calibration analyzed on June 8, 2009 had a percent difference greater than the control limit of 20 for bromoform (-22). Bromform was qualified estimated (UJ) in the following associated samples:

Field Sample ID	Lab ID
828103-MW0401809	A2898-05
828103-MW0601609	A2898-07
828103-MW08K01709	A2898-08

The continuing calibration analyzed on June 2, 2009 had a percent difference greater than the control limit of 20 for carbontetrachloride (-25). Carbontetrachloride was qualified estimated (UJ) in the following associated samples:

Field Sample ID	Lab ID
828103-MW0101509	A2898-01
828103-MW01A00709	A2898-02
828103-MW03C02809	A2898-03
828103-MW0301009	A2898-04

<u>VOC – Lab Control Spikes</u>

SDG A2663

The soil lab control spike (BSH0519M1) analyzed on May 19, 2009 had percent recoveries below the lower lab limit for the following compounds:

Compound	Percent Recovery	Control Limits
trans-1,2-Dichloroethene	80	82-120
Trichloroethene	80	84-113
1,3-Dichlorobenzene	85	88-114
1,4-Dichlorobenzene	85	88-112

These compounds were qualified estimated (J/UJ) in the following associated samples:

828103-GS51109 (see note below)
828103-GS51509 (see note below)
828103-GS111009
828103-GS111609
828103-GS121109
828103-GS121309
828103-GS131209
828103-GS131609
828103-GS141209
828103-GS141409
828103-GS132109
828103-MW131509

Note: The final result for trichloroethene was reported from a dilution analysis and not associated with this LCS (BSH0519M1) and therefore not qualified estimated.

The soil lab control spike (BSH0520M2) analyzed on May 21, 2009 had a percent recovery above the upper lab limit for the following compound:

Compound	Percent Recovery	Control Limits
Tetrachloroethene	135	75-131

Detections of tetrachloroethene were qualified estimated (J) in the following associated samples:

Field Sample ID	Lab Sample ID	Dilution factor
828103-GS51509	A2663-08DL	50
828103-GS121309	A2663-12DL	5
828103-GS131209	A2663-13DL	5

The soil lab control spike (BSH0522M1) analyzed on May 22, 2009 had a percent recoveries outside of lab control limits for the following compounds:

Compound	Percent Recovery	Control Limits
Methylcyclohexane	150	80-115
Tetrachloroethene	70	75-131

Results for tetrachloroethene and methylcyclohexane were qualified estimated (J) in the following associated samples:

Field Sample ID	Lab Sample ID	Compound	Dilution factor
828103-GS10909	A2663-01DL	Tetrachloroethene	10
828103-GS21109	A2663-03DL	Methyl cyclohexane	10
828103-GS21109	A2663-03DL2	Tetrachloroethene	200

SDG A2664

The aqueous lab control spike (BSH0519W2) analyzed on May 19, 2009 had a percent recovery above the upper lab limit for the following compound:

Compound	Percent Recovery	Control Limits

Tetrachloroethene	160	60-154
Trichloroethene	127	76-122

Detections of tetrachloroethene and trichloroethene were qualified estimated (J) in sample 828103-GW501209RE.

SDG A2708

The soil lab control spike (BSH0514M1) analyzed on May 14, 2009 had a percent recoveries outside of lab control limits for the following compounds:

Compound	Percent recovery	Control limits
trans-1,2-Dichloroethene	80	82-120
cis-1,2-Dichloroethene	80	84-120
Chlorodibromomethane	80	82-117
1,3-Dichlorobenzene	85	88-114

These compounds were qualified estimated in the following associated samples:

Field Sample ID	Lab Sample ID
828103-GS41109	A2708-01
828103-GS41609	A2708-02
828103-GS61009D	A2708-03
828103-GS61009	A2708-06
828103-GS61509	A2708-07
828103-GS71209	A2708-08
828103-GS71609	A2708-09
828103-GS91509	A2708-13
828103-GS101209	A2708-14

The soil lab control spike (BSH0522M1) analyzed on May 22, 2009 had a percent recovery of tetrachloroethene (70) that was below the lower limit of 75. Tetrachloroethene was qualified estimated in the 10X dilution analysis of 828103-GS101509.

The soil lab control spike (BSH0515M2) analyzed on May 15, 2009 had a percent recoveries outside of lab control limits for the following compounds:

Compound	Percent recovery	Control limits
trans-1,2-Dichloroethene	80	82-120
cis-1,2-Dichloroethene	75	84-120
1,1-dichloroethane	80	84-123
chloroform	80	85-125

These compounds were qualified estimated (UJ) in samples:

Field Sample ID	Lab Sample ID
828103-GS81109	A2708-10DL

828103-GS81509	A2708-11DL
828103-GS91209	A2708-12DL
828103-GS101509	A2708-15

SDG A2898

The aqueous lab control spike (BSE0602W1) analyzed on June 2, 2009 had a percent recoveries outside of lab control limits for the following compounds:

Compound	Percent recovery	Control limits
Vinyl Chloride	130	61-127
1,1-Dichloroethene	125	70-122
1,1,1-Trichloroethane	75	76-121
Trichloroethene	75	76-122
t-1,3-Dichloropropene	75	77-123
cis-1,3-Dichloropropene	65	77-121

Detections of vinyl chloride and 1,1-dichloroethene were qualified estimated (J) and results (no-detects and detections) were qualified estimated (J/UJ) for 1,1,1-trichloroethane, trichloroethene, t-1.3-dichloropropene and cis-1,3-dichloropropene in the following associated samples:

Field Sample ID	Lab Sample ID
828103-MW0101509	A2898-01
828103-MW01A00709	A2898-02
828103-MW03C02809	A2898-03
828103-MW0301009	A2898-04

VOC - Internal Standards

SDG A2664

Internal standard area counts for all four internal standards were outside of the method control limits of +100% to -50% in sample 828103-GW501209. The laboratory re-analyzed the sample. The area counts in the re-analysis were within control limits; however, the re-analysis was performed one day outside of the 14-day hold time. Professional judgment was used to report the re-analysis (828103-GW501209RE) in the final data set and estimate the results (J/UJ) due to the exceeded hold time.

SDG A2708

Internal standards were below the lower area control limit in the multiple soil samples in SDG A2708. The laboratory attributed the low area counts to sample matrix interference. The samples with low internal areas were re-analyzed at dilutions due to elevated levels of trichloroethene and/or tetrachloroethene. The internal standard areas in the dilution analyses were within control limits. The following tables present the area counts that were below the lower quality control limits. Compounds associated with internal standards that are **bold** (< - 50%) were qualified estimated (UJ/J). In accordance with the 8260B Region II validation guidelines (January, 2006), non-detect compounds associated with internal standards that had area counts less than - 25% of the 12-hour standard area (shaded below) were rejected (R) and detections were qualified estimated (J). Rejected results from the un-diluted analyses were replaced with results from the diluted runs in the final data set. Because of this, non-detects were reported with elevated reporting in samples that are shaded below.

	IS 1 Area	IS 2 Area	IS 3 Area	IS 4 Area
12-hour Std area	339129	602858	538429	271955
Lower limit (- 50%)	169565	301429	269215	135978
25 % of 12-hour Std	84782	150715	134607	67989
Field Sample ID				
828103-GS41609	**165114**	309521	**259847**	143126
828103-GS61009D	**102154**	**184137**	**155800**	**82873**
828103-GS61509	**127123**	**222103**	**192888**	**102196**
828103-GS71609	**102982**	145134	**153367**	**75101**
828103-GS81109	73092	139081	117135	60910
828103-GS81509	29681	56064	49109	26053
828103-GS91209	65216	121199	102520	51865

	IS 1 Area	IS 2 Area	IS 3 Area	IS 4 Area
12-hour Std area	337133	633768	538124	266960
Lower limit (- 50%)	168566	316884	269062	133480
Field Sample ID				
828103-GS41609	**162343**	**304113**	**252437**	134942

SDG A2898

All internal standard areas were above the upper control limit in sample 828103-MW13K01609 and detections were qualified estimated (J).

<u>VOC – Field Duplicates</u>

SDG A2708

Field duplicate sample 828103-GS61009D was submitted and analyzed in SDG A2708. Relative percent differences between the concentrations in the field sample and field duplicate sample were calculated.

Sample ID	QC code	Lab ID	Compound	Conc (µg/kg)	Qual	RPD
828103-GS61009D	FD	A2708-03DL	Tetrachloroethene	750000	D	46.2%
828103-GS61009	FS	A2708-06DL	Tetrachloroethene	1200000	D	
828103-GS61009D	FD	A2708-03DL	Trichloroethene	79000	DJ	62.0%
828103-GS61009	FS	A2708-06DL	Trichloroethene	150000	DJ	

Trichloroethene had an RPD of 62, above the control limit of 50 and was qualified estimated (J) in the field sample and field duplicate.

<u>VOC – Sample Reporting</u>

SDG A2663

The following samples were analyzed at a dilution due to elevated levels of target compounds. Final results are a combination of an undiluted analysis and a diluted analysis:

Field Sample ID	Lab sample ID	Dilution Factor (s)
828103-GS10909	A2663-01DL	10
828103-GS11609	A2663-02DL	5
828103-GS21109	A2663-03DL	10, 200
828103-GS21609	A2663-04DL	5
828103-GS51109	A2663-07DL	200
828103-GS51509	A2663-08DL	50
828103-GS121309	A2663-12DL	5
828103-GS131209	A2663-13DL	5
828103-GS131609	A2663-14DL	5
828103-GS132109	A2663-17DL	5
828103-MW131509	A2663-18DL	5

SDG A2664

The following samples were analyzed at a dilution due to elevated levels of target compounds. Final results are a combination of an undiluted analysis and a diluted analysis:

Field Sample ID	Lab ID	Dilution Factor
828103-GW101209	A2664-01DL	50
828103-GW102009	A2664-11DL	50
828103-GW201909	A2664-02DL	10
828103-GW301209	A2664-03DL	5
828103-GW302009	A2664-04DL	5

SDG A2708

The following samples were analyzed at a dilution due to elevated levels of target compounds. Final results are a combination of an undiluted analysis and a diluted analysis:

Field Sample ID	Lab ID	Dilution Factor
828103-GS41109	A2708-01DL	5
828103-GS41609	A2708-02DL	10
828103-GS61009D	A2708-03DL	200
828103-GS61009	A2708-06DL	200
828103-GS61509	A2708-07DL	200
828103-GS71209	A2708-08DL	50
828103-GS71609	A2708-09DL	500
828103-GS81109	A2708-10DL	50
828103-GS81509	A2708-11DL	100
828103-GS91209	A2708-12DL	100
828103-GS91509	A2708-13DL	20

828103-GS101209	A2708-14DL	5
828103-GS101509	A2708-15DL	10

SDG A2898

The following samples were analyzed at a dilution due to elevated levels of target compounds. Final results are a combination of an undiluted analysis and a diluted analysis:

Field Sample ID	Lab ID	Dilution Factor
828103-MW0101509	A2898-01DL	20
828103-MW01A00709	A2898-02DL	20
828103-MW03C02809	A2898-03DL	50
828103-MW0301009	A2898-04DL	100
828103-MW10K01809	A2898-10DL	10
828103-MW13K01609	A2898-17DL	10
828103-MW13K01609	A2898-17DL2	100
828103-MW14K01909	A2898-18DL	50
828103GPW0201209	A2898-20DL	50
828103GPW0101309	A2898-21DL	50

3.0 VOLATILE ORGANIC COMPOUNDS IN AIR by Method TO-15

SDG LIMT-25188

VOCs in Air - Blanks

Methylene chloride (1.53 μg/m^3) and acetone (0.52 μg/m^3) were detected in the blank associated with samples in SDG LIMT-25188. Action levels were calculated at ten times the blank concentration and compared to sample results. Low level detections of methylene chloride were qualified non-detect (U) in all samples in the SDG. Detections of acetone were reported in all samples at concentration above action levels, and results are reported without qualification.

field_sample_id	lab_sample_id	param_name	final_result (μg/m^3)	final_qualifier
828103-GV10809	09B14161	Methylene chloride	4.5	U
828103-GV10809D	09B14162	Methylene chloride	5.4	U
828103-GV20709	09B14163	Methylene chloride	5.2	U
828103-GV30709	09B14164	Methylene chloride	6.0	U
828103-GV40109	09B14165	Methylene chloride	4.5	U

VOCs in Air - Initial Calibration Standards

The initial calibration analyzed on June 19, 2009 had a percent difference greater than the control limit of 30 for acetone (42), ethanol (40), and propene (37). Acetone, ethanol, and propene were qualified estimated (J/UJ) in all samples in SDG LIMT-25188.

VOCs in Air - Field Duplicate

A field duplicate was collected for sample 828103-GV10809. 2-Butanone and tetrachloroethene had RPDs greater than 50. Final results for these two compounds were qualified estimated (J).

field_sample_id	qc_code	lab_sample_id	param_name	final_result (ug/m3)	RPD
828103-GV10809	FS	09B14161	2-Butanone	12	**54.5%**
828103-GV10809D	FD	09B14162	2-Butanone	21	
828103-GV10809	FS	09B14161	Tetrachloroethene	5.5	**58.8%**
828103-GV10809D	FD	09B14162	Tetrachloroethene	3	

4.0 METALS and WET CHEMISTRY

SDG A2898

Wet Chemistry - Hold Time

The analytical hold time for nitrate and nitrite by method 300 is 48 hours. Nitrate and nitrite were analyzed past the analytical hold time and results were qualified estimated (J/UJ) in the following samples:

Field Sample ID	Lab ID	Sample Date	Analysis Date
828103-MW0401809	A2898-05	5/25/2009	5/30/2009
828103-MW0601609	A2898-07	5/25/2009	5/28/2009
828103-MW09K01809	A2898-09	5/25/2009	5/28/2009
828103-MW12S01009	A2898-12	5/25/2009	5/28/2009
828103-MW0101509	A2898-01	5/26/2009	5/30/2009
828103-MW01A00709	A2898-02	5/26/2009	5/30/2009
828103-MW03C02809	A2898-03	5/26/2009	5/30/2009
828103-MW0301009	A2898-04	5/26/2009	5/30/2009

The analytical hold time for sulfide by method 9034 is 7 days. The following samples were analyzed past the analytical hold time and sulfide results were qualified estimated (J/UJ) in the following samples:

Field Sample	Lab ID	Sample Date	Analysis Date
828103-MW0101509	A2898-01	5/26/2009	6/6/2009
828103-MW03C02809	A2898-03	5/26/2009	6/6/2009
828103-MW0301009	A2898-04	5/26/2009	6/6/2009
828103-MW0401809	A2898-05	5/25/2009	6/6/2009
828103-MW0601609	A2898-07	5/25/2009	6/6/2009
828103-MW08K01709	A2898-08	5/26/2009	6/6/2009
828103-MW09K01809	A2898-09	5/25/2009	6/6/2009
828103-MW10K01809	A2898-10	5/26/2009	6/6/2009
828103-MW11S01209	A2898-11	5/26/2009	6/6/2009
828103-MW12S01009	A2898-12	5/25/2009	6/6/2009
828103-MW12K01609	A2898-13	5/26/2009	6/6/2009
828103-MW13K01609	A2898-17	5/26/2009	6/6/2009
828103-MW14K01909	A2898-18	5/26/2009	6/6/2009

Wet Chemistry – Sample Reporting

The following samples were analyzed by Method 300 for chloride, nitrate, nitrite, and sulfate and were analyzed at a dilution due to elevated concentrations. Samples results were combined with the un-diluted analysis in the final data set:

Field Sample ID	Lab ID	Dilution Factor
828103-MW0101509	A2898-01DL	10
828103-MW01A00709	A2898-02DL	10
828103-MW03C02809	A2898-03DL	5
828103-MW03C02809	A2898-03DL2	25
828103-MW0301009	A2898-04DL	3
828103-MW0401809	A2898-05DL	10
828103-MW0601609	A2898-07DL	100
828103-MW08K01709	A2898-08DL	10

828103-MW09K01809	A2898-09DL	50
828103-MW10K01809	A2898-10DL	10
828103-MW11S01209	A2898-11DL	15
828103-MW12S01009	A2898-12DL	5
828103-MW12K01609	A2898-13DL	2
828103-MW12K01609D	A2898-16DL	2
828103-MW13K01609	A2898-17DL	100
828103-MW14K01909	A2898-18DL	20

Reference:

New York State Department of Environmental Conservation (NYSDEC), 2005. "Analytical Services Protocols"; July 2005.

New York State Department of Environmental Conservation (NYSDEC), 2002. "Technical Guidance for Site Investigation and Remediation-Appendix 2B"; Draft DER-10; Division of Environmental Remediation; December 2002.

Data Validator: Tige Cunningham

Date: 7/15/09

Reviewed by Chris Ricardi, NRCC-EAC
Quality Assurance Officer

Chris Ricardi

Date: 7/31/09

Table 1 – Sample Listing

				Class	VOCs	VOCs	Metals	Wet Chem	Wet Chem	Wet Chem	Wet Chem	Wet Chem	Wet Chem
				Parameter	VOC	VOC	Fe/Mn	Sulfide	Diss. Gasses	Alk	CO2	TOC	Cl, NO_3, NO_2, SO_4
				Analysis Method	SW8260	TO-15	SW6010	9034	RSK175	SM2320 B(Alk)	SM2320 B(CO2)	SM5310B	E300
				Fraction	T	T	D	T	T	T	T	T	T
SDG	**Media**	**Sample ID**	**Sample Date**	**Qc Code**									
A2898	GW	828103GPW0101309	5/25/2009	FS	X								
A2898	GW	828103GPW0201209	5/25/2009	FS	X								
A2898	GW	828103-MW0101509	5/26/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW01A00709	5/26/2009	FS	X				X	X	X	X	X
A2898	GW	828103-MW0301009	5/26/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW03C02809	5/26/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW0401809	5/25/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW0501809	5/25/2009	FS	X								
A2898	GW	828103-MW0601609	5/25/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW08K01709	5/26/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW09K01809	5/25/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW10K01809	5/26/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW11S01209	5/26/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW12K01609	5/26/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW12K01609D	5/26/2009	FD	X		X		X	X	X	X	X
A2898	GW	828103-MW12S01009	5/25/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW13K01609	5/26/2009	FS	X		X	X	X	X	X	X	X
A2898	GW	828103-MW14K01909	5/26/2009	FS	X		X	X	X	X	X	X	X
A2898	BW	828103-MWTB03	5/25/2009	TB	X								
A2663	SOIL	828103-GS10909	5/6/2009	FS	X								
A2663	SOIL	828103-GS11609	5/6/2009	FS	X								
A2663	SOIL	828103-GS111009	5/5/2009	FS	X								
A2663	SOIL	828103-GS111609	5/5/2009	FS	X								
A2663	SOIL	828103-GS121109	5/5/2009	FS	X								
A2663	SOIL	828103-GS121309	5/5/2009	FS	X								

				Class	VOCs	VOCs	Metals	Wet Chem	Wet Chem	Wet Chem	Wet Chem	Wet Chem	Wet Chem
				Parameter	VOC	VOC	Fe/Mn	Sulfide	Diss. Gasses	Alk	CO2	TOC	Cl, NO_3, NO_2, SO_4
				Analysis Method	SW8260	TO-15	SW6010	9034	RSK175	SM2320 B(Alk)	SM2320 B(CO2)	SM5310B	E300
				Fraction	T	T	D	T	T	T	T	T	T
SDG	**Media**	**Sample ID**	**Sample Date**	**Qc Code**									
A2663	SOIL	828103-GS131209	5/5/2009	FS	X								
A2663	SOIL	828103-GS131609	5/5/2009	FS	X								
A2663	SOIL	828103-GS132109	5/5/2009	FS	X								
A2663	SOIL	828103-GS141209	5/5/2009	FS	X								
A2663	SOIL	828103-GS141409	5/5/2009	FS	X								
A2663	SOIL	828103-GS21109	5/6/2009	FS	X								
A2663	SOIL	828103-GS21609	5/6/2009	FS	X								
A2663	SOIL	828103-GS31109	5/6/2009	FS	X								
A2663	SOIL	828103-GS31609	5/6/2009	FS	X								
A2663	SOIL	828103-GS51109	5/6/2009	FS	X								
A2663	SOIL	828103-GS51509	5/6/2009	FS	X								
A2663	SOIL	828103-MW131509	5/5/2009	FS	X								
A2664	GW	828103-GW101209	5/4/2009	FS	X								
A2664	GW	828103-GW102009	5/4/2009	FS	X								
A2664	GW	828103-GW201909	5/5/2009	FS	X								
A2664	GW	828103-GW301209	5/4/2009	FS	X								
A2664	GW	828103-GW302009	5/4/2009	FS	X								
A2664	GW	828103-GW402009	5/5/2009	FS	X								
A2664	GW	828103-GW501209	5/4/2009	FS	X								
A2664	GW	828103-GW501909	5/4/2009	FS	X								
A2664	GW	828103-GW601909	5/5/2009	FS	X								
A2664	BW	828103-MWTB01	5/4/2009	TB	X								
A2708	SOIL	828103-GS101209	5/8/2009	FS	X								
A2708	SOIL	828103-GS101509	5/8/2009	FS	X								
A2708	SOIL	828103-GS41109	5/8/2009	FS	X								
A2708	SOIL	828103-GS41609	5/8/2009	FS	X								
A2708	SOIL	828103-GS61009	5/7/2009	FS	X								
A2708	SOIL	828103-GS61009D	5/7/2009	FD	X								

				Class	VOCs	VOCs	Metals	Wet Chem	Wet Chem	Wet Chem	Wet Chem	Wet Chem	Wet Chem
				Parameter	VOC	VOC	Fe/Mn	Sulfide	Diss. Gasses	Alk	CO2	TOC	Cl, NO_3, NO_2, SO_4
				Analysis Method	SW8260	TO-15	SW6010	9034	RSK175	SM2320 B(Alk)	SM2320 B(CO2)	SM5310B	E300
				Fraction	T	T	D	T	T	T	T	T	T
SDG	**Media**	**Sample ID**	**Sample Date**	**Qc Code**									
A2708	SOIL	828103-GS61509	5/7/2009	FS	X								
A2708	SOIL	828103-GS71209	5/8/2009	FS	X								
A2708	SOIL	828103-GS71609	5/8/2009	FS	X								
A2708	SOIL	828103-GS81109	5/7/2009	FS	X								
A2708	SOIL	828103-GS81509	5/7/2009	FS	X								
A2708	SOIL	828103-GS91209	5/8/2009	FS	X								
A2708	SOIL	828103-GS91509	5/8/2009	FS	X								
A2708	SOIL	MW13K14KIDW09	5/8/2009	FS	X								
A2708	NA-L	828103-GSTB01	5/5/2009	TB	X								
A2948	BW	828103-MWTB04	5/27/2009	TB	X								
A2948	WW	828103-SL101209	5/27/2009	FS	X								
A2948	WW	828103-SL201309	5/27/2009	FS	X								
A2948	WW	828103-SL301309	5/27/2009	FS	X								
A2948	WW	828103-SL400609	5/27/2009	FS	X								
A2948	WW	828103-SL500809	5/27/2009	FS	X								
A2948	WW	828103-SL601109	5/27/2009	FS	X								
LIMT-25188	Air	828103-GV10809	5/7/2009	FS		X							
LIMT-25188	Air	828103-GV10809	5/7/2009	FS		X							
LIMT-25188	Air	828103-GV10809D	5/7/2009	FD		X							
LIMT-25188	Air	828103-GV10809D	5/7/2009	FD		X							
LIMT-25188	Air	828103-GV20709	5/6/2009	FS		X							
LIMT-25188	Air	828103-GV20709	5/6/2009	FS		X							
LIMT-25188	Air	828103-GV30709	5/6/2009	FS		X							
LIMT-25188	Air	828103-GV30709	5/6/2009	FS		X							
LIMT-25188	Air	828103-GV40109	5/7/2009	FS		X							
LIMT-25188	Air	828103-GV40109	5/7/2009	FS		X							

Table 3 - VOC - Tentatively Identified compounds

Tentatively identified compounds (TICs) were reported by the laboratory. TICs reported in samples are presented in Table 3. Only samples that had TICs reported are included on Table 3. If a sample is not listed, no TICs were reported.

SDG	Field Sample ID	Sample Date	Lab Sample ID	CAS No	chemical_name	Result	Validation Qualifier	Units
A2663	828103-GS10909	5/6/2009	A2663-01	95-63-6	1,2,4-Trimethylbenzene	1300	JN	ug/kg
A2663	828103-GS10909	5/6/2009	A2663-01	108-67-8	1,3,5-Trimethylbenzene	280	JN	ug/kg
A2663	828103-GS10909	5/6/2009	A2663-01	000611-14-3	Benzene, 1-ethyl-2-methyl-	2000	JN	ug/kg
A2663	828103-GS10909	5/6/2009	A2663-01	000124-18-5	Decane	4400	JN	ug/kg
A2663	828103-GS10909	5/6/2009	A2663-01	91-20-3	Naphthalene	370	JN	ug/kg
A2663	828103-GS21109	5/6/2009	A2663-03	95-63-6	1,2,4-Trimethylbenzene	16000	JN	ug/kg
A2663	828103-GS21109	5/6/2009	A2663-03	108-67-8	1,3,5-Trimethylbenzene	7300	JN	ug/kg
A2663	828103-GS21109	5/6/2009	A2663-03	000611-14-3	Benzene, 1-ethyl-2-methyl-	4000	JN	ug/kg
A2663	828103-GS21109	5/6/2009	A2663-03	91-20-3	Naphthalene	2400	JN	ug/kg
A2663	828103-GS21109	5/6/2009	A2663-03	103-65-1	n-propylbenzene	1500	JN	ug/kg
A2663	828103-GS21109	5/6/2009	A2663-03	99-87-6	p-Isopropyltoluene	610	JN	ug/kg
A2663	828103-GS21109	5/6/2009	A2663-03	135-98-8	sec-Butylbenzene	430	JN	ug/kg
A2664	828103-GW101209	5/4/2009	A2664-01	87-61-6	1,2,3-Trichlorobenzene	0.87	JN	ug/L
A2664	828103-GW101209	5/4/2009	A2664-01	87-68-3	Hexachlorobutadiene	1.8	JN	ug/L
A2664	828103-GW101209	5/4/2009	A2664-01	91-20-3	Naphthalene	0.89	JN	ug/L
A2664	828103-GW101209	5/4/2009	A2664-01	104-51-8	n-Butylbenzene	0.62	JN	ug/L
A2664	828103-GW102009	5/4/2009	A2664-11	95-63-6	1,2,4-Trimethylbenzene	0.83	JN	ug/L
A2664	828103-GW102009	5/4/2009	A2664-11	91-20-3	Naphthalene	1.9	JN	ug/L
A2708	828103-GS41109	5/8/2009	A2708-01	95-63-6	1,2,4-Trimethylbenzene	280	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	000124-18-5	Decane	9400	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	002847-72-5	Decane, 4-methyl-	2000	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	013151-35-4	Decane, 5-methyl-	2400	JN	ug/kg

A2708	828103-GS41109	5/8/2009	A2708-01	007154-80-5	Heptane, 3,3,5-trimethyl-	5400	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	91-20-3	Naphthalene	230	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	000111-84-2	Nonane	6300	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	017301-94-9	Nonane, 4-methyl-	2200	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	000111-65-9	Octane	2700	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	002051-30-1	Octane, 2,6-dimethyl-	3400	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	003221-61-2	Octane, 2-methyl-	2700	JN	ug/kg
A2708	828103-GS41109	5/8/2009	A2708-01	002216-33-3	Octane, 3-methyl-	2300	JN	ug/kg
A2708	828103-GS41609	5/8/2009	A2708-02	87-61-6	1,2,3-Trichlorobenzene	250	JN	ug/kg
A2708	828103-GS41609	5/8/2009	A2708-02	87-68-3	Hexachlorobutadiene	370	JN	ug/kg
A2708	828103-GS61509	5/7/2009	A2708-07	95-63-6	1,2,4-Trimethylbenzene	270	JN	ug/kg
A2708	828103-GS71609	5/8/2009	A2708-09	95-63-6	1,2,4-Trimethylbenzene	1400	JN	ug/kg
A2708	828103-GS71609	5/8/2009	A2708-09	108-67-8	1,3,5-Trimethylbenzene	1100	JN	ug/kg
A2708	828103-GS71609	5/8/2009	A2708-09	99-87-6	4-iso-Propyltoluene	340	JN	ug/kg
A2708	828103-GS71609	5/8/2009	A2708-09	103-65-1	Propylbenzene	360	JN	ug/kg
A2708	828103-GS71609	5/8/2009	A2708-09	135-98-8	sec-Butylbenzene	300	JN	ug/kg
A2898	828103-MW13K01609	5/26/2009	A2898-17	95-63-6	1,2,4-Trimethylbenzene	38	JN	ug/L
A2898	828103-MW13K01609	5/26/2009	A2898-17	108-67-8	1,3,5-Trimethylbenzene	4.7	JN	ug/L
A2898	828103-MW13K01609	5/26/2009	A2898-17	000611-14-3	Benzene, 1-ethyl-2-methyl-	9.2	JN	ug/L
A2898	828103-MW13K01609	5/26/2009	A2898-17	000620-14-4	Benzene, 1-ethyl-3-methyl-	6.9	JN	ug/L
A2898	828103-MW13K01609	5/26/2009	A2898-17	91-20-3	Naphthalene	17	JN	ug/L
A2898	828103-MW13K01609	5/26/2009	A2898-17	104-51-8	n-Butylbenzene	4.7	JN	ug/L
A2898	828103-MW13K01609	5/26/2009	A2898-17	103-65-1	Propylbenzene	4.4	JN	ug/L
A2898	828103-MW13K01609	5/26/2009	A2898-17	135-98-8	sec-Butylbenzene	1.4	JN	ug/L
A2948	828103-SL101209	5/27/2009	A2948-01	87-61-6	1,2,3-Trichlorobenzene	1	JN	ug/L
A2948	828103-SL101209	5/27/2009	A2948-01	99-87-6	4-iso-Propyltoluene	0.59	JN	ug/L

A2948	828103-SL101209	5/27/2009	A2948-01	87-68-3	Hexachlorobutadiene	2.3	JN	ug/L
A2948	828103-SL101209	5/27/2009	A2948-01	91-20-3	Naphthalene	1.2	JN	ug/L
A2948	828103-SL400609	5/27/2009	A2948-04	99-87-6	4-iso-Propyltoluene	1.7	JN	ug/L
A2948	828103-SL400609	5/27/2009	A2948-04	002216-52-6	Cyclohexanol, 5-methyl-2-(1-methyl	7.7	JN	ug/L
A2948	828103-SL500809	5/27/2009	A2948-05	99-87-6	4-iso-Propyltoluene	0.81	JN	ug/L
A2948	828103-SL500809	5/27/2009	A2948-05	000089-78-1	Cyclohexanol, 5-methyl-2-(1-methyl	7.4	JN	ug/L
A2948	828103-SL601109	5/27/2009	A2948-06	002216-52-6	Cyclohexanol, 5-methyl-2-(1-methyl	6.6	JN	ug/L

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

			Sample Delivery Group	A2664		A2664		A2664		A2664	
			Location	GW-1		GW-1		GW-2		GW-3	
			Sample Date	5/4/2009		5/4/2009		5/5/2009		5/4/2009	
			Sample ID	828103-GW101209		828103-GW102009		828103-GW201909		828103-GW302009	
			Qc Code	FS		FS		FS		FS	
Analysis	**Fraction**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	T	1,1,1-Trichloroethane	ug/l	49		41		1	U	1	U
SW8260	T	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethane	ug/l	11		27		15		0.99	J
SW8260	T	1,1-Dichloroethene	ug/l	4.6		8.1		5.3		3.6	
SW8260	T	1,2,4-Trichlorobenzene	ug/l	0.82	J	1	U	1	U	1	U
SW8260	T	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromoethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,4-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Acetic acid, methyl ester	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Acetone	ug/l	5	U	11		5	U	5	U
SW8260	T	Benzene	ug/l	1	U	0.99	J	1.4		1	U
SW8260	T	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromoform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon disulfide	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorodibromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cis-1,2-Dichloroethene	ug/l	480	DJ	720	DJ	390	DJ	110	DJ
SW8260	T	cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Dichlorodifluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Ethyl benzene	ug/l	1	U	1.1		1	U	1	U
SW8260	T	Isopropylbenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl Tertbutyl Ether	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methylene chloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Tetrachloroethene	ug/l	640	DJ	2900	DJ	150	DJ	730	DJ
SW8260	T	Toluene	ug/l	1	U	2.7		0.77	J	1	U
SW8260	T	trans-1,2-Dichloroethene	ug/l	5.1		19		3.1		1	
SW8260	T	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Trichloroethene	ug/l	420	DJ	840	DJ	310	DJ	110	DJ
SW8260	T	Trichlorofluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Vinyl chloride	ug/l	28		57		55		45	
SW8260	T	Xylene, m/p	ug/l	2	U	1.6	J	2	U	2	U
SW8260	T	Xylene, o	ug/l	1	U	2.5		1	U	1	U
SW6010	D	Iron	ug/l								
SW6010	D	Manganese	ug/l								
9034	T	Sulfide	mg/l								
E300	T	Chloride	mg/l								
E300	T	Nitrate as N	mg/l								
E300	T	Nitrite as N	mg/l								
E300	T	Sulfate	mg/l								
RSK175	T	Ethane	ug/l								
RSK175	T	Ethene	ug/l								
RSK175	T	Methane	ug/l								
SM2320 B(Alk)	T	Alkalinity, Total	mg/l								
SM2320 B(CO2)	T	Carbon Dioxide	mg/l								
SM5310B	T	Total Organic Carbon	mg/l								
Notes:											
Fraction : T = total, D = dissolved											
Units: ug/l = micrograms per liter, mg/l = milligrams per liter											
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis											

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

			Sample Delivery Group	A2664		A2664		A2664		A2664	
			Location	GW-3		GW-4		GW-5		GW-5	
			Sample Date	5/4/2009		5/5/2009		5/4/2009		5/4/2009	
			Sample ID	828103-GW301209		828103-GW402009		828103-GW501209		828103-GW501909	
			Qc Code	FS		FS		FS		FS	
Analysis	**Fraction**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	T	1,1,1-Trichloroethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,1-Dichloroethane	ug/l	1.2		1	U	1	UJ	1	U
SW8260	T	1,1-Dichloroethene	ug/l	3.2		1	U	1	UJ	1	U
SW8260	T	1,2,4-Trichlorobenzene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,2-Dibromoethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,2-Dichloroethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,2-Dichloropropane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	1,4-Dichlorobenzene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	2-Butanone	ug/l	5	U	5	U	5	UJ	5	U
SW8260	T	2-Hexanone	ug/l	5	U	5	U	5	UJ	5	U
SW8260	T	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	UJ	5	U
SW8260	T	Acetic acid, methyl ester	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Acetone	ug/l	5	U	5	U	5	UJ	5	U
SW8260	T	Benzene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Bromodichloromethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Bromoform	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Bromomethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Carbon disulfide	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Carbon tetrachloride	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Chlorobenzene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Chlorodibromomethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Chloroethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Chloroform	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Chloromethane	ug/l	1	U	1	U	3.3	J	1	U
SW8260	T	Cis-1,2-Dichloroethene	ug/l	150	DJ	1	U	1	UJ	2.7	
SW8260	T	cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Cyclohexane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Dichlorodifluoromethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Ethyl benzene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Isopropylbenzene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Methyl cyclohexane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Methyl Tertbutyl Ether	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Methylene chloride	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Styrene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Tetrachloroethene	ug/l	720	DJ	1	UJ	29	J	3	
SW8260	T	Toluene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	trans-1,2-Dichloroethene	ug/l	0.73	J	1	U	1	UJ	1	U
SW8260	T	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Trichloroethene	ug/l	120	DJ	1	U	9.6	J	34	
SW8260	T	Trichlorofluoromethane	ug/l	1	U	1	U	1	UJ	1	U
SW8260	T	Vinyl chloride	ug/l	30		1	U	1	UJ	1	U
SW8260	T	Xylene, m/p	ug/l	2	U	2	U	2	UJ	2	U
SW8260	T	Xylene, o	ug/l	1	U	1	U	1	UJ	1	U
SW6010	D	Iron	ug/l								
SW6010	D	Manganese	ug/l								
9034	T	Sulfide	mg/l								
E300	T	Chloride	mg/l								
E300	T	Nitrate as N	mg/l								
E300	T	Nitrite as N	mg/l								
E300	T	Sulfate	mg/l								
RSK175	T	Ethane	ug/l								
RSK175	T	Ethene	ug/l								
RSK175	T	Methane	ug/l								
SM2320 B(Alk)	T	Alkalinity, Total	mg/l								
SM2320 B(CO2)	T	Carbon Dioxide	mg/l								
SM5310B	T	Total Organic Carbon	mg/l								

Notes:
Fraction : T = total, D = dissolved
Units: ug/l = micrograms per liter, mg/l = milligrams per liter
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

			Sample Delivery Group	A2664		A2664		A2898		A2898	
			Location	GW-6		QC		GPW-01		GPW-02	
			Sample Date	5/5/2009		5/4/2009		5/25/2009		5/25/2009	
			Sample ID	828103-GW601909		828103-MWTB01		828103GPW0101309		828103GPW0201209	
			Qc Code	FS		TB		FS		FS	
Analysis	Fraction	Parameter	Units	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	T	1,1,1-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	U	1	UJ	1	UJ
SW8260	T	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethane	ug/l	2.2		1	U	1	U	1	U
SW8260	T	1,1-Dichloroethene	ug/l	3.1		1	U	1	U	1	U
SW8260	T	1,2,4-Trichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromoethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,4-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Acetic acid, methyl ester	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Acetone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromoform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon disulfide	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorodibromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cis-1,2-Dichloroethene	ug/l	31		1	U	38		81	
SW8260	T	cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Dichlorodifluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Ethyl benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Isopropylbenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl Tertbutyl Ether	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methylene chloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Tetrachloroethene	ug/l	3.4		1	U	7.4		830	D
SW8260	T	Toluene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	trans-1,2-Dichloroethene	ug/l	1.3		1	U	2.6		1.2	
SW8260	T	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Trichloroethene	ug/l	81		1	U	1600	D	5200	D
SW8260	T	Trichlorofluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Vinyl chloride	ug/l	7.1		1	U	1	U	7.6	
SW8260	T	Xylene, m/p	ug/l	2	U	2	U	2	U	2	U
SW8260	T	Xylene, o	ug/l	1	U	1	U	1	U	1	U
SW6010	D	Iron	ug/l								
SW6010	D	Manganese	ug/l								
9034	T	Sulfide	mg/l								
E300	T	Chloride	mg/l								
E300	T	Nitrate as N	mg/l								
E300	T	Nitrite as N	mg/l								
E300	T	Sulfate	mg/l								
RSK175	T	Ethane	ug/l								
RSK175	T	Ethene	ug/l								
RSK175	T	Methane	ug/l								
SM2320 B(Alk)	T	Alkalinity, Total	mg/l								
SM2320 B(CO2)	T	Carbon Dioxide	mg/l								
SM5310B	T	Total Organic Carbon	mg/l								
Notes:											
Fraction : T = total, D = dissolved											
Units: ug/l = micrograms per liter, mg/l = milligrams per liter											
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis											

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

			Sample Delivery Group	A2898		A2898		A2898		A2898	
			Location	MW-01		MW-01A		MW-03		MW-03C	
			Sample Date	5/26/2009		5/26/2009		5/26/2009		5/26/2009	
			Sample ID	828103-MW0101509		828103-MW01A00709		828103-MW0301009		828103-MW03C02809	
			Qc Code	FS		FS		FS		FS	
Analysis	**Fraction**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	T	1,1,1-Trichloroethane	ug/l	1	UJ	1	UJ	47	J	1	UJ
SW8260	T	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethane	ug/l	4		1	U	3.5		32	J
SW8260	T	1,1-Dichloroethene	ug/l	2.5	J	1	U	16	J	1.8	J
SW8260	T	1,2,4-Trichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromoethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,4-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Acetic acid, methyl ester	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Acetone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Benzene	ug/l	1	U	1	U	1	U	0.82	J
SW8260	T	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromoform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon disulfide	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon tetrachloride	ug/l	1	UJ	1	UJ	1	UJ	1	UJ
SW8260	T	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorodibromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroform	ug/l	1	U	1	U	0.74	J	1	U
SW8260	T	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cis-1,2-Dichloroethene	ug/l	450	D	310	D	190	D	220	D
SW8260	T	cis-1,3-Dichloropropene	ug/l	1	UJ	1	UJ	1	UJ	1	UJ
SW8260	T	Cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Dichlorodifluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Ethyl benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Isopropylbenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl Tertbutyl Ether	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methylene chloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Tetrachloroethene	ug/l	53		44	D	9100	D	370	D
SW8260	T	Toluene	ug/l	1	U	1	U	1.1		1	U
SW8260	T	trans-1,2-Dichloroethene	ug/l	7		2.3		4.3		1.1	J
SW8260	T	trans-1,3-Dichloropropene	ug/l	1	UJ	1	UJ	1	UJ	1	UJ
SW8260	T	Trichloroethene	ug/l	61	D	67	D	2200	D	1100	D
SW8260	T	Trichlorofluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Vinyl chloride	ug/l	37	D	5.4	J	1	U	7.5	J
SW8260	T	Xylene, m/p	ug/l	2	U	2	U	2	U	2	U
SW8260	T	Xylene, o	ug/l	1	U	1	U	1.9		1	U
SW6010	D	Iron	ug/l	3860				95		1190	
SW6010	D	Manganese	ug/l	248				44.1		45.1	
9034	T	Sulfide	mg/l	1	UJ			1	UJ	1	UJ
E300	T	Chloride	mg/l	91	D	62	D	35	D	210	D
E300	T	Nitrate as N	mg/l	0.1	UJ	0.378	J	10	J	0.1	UJ
E300	T	Nitrite as N	mg/l	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
E300	T	Sulfate	mg/l	44		18		96	D	160	D
RSK175	T	Ethane	ug/l	5	U	5	U	5	U	5	U
RSK175	T	Ethene	ug/l	5	U	5	U	5	U	5	U
RSK175	T	Methane	ug/l	18.8		5	U	5	U	5	U
SM2320 B(Alk)	T	Alkalinity, Total	mg/l	270		270		210		440	
SM2320 B(CO2)	T	Carbon Dioxide	mg/l	100		100		93		200	
SM5310B	T	Total Organic Carbon	mg/l	8.32		4.37		4		1.67	

Notes:
Fraction : T = total, D = dissolved
Units: ug/l = micrograms per liter, mg/l = milligrams per liter
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis

			Sample Delivery Group	A2898		A2898		A2898		A2898	
			Location	MW-04		MW-05		MW-06		MW-08K	
			Sample Date	5/25/2009		5/25/2009		5/25/2009		5/26/2009	
			Sample ID	828103-MW0401809		828103-MW0501809		828103-MW0601609		828103-MW08K01709	
			Qc Code	FS		FS		FS		FS	
Analysis	**Fraction**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	T	1,1,1-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2,4-Trichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromoethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,4-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Acetic acid, methyl ester	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Acetone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromoform	ug/l	1	UJ	1	U	1	UJ	1	UJ
SW8260	T	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon disulfide	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorodibromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cis-1,2-Dichloroethene	ug/l	1	U	1	U	13		1	U
SW8260	T	cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Dichlorodifluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Ethyl benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Isopropylbenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl Tertbutyl Ether	ug/l	1.3		1	U	1	U	1	U
SW8260	T	Methylene chloride	ug/l	0.52	J	1	U	1	U	1	U
SW8260	T	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Tetrachloroethene	ug/l	1	U	1	UJ	1.1	U	1	U
SW8260	T	Toluene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	trans-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Trichloroethene	ug/l	1	U	4.6		4.6		1	U
SW8260	T	Trichlorofluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Vinyl chloride	ug/l	1	U	1	U	0.59	J	1	U
SW8260	T	Xylene, m/p	ug/l	2	U	2	U	2	U	2	U
SW8260	T	Xylene, o	ug/l	1	U	1	U	1	U	1	U
SW6010	D	Iron	ug/l	59.2				50	U	50	U
SW6010	D	Manganese	ug/l	31.9				28.6		24.8	
9034	T	Sulfide	mg/l	1	UJ			1	UJ	1	UJ
E300	T	Chloride	mg/l	66	D			490	D	57	D
E300	T	Nitrate as N	mg/l	0.266	J			0.788	J	4.25	
E300	T	Nitrite as N	mg/l	0.05	UJ			0.05	UJ	0.05	U
E300	T	Sulfate	mg/l	100	D			150	D	44	
RSK175	T	Ethane	ug/l	5	U			5	U	5	U
RSK175	T	Ethene	ug/l	5	U			5	U	5	U
RSK175	T	Methane	ug/l	5	U			5	U	5	U
SM2320 B(Alk)	T	Alkalinity, Total	mg/l	350				550		300	
SM2320 B(CO2)	T	Carbon Dioxide	mg/l	200				200		100	
SM5310B	T	Total Organic Carbon	mg/l	1.5				6.02		1.5	
Notes:											
Fraction : T = total, D = dissolved											
Units: ug/l = micrograms per liter, mg/l = milligrams per liter											
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis											

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

			Sample Delivery Group	A2898		A2898		A2898		A2898	
			Location	MW-09K		MW-10K		MW-11S		MW-12K	
			Sample Date	5/25/2009		5/26/2009		5/26/2009		5/26/2009	
			Sample ID	828103-MW09K01809		828103-MW10K01809		828103-MW11S01209		828103-MW12K01609	
			Qc Code	FS		FS		FS		FS	
Analysis	**Fraction**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	T	1,1,1-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	UJ	1	U	1	U
SW8260	T	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethane	ug/l	1	U	3.9		1	U	1	U
SW8260	T	1,1-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2,4-Trichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromoethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,4-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Acetic acid, methyl ester	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Acetone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Benzene	ug/l	1	U	0.61	J	1	U	1	U
SW8260	T	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromoform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon disulfide	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorodibromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cis-1,2-Dichloroethene	ug/l	1	U	100	D	1	U	1	U
SW8260	T	cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Dichlorodifluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Ethyl benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Isopropylbenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl Tertbutyl Ether	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methylene chloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Tetrachloroethene	ug/l	1	UJ	39		1	UJ	1	UJ
SW8260	T	Toluene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	trans-1,2-Dichloroethene	ug/l	1	U	1.6		1	U	1	U
SW8260	T	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Trichloroethene	ug/l	1.9		410	D	1	U	8.2	
SW8260	T	Trichlorofluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Vinyl chloride	ug/l	1	U	5.8		1	U	1	U
SW8260	T	Xylene, m/p	ug/l	2	U	2	U	2	U	2	U
SW8260	T	Xylene, o	ug/l	1	U	1	U	1	U	1	U
SW6010	D	Iron	ug/l	949		1710		50	U	89.6	
SW6010	D	Manganese	ug/l	47.9		58.6		10	U	118	
9034	T	Sulfide	mg/l	1	UJ	1.6	J	1	UJ	1.6	J
E300	T	Chloride	mg/l	340	D	61	D	100	D	18	D
E300	T	Nitrate as N	mg/l	0.1	UJ	0.1	U	9.21		0.285	
E300	T	Nitrite as N	mg/l	0.05	UJ	0.05	U	0.05	U	0.05	U
E300	T	Sulfate	mg/l	140	D	130	D	43		77	D
RSK175	T	Ethane	ug/l	5	U	5	U	5	U	5	U
RSK175	T	Ethene	ug/l	5	U	5	U	5	U	5	U
RSK175	T	Methane	ug/l	5	U	5	U	5	U	5	U
SM2320 B(Alk)	T	Alkalinity, Total	mg/l	420		590		240		440	
SM2320 B(CO2)	T	Carbon Dioxide	mg/l	200		300		100		200	
SM5310B	T	Total Organic Carbon	mg/l	2.24		2.69		2.61		1.91	
Notes:											
Fraction : T = total, D = dissolved											
Units: ug/l = micrograms per liter, mg/l = milligrams per liter											
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis											

Aqueous

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

			Sample Delivery Group	A2898		A2898		A2898		A2898	
			Location	MW-12K		MW-12S		MW-13K		MW-14K	
			Sample Date	5/26/2009		5/25/2009		5/26/2009		5/26/2009	
			Sample ID	828103-MW12K01609D		828103-MW12S01009		828103-MW13K01609		828103-MW14K01909	
			Qc Code	FD		FS		FS		FS	
Analysis	**Fraction**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	T	1,1,1-Trichloroethane	ug/l	1	U	1	U	59	J	1	U
SW8260	T	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	U	1	U	1	UJ
SW8260	T	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethane	ug/l	1	U	1	U	47	J	1	U
SW8260	T	1,1-Dichloroethene	ug/l	1	U	1	U	38	J	1	U
SW8260	T	1,2,4-Trichlorobenzene	ug/l	1	U	1	U	4	U	1	U
SW8260	T	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromoethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,4-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Acetic acid, methyl ester	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Acetone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromoform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon disulfide	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorodibromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cis-1,2-Dichloroethene	ug/l	1	U	1	U	1100	D	98	
SW8260	T	cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Dichlorodifluoromethane	ug/l	1	U	1	U	2.6	J	1	U
SW8260	T	Ethyl benzene	ug/l	1	U	1	U	7	J	1	U
SW8260	T	Isopropylbenzene	ug/l	1	U	1	U	4	J	1	U
SW8260	T	Methyl cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl Tertbutyl Ether	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methylene chloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Tetrachloroethene	ug/l	1	UJ	1	UJ	5800	D	250	D
SW8260	T	Toluene	ug/l	1	U	1	U	2	J	1	U
SW8260	T	trans-1,2-Dichloroethene	ug/l	1	U	1	U	25	J	1.8	
SW8260	T	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Trichloroethene	ug/l	6.9		1	U	1300	D	5100	D
SW8260	T	Trichlorofluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Vinyl chloride	ug/l	1	U	1	U	69	D	1	U
SW8260	T	Xylene, m/p	ug/l	2	U	2	U	2	U	2	U
SW8260	T	Xylene, o	ug/l	1	U	1	U	13	J	1	U
SW6010	D	Iron	ug/l	86.9		50	U	838		481	
SW6010	D	Manganese	ug/l	111		77.5		75		37.6	
9034	T	Sulfide	mg/l			1	UJ	1.6	J	1.6	J
E300	T	Chloride	mg/l	22	D	41	D	340	D	130	D
E300	T	Nitrate as N	mg/l	0.291		0.257	J	0.1	U	0.1	U
E300	T	Nitrite as N	mg/l	0.05	U	0.05	UJ	0.05	U	0.05	U
E300	T	Sulfate	mg/l	82	D	210	D	100	D	120	D
RSK175	T	Ethane	ug/l	5	U	5	U	5	U	5	U
RSK175	T	Ethene	ug/l	5	U	5	U	5	U	5	U
RSK175	T	Methane	ug/l	5	U	5	U	7.8		5	U
SM2320 B(Alk)	T	Alkalinity, Total	mg/l	440		440		470		360	
SM2320 B(CO2)	T	Carbon Dioxide	mg/l	200		200		200		200	
SM5310B	T	Total Organic Carbon	mg/l	1.75		2.18		2.64		1.49	
Notes:											
Fraction : T = total, D = dissolved											
Units: ug/l = micrograms per liter, mg/l = milligrams per liter											
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis											

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

			Sample Delivery Group	A2898		A2948		A2948		A2948	
			Location	QC		QC		SL-1		SL-2	
			Sample Date	5/25/2009		5/27/2009		5/27/2009		5/27/2009	
			Sample ID	828103-MWTB03		828103-MWTB04		828103-SL101209		828103-SL201309	
			Qc Code	TB		TB		FS		FS	
Analysis	**Fraction**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	T	1,1,1-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2,4-Trichlorobenzene	ug/l	4.1		1	U	0.8	J	1	U
SW8260	T	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromoethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,4-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Acetic acid, methyl ester	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Acetone	ug/l	5	U	5	U	23		27	
SW8260	T	Benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromodichloromethane	ug/l	1	U	1	U	0.52	J	1	U
SW8260	T	Bromoform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon disulfide	ug/l	1	U	1	U	0.71	J	1	U
SW8260	T	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorodibromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroform	ug/l	1	U	1	U	2		2	
SW8260	T	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cis-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1.1	
SW8260	T	cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Dichlorodifluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Ethyl benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Isopropylbenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl Tertbutyl Ether	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methylene chloride	ug/l	1	U	1	U	1	J	0.88	J
SW8260	T	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Tetrachloroethene	ug/l	0.78	J	1	U	1	U	2.8	
SW8260	T	Toluene	ug/l	1	U	1	U	3.2		2.2	
SW8260	T	trans-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Trichloroethene	ug/l	1	U	1	U	1	U	1.4	
SW8260	T	Trichlorofluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Vinyl chloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Xylene, m/p	ug/l	2	U	2	U	2	U	2	U
SW8260	T	Xylene, o	ug/l	1	U	1	U	1	U	1	U
SW6010	D	Iron	ug/l								
SW6010	D	Manganese	ug/l								
9034	T	Sulfide	mg/l								
E300	T	Chloride	mg/l								
E300	T	Nitrate as N	mg/l								
E300	T	Nitrite as N	mg/l								
E300	T	Sulfate	mg/l								
RSK175	T	Ethane	ug/l								
RSK175	T	Ethene	ug/l								
RSK175	T	Methane	ug/l								
SM2320 B(Alk)	T	Alkalinity, Total	mg/l								
SM2320 B(CO2)	T	Carbon Dioxide	mg/l								
SM5310B	T	Total Organic Carbon	mg/l								
Notes:											
Fraction : T = total, D = dissolved											
Units: ug/l = micrograms per liter, mg/l = milligrams per liter											
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis											

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

			Sample Delivery Group	A2948		A2948		A2948		A2948	
			Location	SL-3		SL-4		SL-5		SL-6	
			Sample Date	5/27/2009		5/27/2009		5/27/2009		5/27/2009	
			Sample ID	828103-SL301309		828103-SL400609		828103-SL500809		828103-SL601109	
			Qc Code	FS		FS		FS		FS	
Analysis	**Fraction**	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	T	1,1,1-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,1-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2,4-Trichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dibromoethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	1,4-Dichlorobenzene	ug/l	1	U	2.2		0.5	J	1	U
SW8260	T	2-Butanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	2-Hexanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U
SW8260	T	Acetic acid, methyl ester	ug/l	1	U	13		5		3.7	
SW8260	T	Acetone	ug/l	35		5.3		34		14	
SW8260	T	Benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromoform	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Bromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Carbon disulfide	ug/l	1	U	0.54	J	1	U	1	U
SW8260	T	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chlorodibromomethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Chloroform	ug/l	1.5		0.8	J	1	U	0.87	J
SW8260	T	Chloromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cis-1,2-Dichloroethene	ug/l	1.4		1	U	1	U	27	
SW8260	T	cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Dichlorodifluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Ethyl benzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Isopropylbenzene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl cyclohexane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methyl Tertbutyl Ether	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Methylene chloride	ug/l	0.93	J	1	U	1	U	1	U
SW8260	T	Styrene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Tetrachloroethene	ug/l	4.2		1	U	1	U	73	
SW8260	T	Toluene	ug/l	2.2		30		10		5.1	
SW8260	T	trans-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Trichloroethene	ug/l	2.1		1	U	1	U	42	
SW8260	T	Trichlorofluoromethane	ug/l	1	U	1	U	1	U	1	U
SW8260	T	Vinyl chloride	ug/l	1	U	1	U	1	U	1.3	
SW8260	T	Xylene, m/p	ug/l	2	U	2	U	2	U	2	U
SW8260	T	Xylene, o	ug/l	1	U	1	U	1	U	1	U
SW6010	D	Iron	ug/l								
SW6010	D	Manganese	ug/l								
9034	T	Sulfide	mg/l								
E300	T	Chloride	mg/l								
E300	T	Nitrate as N	mg/l								
E300	T	Nitrite as N	mg/l								
E300	T	Sulfate	mg/l								
RSK175	T	Ethane	ug/l								
RSK175	T	Ethene	ug/l								
RSK175	T	Methane	ug/l								
SM2320 B(Alk)	T	Alkalinity, Total	mg/l								
SM2320 B(CO2)	T	Carbon Dioxide	mg/l								
SM5310B	T	Total Organic Carbon	mg/l								
Notes:											
Fraction : T = total, D = dissolved											
Units: ug/l = micrograms per liter, mg/l = milligrams per liter											
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis											

Solid

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

Sample Delivery Group			A2663		A2663		A2663	
Location			GS-1		GS-1		GS-11	
Sample Date			5/6/2009		5/6/2009		5/5/2009	
Sample ID			828103-GS10909		828103-GS11609		828103-GS111009	
Qc Code			FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	550	U	410	U	310	U
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	550	U	410	U	310	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	550	U	410	U	310	U
SW8260	1,1,2-Trichloroethane	ug/kg	550	U	410	U	310	U
SW8260	1,1-Dichloroethane	ug/kg	550	U	410	U	310	U
SW8260	1,1-Dichloroethene	ug/kg	550	U	410	U	310	U
SW8260	1,2,4-Trichlorobenzene	ug/kg	550	U	410	U	310	U
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	550	U	410	U	310	U
SW8260	1,2-Dibromoethane	ug/kg	550	U	410	U	310	U
SW8260	1,2-Dichlorobenzene	ug/kg	550	U	410	U	310	U
SW8260	1,2-Dichloroethane	ug/kg	550	U	410	U	310	U
SW8260	1,2-Dichloropropane	ug/kg	550	U	410	U	310	U
SW8260	1,3-Dichlorobenzene	ug/kg	550	U	410	U	310	UJ
SW8260	1,4-Dichlorobenzene	ug/kg	550	U	410	U	310	UJ
SW8260	2-Butanone	ug/kg	2700	U	2100	U	1500	U
SW8260	2-Hexanone	ug/kg	2700	U	2100	U	1500	U
SW8260	4-Methyl-2-pentanone	ug/kg	2700	U	2100	U	1500	U
SW8260	Acetic acid, methyl ester	ug/kg	550	U	410	U	310	U
SW8260	Acetone	ug/kg	2700	U	2100	U	1500	U
SW8260	Benzene	ug/kg	550	U	410	U	310	U
SW8260	Bromodichloromethane	ug/kg	550	U	410	U	310	U
SW8260	Bromoform	ug/kg	550	U	410	U	310	U
SW8260	Bromomethane	ug/kg	550	U	410	U	310	U
SW8260	Carbon disulfide	ug/kg	550	U	410	U	310	U
SW8260	Carbon tetrachloride	ug/kg	550	U	410	U	310	U
SW8260	Chlorobenzene	ug/kg	550	U	410	U	310	U
SW8260	Chlorodibromomethane	ug/kg	550	U	410	U	310	U
SW8260	Chloroethane	ug/kg	550	U	410	U	310	U
SW8260	Chloroform	ug/kg	550	U	410	U	310	U
SW8260	Chloromethane	ug/kg	550	U	410	U	310	U
SW8260	Cis-1,2-Dichloroethene	ug/kg	5200		410	U	310	U
SW8260	cis-1,3-Dichloropropene	ug/kg	550	U	410	U	310	U
SW8260	Cyclohexane	ug/kg	550	U	410	U	310	U
SW8260	Dichlorodifluoromethane	ug/kg	550	U	410	U	310	U
SW8260	Ethyl benzene	ug/kg	550	U	410	U	310	U
SW8260	Isopropylbenzene	ug/kg	550	U	410	U	310	U
SW8260	Methyl cyclohexane	ug/kg	550	U	410	U	310	U
SW8260	Methyl Tertbutyl Ether	ug/kg	550	U	410	U	310	U
SW8260	Methylene chloride	ug/kg	550	U	410	U	310	U
SW8260	Styrene	ug/kg	550	U	410	U	310	U
SW8260	Tetrachloroethene	ug/kg	52000	DJ	3700		630	
SW8260	Toluene	ug/kg	550	U	410	U	310	U
SW8260	trans-1,2-Dichloroethene	ug/kg	550	U	410	U	310	UJ
SW8260	trans-1,3-Dichloropropene	ug/kg	550	U	410	U	310	U
SW8260	Trichloroethene	ug/kg	9000		27000	D	440	J
SW8260	Trichlorofluoromethane	ug/kg	550	U	410	U	310	U
SW8260	Vinyl chloride	ug/kg	550	U	410	U	310	U
SW8260	Xylene, m/p	ug/kg	250	J	830	U	610	U
SW8260	Xylene, o	ug/kg	550	U	410	U	310	U
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

		Sample Delivery Group	A2663		A2663		A2663	
		Location	GS-11		GS-12		GS-12	
		Sample Date	5/5/2009		5/5/2009		5/5/2009	
		Sample ID	828103-GS111609		828103-GS121109		828103-GS121309	
		Qc Code	FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	360	U	350	U	330	U
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	360	U	350	U	330	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	360	U	350	U	330	U
SW8260	1,1,2-Trichloroethane	ug/kg	360	U	350	U	330	U
SW8260	1,1-Dichloroethane	ug/kg	360	U	350	U	330	U
SW8260	1,1-Dichloroethene	ug/kg	360	U	350	U	330	U
SW8260	1,2,4-Trichlorobenzene	ug/kg	360	U	350	U	330	U
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	360	U	350	U	330	U
SW8260	1,2-Dibromoethane	ug/kg	360	U	350	U	330	U
SW8260	1,2-Dichlorobenzene	ug/kg	360	U	350	U	330	U
SW8260	1,2-Dichloroethane	ug/kg	360	U	350	U	330	U
SW8260	1,2-Dichloropropane	ug/kg	360	U	350	U	330	U
SW8260	1,3-Dichlorobenzene	ug/kg	360	UJ	350	UJ	330	UJ
SW8260	1,4-Dichlorobenzene	ug/kg	360	UJ	350	UJ	330	UJ
SW8260	2-Butanone	ug/kg	1800	U	1800	U	1600	U
SW8260	2-Hexanone	ug/kg	1800	U	1800	U	1600	U
SW8260	4-Methyl-2-pentanone	ug/kg	1800	U	1800	U	1600	U
SW8260	Acetic acid, methyl ester	ug/kg	360	U	350	U	330	U
SW8260	Acetone	ug/kg	1800	U	1800	U	1600	U
SW8260	Benzene	ug/kg	360	U	350	U	330	U
SW8260	Bromodichloromethane	ug/kg	360	U	350	U	330	U
SW8260	Bromoform	ug/kg	360	U	350	U	330	U
SW8260	Bromomethane	ug/kg	360	U	350	U	330	U
SW8260	Carbon disulfide	ug/kg	360	U	350	U	330	U
SW8260	Carbon tetrachloride	ug/kg	360	U	350	U	330	U
SW8260	Chlorobenzene	ug/kg	360	U	350	U	330	U
SW8260	Chlorodibromomethane	ug/kg	360	U	350	U	330	U
SW8260	Chloroethane	ug/kg	360	U	350	U	330	U
SW8260	Chloroform	ug/kg	360	U	350	U	330	U
SW8260	Chloromethane	ug/kg	360	U	350	U	330	U
SW8260	Cis-1,2-Dichloroethene	ug/kg	360	U	350	U	330	U
SW8260	cis-1,3-Dichloropropene	ug/kg	360	U	350	U	330	U
SW8260	Cyclohexane	ug/kg	360	U	350	U	330	U
SW8260	Dichlorodifluoromethane	ug/kg	360	U	350	U	330	U
SW8260	Ethyl benzene	ug/kg	360	U	350	U	330	U
SW8260	Isopropylbenzene	ug/kg	360	U	350	U	330	U
SW8260	Methyl cyclohexane	ug/kg	360	U	350	U	330	U
SW8260	Methyl Tertbutyl Ether	ug/kg	360	U	350	U	330	U
SW8260	Methylene chloride	ug/kg	360	U	350	U	330	U
SW8260	Styrene	ug/kg	360	U	350	U	330	U
SW8260	Tetrachloroethene	ug/kg	360	U	7200		30000	DJ
SW8260	Toluene	ug/kg	360	U	350	U	330	U
SW8260	trans-1,2-Dichloroethene	ug/kg	360	UJ	350	UJ	330	UJ
SW8260	trans-1,3-Dichloropropene	ug/kg	360	U	350	U	330	U
SW8260	Trichloroethene	ug/kg	360	UJ	1100	J	3000	J
SW8260	Trichlorofluoromethane	ug/kg	360	U	350	U	330	U
SW8260	Vinyl chloride	ug/kg	360	U	350	U	330	U
SW8260	Xylene, m/p	ug/kg	720	U	710	U	660	U
SW8260	Xylene, o	ug/kg	360	U	350	U	330	U
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

Sample Delivery Group			A2663		A2663		A2663	
Location			GS-13		GS-13		GS-13	
Sample Date			5/5/2009		5/5/2009		5/5/2009	
Sample ID			828103-GS131209		828103-GS131609		828103-GS132109	
Qc Code			FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	370	U	380	U	340	U
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	370	U	380	U	340	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	370	U	380	U	340	U
SW8260	1,1,2-Trichloroethane	ug/kg	370	U	380	U	340	U
SW8260	1,1-Dichloroethane	ug/kg	370	U	380	U	340	U
SW8260	1,1-Dichloroethene	ug/kg	370	U	380	U	340	U
SW8260	1,2,4-Trichlorobenzene	ug/kg	370	U	380	U	340	U
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	370	U	380	U	340	U
SW8260	1,2-Dibromoethane	ug/kg	370	U	380	U	340	U
SW8260	1,2-Dichlorobenzene	ug/kg	370	U	380	U	340	U
SW8260	1,2-Dichloroethane	ug/kg	370	U	380	U	340	U
SW8260	1,2-Dichloropropane	ug/kg	370	U	380	U	340	U
SW8260	1,3-Dichlorobenzene	ug/kg	370	UJ	380	UJ	340	UJ
SW8260	1,4-Dichlorobenzene	ug/kg	370	UJ	380	UJ	340	UJ
SW8260	2-Butanone	ug/kg	1900	U	1900	U	1700	U
SW8260	2-Hexanone	ug/kg	1900	U	1900	U	1700	U
SW8260	4-Methyl-2-pentanone	ug/kg	1900	U	1900	U	1700	U
SW8260	Acetic acid, methyl ester	ug/kg	370	U	380	U	340	U
SW8260	Acetone	ug/kg	1900	U	1900	U	1700	U
SW8260	Benzene	ug/kg	370	U	380	U	340	U
SW8260	Bromodichloromethane	ug/kg	370	U	380	U	340	U
SW8260	Bromoform	ug/kg	370	U	380	U	340	U
SW8260	Bromomethane	ug/kg	370	U	380	U	340	U
SW8260	Carbon disulfide	ug/kg	370	U	380	U	340	U
SW8260	Carbon tetrachloride	ug/kg	370	U	380	U	340	U
SW8260	Chlorobenzene	ug/kg	370	U	380	U	340	U
SW8260	Chlorodibromomethane	ug/kg	370	U	380	U	340	U
SW8260	Chloroethane	ug/kg	370	U	380	U	340	U
SW8260	Chloroform	ug/kg	370	U	380	U	340	U
SW8260	Chloromethane	ug/kg	370	U	380	U	340	U
SW8260	Cis-1,2-Dichloroethene	ug/kg	360	J	510		200	J
SW8260	cis-1,3-Dichloropropene	ug/kg	370	U	380	U	340	U
SW8260	Cyclohexane	ug/kg	370	U	380	U	340	U
SW8260	Dichlorodifluoromethane	ug/kg	370	U	380	U	340	U
SW8260	Ethyl benzene	ug/kg	370	U	380	U	340	U
SW8260	Isopropylbenzene	ug/kg	370	U	380	U	340	U
SW8260	Methyl cyclohexane	ug/kg	370	U	380	U	340	U
SW8260	Methyl Tertbutyl Ether	ug/kg	370	U	380	U	340	U
SW8260	Methylene chloride	ug/kg	370	U	380	U	340	U
SW8260	Styrene	ug/kg	370	U	380	U	340	U
SW8260	Tetrachloroethene	ug/kg	30000	DJ	9500		1100	
SW8260	Toluene	ug/kg	370	U	380	U	340	U
SW8260	trans-1,2-Dichloroethene	ug/kg	370	UJ	380	UJ	340	UJ
SW8260	trans-1,3-Dichloropropene	ug/kg	370	U	380	U	340	U
SW8260	Trichloroethene	ug/kg	3300	J	26000	D	16000	D
SW8260	Trichlorofluoromethane	ug/kg	370	U	380	U	340	U
SW8260	Vinyl chloride	ug/kg	370	U	380	U	340	U
SW8260	Xylene, m/p	ug/kg	740	U	770	U	680	U
SW8260	Xylene, o	ug/kg	370	U	380	U	340	U
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

		Sample Delivery Group	A2663		A2663		A2663	
		Location	GS-14		GS-14		GS-2	
		Sample Date	5/5/2009		5/5/2009		5/6/2009	
		Sample ID	828103-GS141209		828103-GS141409		828103-GS21109	
		Qc Code	FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	440	U	410	U	360	U
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	440	U	410	U	360	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	440	U	410	U	360	U
SW8260	1,1,2-Trichloroethane	ug/kg	440	U	410	U	360	U
SW8260	1,1-Dichloroethane	ug/kg	440	U	410	U	360	U
SW8260	1,1-Dichloroethene	ug/kg	440	U	410	U	360	U
SW8260	1,2,4-Trichlorobenzene	ug/kg	440	U	410	U	360	U
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	440	U	410	U	360	U
SW8260	1,2-Dibromoethane	ug/kg	440	U	410	U	360	U
SW8260	1,2-Dichlorobenzene	ug/kg	440	U	410	U	360	U
SW8260	1,2-Dichloroethane	ug/kg	440	U	410	U	360	U
SW8260	1,2-Dichloropropane	ug/kg	440	U	410	U	360	U
SW8260	1,3-Dichlorobenzene	ug/kg	440	UJ	410	UJ	360	U
SW8260	1,4-Dichlorobenzene	ug/kg	440	UJ	410	UJ	360	U
SW8260	2-Butanone	ug/kg	2200	U	2000	U	1800	U
SW8260	2-Hexanone	ug/kg	2200	U	2000	U	1800	U
SW8260	4-Methyl-2-pentanone	ug/kg	2200	U	2000	U	1800	U
SW8260	Acetic acid, methyl ester	ug/kg	440	U	410	U	360	U
SW8260	Acetone	ug/kg	2200	U	2000	U	1800	U
SW8260	Benzene	ug/kg	440	U	410	U	360	U
SW8260	Bromodichloromethane	ug/kg	440	U	410	U	360	U
SW8260	Bromoform	ug/kg	440	U	410	U	360	U
SW8260	Bromomethane	ug/kg	440	U	410	U	360	U
SW8260	Carbon disulfide	ug/kg	440	U	410	U	360	U
SW8260	Carbon tetrachloride	ug/kg	440	U	410	U	360	U
SW8260	Chlorobenzene	ug/kg	440	U	410	U	360	U
SW8260	Chlorodibromomethane	ug/kg	440	U	410	U	360	U
SW8260	Chloroethane	ug/kg	440	U	410	U	360	U
SW8260	Chloroform	ug/kg	440	U	410	U	360	U
SW8260	Chloromethane	ug/kg	440	U	410	U	360	U
SW8260	Cis-1,2-Dichloroethene	ug/kg	440	U	410	U	360	U
SW8260	cis-1,3-Dichloropropene	ug/kg	440	U	410	U	360	U
SW8260	Cyclohexane	ug/kg	440	U	410	U	3500	
SW8260	Dichlorodifluoromethane	ug/kg	440	U	410	U	360	U
SW8260	Ethyl benzene	ug/kg	440	U	410	U	2100	
SW8260	Isopropylbenzene	ug/kg	440	U	410	U	1100	
SW8260	Methyl cyclohexane	ug/kg	440	U	410	U	83000	DJ
SW8260	Methyl Tertbutyl Ether	ug/kg	440	U	410	U	360	U
SW8260	Methylene chloride	ug/kg	440	U	410	U	360	U
SW8260	Styrene	ug/kg	440	U	410	U	360	U
SW8260	Tetrachloroethene	ug/kg	440	U	410	U	1700000	DJ
SW8260	Toluene	ug/kg	440	U	410	U	360	U
SW8260	trans-1,2-Dichloroethene	ug/kg	440	UJ	410	UJ	360	U
SW8260	trans-1,3-Dichloropropene	ug/kg	440	U	410	U	360	U
SW8260	Trichloroethene	ug/kg	5800	J	5700	J	3700	
SW8260	Trichlorofluoromethane	ug/kg	440	U	410	U	360	U
SW8260	Vinyl chloride	ug/kg	440	U	410	U	360	U
SW8260	Xylene, m/p	ug/kg	870	U	820	U	51000	D
SW8260	Xylene, o	ug/kg	440	U	410	U	7600	
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

		Sample Delivery Group	A2663		A2663		A2663	
		Location	GS-2		GS-3		GS-3	
		Sample Date	5/6/2009		5/6/2009		5/6/2009	
		Sample ID	828103-GS21609		828103-GS31109		828103-GS31609	
		Qc Code	FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	490	U	860		600	
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	490	U	320	U	360	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	490	U	320	U	360	U
SW8260	1,1,2-Trichloroethane	ug/kg	490	U	320	U	360	U
SW8260	1,1-Dichloroethane	ug/kg	490	U	200	J	590	
SW8260	1,1-Dichloroethene	ug/kg	490	U	320	U	360	U
SW8260	1,2,4-Trichlorobenzene	ug/kg	490	U	320	U	360	U
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	490	U	320	U	360	U
SW8260	1,2-Dibromoethane	ug/kg	490	U	320	U	360	U
SW8260	1,2-Dichlorobenzene	ug/kg	490	U	320	U	360	U
SW8260	1,2-Dichloroethane	ug/kg	490	U	320	U	360	U
SW8260	1,2-Dichloropropane	ug/kg	490	U	320	U	360	U
SW8260	1,3-Dichlorobenzene	ug/kg	490	U	320	U	360	U
SW8260	1,4-Dichlorobenzene	ug/kg	490	U	320	U	360	U
SW8260	2-Butanone	ug/kg	2500	U	1600	U	1800	U
SW8260	2-Hexanone	ug/kg	2500	U	1600	U	1800	U
SW8260	4-Methyl-2-pentanone	ug/kg	2500	U	1600	U	1800	U
SW8260	Acetic acid, methyl ester	ug/kg	490	U	320	U	360	U
SW8260	Acetone	ug/kg	2500	U	1600	U	1800	U
SW8260	Benzene	ug/kg	490	U	320	U	360	U
SW8260	Bromodichloromethane	ug/kg	490	U	320	U	360	U
SW8260	Bromoform	ug/kg	490	U	320	U	360	U
SW8260	Bromomethane	ug/kg	490	U	320	U	360	U
SW8260	Carbon disulfide	ug/kg	490	U	320	U	360	U
SW8260	Carbon tetrachloride	ug/kg	490	U	320	U	360	U
SW8260	Chlorobenzene	ug/kg	490	U	320	U	360	U
SW8260	Chlorodibromomethane	ug/kg	490	U	320	U	360	U
SW8260	Chloroethane	ug/kg	490	U	320	U	360	U
SW8260	Chloroform	ug/kg	490	U	320	U	360	U
SW8260	Chloromethane	ug/kg	490	U	320	U	360	U
SW8260	Cis-1,2-Dichloroethene	ug/kg	490	U	320	U	360	U
SW8260	cis-1,3-Dichloropropene	ug/kg	490	U	320	U	360	U
SW8260	Cyclohexane	ug/kg	490	U	320	U	360	U
SW8260	Dichlorodifluoromethane	ug/kg	490	U	320	U	360	U
SW8260	Ethyl benzene	ug/kg	490	U	320	U	360	U
SW8260	Isopropylbenzene	ug/kg	490	U	320	U	360	U
SW8260	Methyl cyclohexane	ug/kg	490	U	320	U	360	U
SW8260	Methyl Tertbutyl Ether	ug/kg	490	U	320	U	360	U
SW8260	Methylene chloride	ug/kg	490	U	320	U	360	U
SW8260	Styrene	ug/kg	490	U	320	U	360	U
SW8260	Tetrachloroethene	ug/kg	15000		5600		640	
SW8260	Toluene	ug/kg	490	U	320	U	160	J
SW8260	trans-1,2-Dichloroethene	ug/kg	490	U	320	U	360	U
SW8260	trans-1,3-Dichloropropene	ug/kg	490	U	320	U	360	U
SW8260	Trichloroethene	ug/kg	29000	D	8100		7000	
SW8260	Trichlorofluoromethane	ug/kg	490	U	320	U	360	U
SW8260	Vinyl chloride	ug/kg	490	U	320	U	360	U
SW8260	Xylene, m/p	ug/kg	220	J	160	J	720	U
SW8260	Xylene, o	ug/kg	490	U	320	U	360	U
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

		Sample Delivery Group	A2663		A2663		A2663	
		Location	GS-5		GS-5		MW-13K	
		Sample Date	5/6/2009		5/6/2009		5/5/2009	
		Sample ID	828103-GS51109		828103-GS51509		828103-MW131509	
		Qc Code	FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	470	U	340	U	250	U
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	470	U	340	U	250	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	470	U	340	U	250	U
SW8260	1,1,2-Trichloroethane	ug/kg	470	U	340	U	250	U
SW8260	1,1-Dichloroethane	ug/kg	470	U	340	U	250	U
SW8260	1,1-Dichloroethene	ug/kg	470	U	340	U	250	U
SW8260	1,2,4-Trichlorobenzene	ug/kg	470	U	340	U	250	U
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	470	U	340	U	250	U
SW8260	1,2-Dibromoethane	ug/kg	470	U	340	U	250	U
SW8260	1,2-Dichlorobenzene	ug/kg	470	U	340	U	250	U
SW8260	1,2-Dichloroethane	ug/kg	470	U	340	U	250	U
SW8260	1,2-Dichloropropane	ug/kg	470	U	340	U	250	U
SW8260	1,3-Dichlorobenzene	ug/kg	470	UJ	340	UJ	250	UJ
SW8260	1,4-Dichlorobenzene	ug/kg	470	UJ	340	UJ	250	UJ
SW8260	2-Butanone	ug/kg	2400	U	1700	U	1200	U
SW8260	2-Hexanone	ug/kg	2400	U	1700	U	1200	U
SW8260	4-Methyl-2-pentanone	ug/kg	2400	UJ	1700	U	1200	U
SW8260	Acetic acid, methyl ester	ug/kg	470	U	340	U	250	U
SW8260	Acetone	ug/kg	2400	U	1700	U	1200	U
SW8260	Benzene	ug/kg	470	U	340	U	250	U
SW8260	Bromodichloromethane	ug/kg	470	U	340	U	250	U
SW8260	Bromoform	ug/kg	470	U	340	U	250	U
SW8260	Bromomethane	ug/kg	470	U	340	U	250	U
SW8260	Carbon disulfide	ug/kg	470	UJ	340	U	250	U
SW8260	Carbon tetrachloride	ug/kg	470	U	340	U	250	U
SW8260	Chlorobenzene	ug/kg	470	U	340	U	250	U
SW8260	Chlorodibromomethane	ug/kg	470	U	340	U	250	U
SW8260	Chloroethane	ug/kg	470	UJ	340	U	250	U
SW8260	Chloroform	ug/kg	470	U	340	U	250	U
SW8260	Chloromethane	ug/kg	470	U	340	U	250	U
SW8260	Cis-1,2-Dichloroethene	ug/kg	470	U	340	U	240	J
SW8260	cis-1,3-Dichloropropene	ug/kg	470	U	340	U	250	U
SW8260	Cyclohexane	ug/kg	470	U	340	U	250	U
SW8260	Dichlorodifluoromethane	ug/kg	470	U	340	U	250	U
SW8260	Ethyl benzene	ug/kg	470	U	340	U	250	U
SW8260	Isopropylbenzene	ug/kg	470	U	340	U	250	U
SW8260	Methyl cyclohexane	ug/kg	470	U	340	U	250	U
SW8260	Methyl Tertbutyl Ether	ug/kg	470	U	340	U	250	U
SW8260	Methylene chloride	ug/kg	470	UJ	340	U	250	U
SW8260	Styrene	ug/kg	470	U	340	U	250	U
SW8260	Tetrachloroethene	ug/kg	990000	D	340000	DJ	10000	D
SW8260	Toluene	ug/kg	470	U	340	U	250	U
SW8260	trans-1,2-Dichloroethene	ug/kg	470	UJ	340	UJ	250	UJ
SW8260	trans-1,3-Dichloropropene	ug/kg	470	U	340	U	250	U
SW8260	Trichloroethene	ug/kg	630000	D	370000	D	2500	J
SW8260	Trichlorofluoromethane	ug/kg	470	U	340	U	250	U
SW8260	Vinyl chloride	ug/kg	470	U	340	U	250	U
SW8260	Xylene, m/p	ug/kg	940	U	680	U	490	U
SW8260	Xylene, o	ug/kg	470	U	340	U	250	U
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

		Sample Delivery Group	A2708		A2708		A2708	
		Location	GS-10		GS-10		GS-4	
		Sample Date	5/8/2009		5/8/2009		5/8/2009	
		Sample ID	828103-GS101209		828103-GS101509		828103-GS41109	
		Qc Code	FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	550	U	540	UJ	560	U
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	550	U	540	U	560	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	550	U	540	UJ	560	U
SW8260	1,1,2-Trichloroethane	ug/kg	550	U	540	UJ	560	U
SW8260	1,1-Dichloroethane	ug/kg	550	U	540	UJ	560	U
SW8260	1,1-Dichloroethene	ug/kg	550	U	540	UJ	560	U
SW8260	1,2,4-Trichlorobenzene	ug/kg	550	U	540	U	560	U
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	550	U	540	U	560	U
SW8260	1,2-Dibromoethane	ug/kg	550	U	540	UJ	560	U
SW8260	1,2-Dichlorobenzene	ug/kg	550	U	540	U	560	U
SW8260	1,2-Dichloroethane	ug/kg	550	U	540	UJ	560	U
SW8260	1,2-Dichloropropane	ug/kg	550	U	540	UJ	560	U
SW8260	1,3-Dichlorobenzene	ug/kg	550	UJ	540	U	560	UJ
SW8260	1,4-Dichlorobenzene	ug/kg	550	U	540	U	560	U
SW8260	2-Butanone	ug/kg	2700	U	2700	UJ	2800	U
SW8260	2-Hexanone	ug/kg	2700	U	2700	UJ	2800	U
SW8260	4-Methyl-2-pentanone	ug/kg	2700	U	2700	UJ	2800	U
SW8260	Acetic acid, methyl ester	ug/kg	550	U	540	UJ	560	U
SW8260	Acetone	ug/kg	2700	U	2700	UJ	2800	U
SW8260	Benzene	ug/kg	550	U	540	UJ	560	U
SW8260	Bromodichloromethane	ug/kg	550	U	540	UJ	560	U
SW8260	Bromoform	ug/kg	550	U	540	UJ	560	U
SW8260	Bromomethane	ug/kg	550	U	540	UJ	560	U
SW8260	Carbon disulfide	ug/kg	550	U	540	UJ	560	U
SW8260	Carbon tetrachloride	ug/kg	550	U	540	UJ	560	U
SW8260	Chlorobenzene	ug/kg	550	U	540	UJ	560	U
SW8260	Chlorodibromomethane	ug/kg	550	UJ	540	UJ	560	UJ
SW8260	Chloroethane	ug/kg	550	U	540	UJ	560	U
SW8260	Chloroform	ug/kg	550	U	540	UJ	560	U
SW8260	Chloromethane	ug/kg	550	U	540	UJ	560	U
SW8260	Cis-1,2-Dichloroethene	ug/kg	550	UJ	540	UJ	370	J
SW8260	cis-1,3-Dichloropropene	ug/kg	550	U	540	UJ	560	U
SW8260	Cyclohexane	ug/kg	550	U	540	UJ	540	J
SW8260	Dichlorodifluoromethane	ug/kg	550	U	540	UJ	560	U
SW8260	Ethyl benzene	ug/kg	550	U	540	UJ	560	U
SW8260	Isopropylbenzene	ug/kg	550	U	540	U	560	U
SW8260	Methyl cyclohexane	ug/kg	550	UJ	540	UJ	2600	J
SW8260	Methyl Tertbutyl Ether	ug/kg	550	U	540	UJ	560	U
SW8260	Methylene chloride	ug/kg	550	U	540	UJ	560	U
SW8260	Styrene	ug/kg	550	U	540	UJ	560	U
SW8260	Tetrachloroethene	ug/kg	12000	D	15000	DJ	21000	D
SW8260	Toluene	ug/kg	550	U	540	UJ	560	U
SW8260	trans-1,2-Dichloroethene	ug/kg	550	UJ	540	UJ	560	UJ
SW8260	trans-1,3-Dichloropropene	ug/kg	550	U	540	UJ	560	U
SW8260	Trichloroethene	ug/kg	15000		15000	J	3000	
SW8260	Trichlorofluoromethane	ug/kg	550	UJ	540	UJ	560	UJ
SW8260	Vinyl chloride	ug/kg	550	U	540	UJ	560	U
SW8260	Xylene, m/p	ug/kg	1100	U	1100	UJ	1100	U
SW8260	Xylene, o	ug/kg	550	U	540	UJ	560	U
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

		Sample Delivery Group	A2708		A2708		A2708	
		Location	GS-4		GS-6		GS-6	
		Sample Date	5/8/2009		5/7/2009		5/7/2009	
		Sample ID	828103-GS41609		828103-GS61009		828103-GS61009D	
		Qc Code	FS		FS		FD	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	540	UJ	600	U	600	UJ
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	540	UJ	600	U	600	UJ
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	540	UJ	600	U	600	UJ
SW8260	1,1,2-Trichloroethane	ug/kg	540	U	600	U	600	UJ
SW8260	1,1-Dichloroethane	ug/kg	940	J	600	U	600	UJ
SW8260	1,1-Dichloroethene	ug/kg	540	UJ	600	U	600	UJ
SW8260	1,2,4-Trichlorobenzene	ug/kg	540	UJ	600	U	600	UJ
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	540	UJ	600	U	600	UJ
SW8260	1,2-Dibromoethane	ug/kg	540	U	600	U	600	UJ
SW8260	1,2-Dichlorobenzene	ug/kg	540	UJ	600	U	600	UJ
SW8260	1,2-Dichloroethane	ug/kg	540	U	600	U	600	UJ
SW8260	1,2-Dichloropropane	ug/kg	540	U	600	U	600	UJ
SW8260	1,3-Dichlorobenzene	ug/kg	540	UJ	600	UJ	600	UJ
SW8260	1,4-Dichlorobenzene	ug/kg	540	UJ	600	U	600	UJ
SW8260	2-Butanone	ug/kg	2700	UJ	3000	U	3000	UJ
SW8260	2-Hexanone	ug/kg	2700	U	3000	U	3000	UJ
SW8260	4-Methyl-2-pentanone	ug/kg	2700	U	3000	U	3000	UJ
SW8260	Acetic acid, methyl ester	ug/kg	540	UJ	600	U	600	UJ
SW8260	Acetone	ug/kg	2700	UJ	3000	U	3000	UJ
SW8260	Benzene	ug/kg	540	U	600	U	600	UJ
SW8260	Bromodichloromethane	ug/kg	540	U	600	U	600	UJ
SW8260	Bromoform	ug/kg	540	UJ	600	U	600	UJ
SW8260	Bromomethane	ug/kg	540	UJ	600	U	600	UJ
SW8260	Carbon disulfide	ug/kg	540	UJ	600	U	600	UJ
SW8260	Carbon tetrachloride	ug/kg	540	U	600	U	600	UJ
SW8260	Chlorobenzene	ug/kg	540	UJ	600	U	600	UJ
SW8260	Chlorodibromomethane	ug/kg	540	UJ	600	UJ	600	UJ
SW8260	Chloroethane	ug/kg	540	UJ	600	U	600	UJ
SW8260	Chloroform	ug/kg	540	UJ	600	U	600	UJ
SW8260	Chloromethane	ug/kg	540	UJ	600	U	600	UJ
SW8260	Cis-1,2-Dichloroethene	ug/kg	540	UJ	600	UJ	600	UJ
SW8260	cis-1,3-Dichloropropene	ug/kg	540	U	600	U	600	UJ
SW8260	Cyclohexane	ug/kg	540	UJ	600	U	600	UJ
SW8260	Dichlorodifluoromethane	ug/kg	540	UJ	600	U	600	UJ
SW8260	Ethyl benzene	ug/kg	540	UJ	600	U	600	UJ
SW8260	Isopropylbenzene	ug/kg	540	UJ	600	U	600	UJ
SW8260	Methyl cyclohexane	ug/kg	540	UJ	600	UJ	600	UJ
SW8260	Methyl Tertbutyl Ether	ug/kg	540	UJ	600	U	600	UJ
SW8260	Methylene chloride	ug/kg	540	UJ	600	U	600	UJ
SW8260	Styrene	ug/kg	540	UJ	600	U	600	UJ
SW8260	Tetrachloroethene	ug/kg	84000	D	1200000	D	750000	D
SW8260	Toluene	ug/kg	260	J	600	U	600	UJ
SW8260	trans-1,2-Dichloroethene	ug/kg	540	UJ	600	UJ	600	UJ
SW8260	trans-1,3-Dichloropropene	ug/kg	540	U	600	U	600	UJ
SW8260	Trichloroethene	ug/kg	35000	D	150000	DJ	79000	DJ
SW8260	Trichlorofluoromethane	ug/kg	540	UJ	600	UJ	600	UJ
SW8260	Vinyl chloride	ug/kg	540	UJ	600	U	600	UJ
SW8260	Xylene, m/p	ug/kg	500	J	1200	U	1200	UJ
SW8260	Xylene, o	ug/kg	540	UJ	600	U	600	UJ
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

		Sample Delivery Group	A2708		A2708		A2708	
		Location	GS-6		GS-7		GS-7	
		Sample Date	5/7/2009		5/8/2009		5/8/2009	
		Sample ID	828103-GS61509		828103-GS71209		828103-GS71609	
		Qc Code	FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	540	UJ	550	U	550	UJ
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	540	UJ	550	U	550	UJ
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	540	UJ	550	U	550	UJ
SW8260	1,1,2-Trichloroethane	ug/kg	540	UJ	550	U	270000	U
SW8260	1,1-Dichloroethane	ug/kg	540	UJ	550	U	550	UJ
SW8260	1,1-Dichloroethene	ug/kg	540	UJ	550	U	550	UJ
SW8260	1,2,4-Trichlorobenzene	ug/kg	540	UJ	550	U	550	UJ
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	540	UJ	550	U	550	UJ
SW8260	1,2-Dibromoethane	ug/kg	540	UJ	550	U	270000	U
SW8260	1,2-Dichlorobenzene	ug/kg	540	UJ	550	U	550	UJ
SW8260	1,2-Dichloroethane	ug/kg	540	UJ	550	U	270000	U
SW8260	1,2-Dichloropropane	ug/kg	540	UJ	550	U	270000	U
SW8260	1,3-Dichlorobenzene	ug/kg	540	UJ	550	UJ	550	UJ
SW8260	1,4-Dichlorobenzene	ug/kg	540	UJ	550	U	550	UJ
SW8260	2-Butanone	ug/kg	2700	UJ	2700	U	2700	UJ
SW8260	2-Hexanone	ug/kg	2700	UJ	2700	U	1400000	U
SW8260	4-Methyl-2-pentanone	ug/kg	2700	UJ	2700	U	1400000	U
SW8260	Acetic acid, methyl ester	ug/kg	540	UJ	550	U	550	UJ
SW8260	Acetone	ug/kg	2700	UJ	2700	U	2700	UJ
SW8260	Benzene	ug/kg	540	UJ	550	U	270000	U
SW8260	Bromodichloromethane	ug/kg	540	UJ	550	U	270000	U
SW8260	Bromoform	ug/kg	540	UJ	550	U	550	UJ
SW8260	Bromomethane	ug/kg	540	UJ	550	U	550	UJ
SW8260	Carbon disulfide	ug/kg	540	UJ	550	U	550	UJ
SW8260	Carbon tetrachloride	ug/kg	540	UJ	550	U	270000	U
SW8260	Chlorobenzene	ug/kg	540	UJ	550	U	550	UJ
SW8260	Chlorodibromomethane	ug/kg	540	UJ	550	UJ	270000	U
SW8260	Chloroethane	ug/kg	540	UJ	550	U	550	UJ
SW8260	Chloroform	ug/kg	540	UJ	550	U	550	UJ
SW8260	Chloromethane	ug/kg	540	UJ	550	U	550	UJ
SW8260	Cis-1,2-Dichloroethene	ug/kg	540	UJ	550	UJ	550	UJ
SW8260	cis-1,3-Dichloropropene	ug/kg	540	UJ	550	U	270000	U
SW8260	Cyclohexane	ug/kg	540	UJ	550	U	550	UJ
SW8260	Dichlorodifluoromethane	ug/kg	540	UJ	550	U	550	UJ
SW8260	Ethyl benzene	ug/kg	540	UJ	550	U	550	UJ
SW8260	Isopropylbenzene	ug/kg	540	UJ	550	U	550	UJ
SW8260	Methyl cyclohexane	ug/kg	540	UJ	550	UJ	270000	U
SW8260	Methyl Tertbutyl Ether	ug/kg	540	UJ	550	U	550	UJ
SW8260	Methylene chloride	ug/kg	540	UJ	550	U	550	UJ
SW8260	Styrene	ug/kg	540	UJ	550	U	550	UJ
SW8260	Tetrachloroethene	ug/kg	670000	D	110000	D	1200000	D
SW8260	Toluene	ug/kg	540	UJ	550	U	290	J
SW8260	trans-1,2-Dichloroethene	ug/kg	540	UJ	550	UJ	550	UJ
SW8260	trans-1,3-Dichloropropene	ug/kg	540	UJ	550	U	270000	U
SW8260	Trichloroethene	ug/kg	490000	D	160000	D	1400000	D
SW8260	Trichlorofluoromethane	ug/kg	540	UJ	550	UJ	550	UJ
SW8260	Vinyl chloride	ug/kg	540	UJ	550	U	550	UJ
SW8260	Xylene, m/p	ug/kg	1100	UJ	1100	U	250	J
SW8260	Xylene, o	ug/kg	540	UJ	550	U	340	J
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

Solid

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

		Sample Delivery Group	A2708		A2708		A2708	
		Location	GS-8		GS-8		GS-9	
		Sample Date	5/7/2009		5/7/2009		5/8/2009	
		Sample ID	828103-GS81109		828103-GS81509		828103-GS91209	
		Qc Code	FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	27000	U	58000	U	54000	U
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	27000	U	58000	U	54000	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	27000	U	58000	U	54000	U
SW8260	1,1,2-Trichloroethane	ug/kg	27000	U	58000	U	54000	U
SW8260	1,1-Dichloroethane	ug/kg	27000	UJ	58000	UJ	54000	UJ
SW8260	1,1-Dichloroethene	ug/kg	27000	U	58000	U	54000	U
SW8260	1,2,4-Trichlorobenzene	ug/kg	27000	U	58000	U	54000	U
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	27000	U	58000	U	54000	U
SW8260	1,2-Dibromoethane	ug/kg	27000	U	58000	U	54000	U
SW8260	1,2-Dichlorobenzene	ug/kg	27000	U	58000	U	54000	U
SW8260	1,2-Dichloroethane	ug/kg	27000	U	58000	U	54000	U
SW8260	1,2-Dichloropropane	ug/kg	27000	U	58000	U	54000	U
SW8260	1,3-Dichlorobenzene	ug/kg	27000	U	58000	U	54000	U
SW8260	1,4-Dichlorobenzene	ug/kg	27000	U	58000	U	54000	U
SW8260	2-Butanone	ug/kg	140000	U	290000	U	270000	U
SW8260	2-Hexanone	ug/kg	140000	U	290000	U	270000	U
SW8260	4-Methyl-2-pentanone	ug/kg	140000	U	290000	U	270000	U
SW8260	Acetic acid, methyl ester	ug/kg	27000	U	58000	U	54000	U
SW8260	Acetone	ug/kg	140000	U	290000	U	270000	U
SW8260	Benzene	ug/kg	27000	U	58000	U	54000	U
SW8260	Bromodichloromethane	ug/kg	27000	U	58000	U	54000	U
SW8260	Bromoform	ug/kg	27000	U	58000	U	54000	U
SW8260	Bromomethane	ug/kg	27000	U	58000	U	54000	U
SW8260	Carbon disulfide	ug/kg	27000	U	58000	U	54000	U
SW8260	Carbon tetrachloride	ug/kg	27000	U	58000	U	54000	U
SW8260	Chlorobenzene	ug/kg	27000	U	58000	U	54000	U
SW8260	Chlorodibromomethane	ug/kg	27000	U	58000	U	54000	U
SW8260	Chloroethane	ug/kg	27000	U	58000	U	54000	U
SW8260	Chloroform	ug/kg	27000	UJ	58000	UJ	54000	UJ
SW8260	Chloromethane	ug/kg	27000	U	58000	U	54000	U
SW8260	Cis-1,2-Dichloroethene	ug/kg	27000	UJ	58000	UJ	54000	UJ
SW8260	cis-1,3-Dichloropropene	ug/kg	27000	U	58000	U	54000	U
SW8260	Cyclohexane	ug/kg	27000	U	58000	U	54000	U
SW8260	Dichlorodifluoromethane	ug/kg	27000	U	58000	U	54000	U
SW8260	Ethyl benzene	ug/kg	27000	U	58000	U	54000	U
SW8260	Isopropylbenzene	ug/kg	27000	U	58000	U	54000	U
SW8260	Methyl cyclohexane	ug/kg	27000	U	58000	U	54000	U
SW8260	Methyl Tertbutyl Ether	ug/kg	27000	U	58000	U	54000	U
SW8260	Methylene chloride	ug/kg	27000	U	58000	U	54000	U
SW8260	Styrene	ug/kg	27000	U	58000	U	54000	U
SW8260	Tetrachloroethene	ug/kg	51000	D	64000	D	93000	D
SW8260	Toluene	ug/kg	27000	U	58000	U	54000	U
SW8260	trans-1,2-Dichloroethene	ug/kg	27000	UJ	58000	UJ	54000	UJ
SW8260	trans-1,3-Dichloropropene	ug/kg	27000	U	58000	U	54000	U
SW8260	Trichloroethene	ug/kg	12000	DJ	26000	DJ	110000	D
SW8260	Trichlorofluoromethane	ug/kg	27000	U	58000	U	54000	U
SW8260	Vinyl chloride	ug/kg	27000	U	58000	U	54000	U
SW8260	Xylene, m/p	ug/kg	55000	U	120000	U	110000	U
SW8260	Xylene, o	ug/kg	27000	U	58000	U	54000	U
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

		Sample Delivery Group	A2708		A2708		A2708	
		Location	GS-9		IDW		QC	
		Sample Date	5/8/2009		5/8/2009		5/5/2009	
		Sample ID	828103-GS91509		MW13K14KIDW09		828103-GSTB01	
		Qc Code	FS		FS		TB	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/kg	560	U	28	U	500	U
SW8260	1,1,2,2-Tetrachloroethane	ug/kg	560	U	28	U	500	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	560	U	28	U	500	U
SW8260	1,1,2-Trichloroethane	ug/kg	560	U	28	U	500	U
SW8260	1,1-Dichloroethane	ug/kg	560	U	28	U	500	U
SW8260	1,1-Dichloroethene	ug/kg	560	U	28	U	500	U
SW8260	1,2,4-Trichlorobenzene	ug/kg	560	U	28	U	500	U
SW8260	1,2-Dibromo-3-chloropropane	ug/kg	560	U	28	U	500	U
SW8260	1,2-Dibromoethane	ug/kg	560	U	28	U	500	U
SW8260	1,2-Dichlorobenzene	ug/kg	560	U	28	U	500	U
SW8260	1,2-Dichloroethane	ug/kg	560	U	28	U	500	U
SW8260	1,2-Dichloropropane	ug/kg	560	U	28	U	500	U
SW8260	1,3-Dichlorobenzene	ug/kg	560	UJ	28	U	500	U
SW8260	1,4-Dichlorobenzene	ug/kg	560	U	28	U	500	U
SW8260	2-Butanone	ug/kg	2800	U	140	U	2500	U
SW8260	2-Hexanone	ug/kg	2800	U	140	U	2500	U
SW8260	4-Methyl-2-pentanone	ug/kg	2800	U	140	U	2500	U
SW8260	Acetic acid, methyl ester	ug/kg	560	U	28	U	500	U
SW8260	Acetone	ug/kg	2800	U	140	U	2500	U
SW8260	Benzene	ug/kg	560	U	28	U	500	U
SW8260	Bromodichloromethane	ug/kg	560	U	28	U	500	U
SW8260	Bromoform	ug/kg	560	U	28	U	500	U
SW8260	Bromomethane	ug/kg	560	U	28	U	500	U
SW8260	Carbon disulfide	ug/kg	560	U	28	UJ	500	U
SW8260	Carbon tetrachloride	ug/kg	560	U	28	U	500	U
SW8260	Chlorobenzene	ug/kg	560	U	28	U	500	U
SW8260	Chlorodibromomethane	ug/kg	560	UJ	28	U	500	U
SW8260	Chloroethane	ug/kg	560	U	28	U	500	U
SW8260	Chloroform	ug/kg	560	U	28	U	500	U
SW8260	Chloromethane	ug/kg	560	U	28	U	500	U
SW8260	Cis-1,2-Dichloroethene	ug/kg	560	UJ	28	U	500	U
SW8260	cis-1,3-Dichloropropene	ug/kg	560	U	28	U	500	U
SW8260	Cyclohexane	ug/kg	560	U	28	U	500	U
SW8260	Dichlorodifluoromethane	ug/kg	560	U	28	U	500	U
SW8260	Ethyl benzene	ug/kg	560	U	28	U	500	U
SW8260	Isopropylbenzene	ug/kg	560	U	28	U	500	U
SW8260	Methyl cyclohexane	ug/kg	560	UJ	28	U	500	U
SW8260	Methyl Tertbutyl Ether	ug/kg	560	U	28	U	500	U
SW8260	Methylene chloride	ug/kg	560	U	23	J	500	U
SW8260	Styrene	ug/kg	560	U	28	U	500	U
SW8260	Tetrachloroethene	ug/kg	43000	D	240		240	J
SW8260	Toluene	ug/kg	560	U	28	U	500	U
SW8260	trans-1,2-Dichloroethene	ug/kg	560	UJ	28	U	500	U
SW8260	trans-1,3-Dichloropropene	ug/kg	560	U	28	U	500	U
SW8260	Trichloroethene	ug/kg	160000	D	330		500	U
SW8260	Trichlorofluoromethane	ug/kg	560	UJ	28	U	500	U
SW8260	Vinyl chloride	ug/kg	560	U	28	U	500	U
SW8260	Xylene, m/p	ug/kg	1100	U	56	U	1000	U
SW8260	Xylene, o	ug/kg	560	U	28	U	500	U
Notes:								
Units: ug/kg = micrograms per kilogram								
Qualifier: U= non-detect, J= estimated,								
D= result from dilution analysis								

DATA USABILITY SUMMARY REPORT
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK
SDGs: A2663, A2664, A2708, A2948, A2898, and LIMT-25188

		Sample Delivery Group	LIMT-25188		LIMT-25188		LIMT-25188		LIMT-25188		LIMT-25188	
		Location	SV-01		SV-01		SV-02		SV-03		SV-04	
		Sample Date	5/7/2009		5/7/2009		5/6/2009		5/6/2009		5/7/2009	
		Sample ID	828103-GV10809		828103-GV10809D		828103-GV20709		828103-GV30709		828103-GV40109	
		Qc Code	FS		FD		FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
TO-15	1,1,1-Trichloroethane	ug/m3	0.54	U	0.54	U	0.54	U	0.54	U	9.4	
TO-15	1,1,2,2-Tetrachloroethane	ug/m3	0.68	U	0.68	U	0.68	U	0.68	U	0.68	U
TO-15	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/m3	0.76	U	0.76	U	0.76	U	0.76	U	1.1	
TO-15	1,1,2-Trichloroethane	ug/m3	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
TO-15	1,1-Dichloroethane	ug/m3	0.4	U	0.4	U	0.4	U	0.4	U	1.9	
TO-15	1,1-Dichloroethene	ug/m3	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
TO-15	1,2,4-Trichlorobenzene	ug/m3	0.89		0.88		0.91		0.74	U	1.9	
TO-15	1,2,4-Trimethylbenzene	ug/m3	1.5		1.7		2.2		1.7		25	
TO-15	1,2-Dibromoethane	ug/m3	0.76	U	0.76	U	0.76	U	0.76	U	0.76	U
TO-15	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ug/m3	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U
TO-15	1,2-Dichlorobenzene	ug/m3	0.6	U	0.6	U	0.6	U	0.6	U	0.76	
TO-15	1,2-Dichloroethane	ug/m3	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
TO-15	1,2-Dichloropropane	ug/m3	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
TO-15	1,3,5-Trimethylbenzene	ug/m3	0.56		0.54		0.8		0.67		9.8	
TO-15	1,3-Dichlorobenzene	ug/m3	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
TO-15	1,4-Dichlorobenzene	ug/m3	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
TO-15	2-Butanone	ug/m3	12	J	21	J	78		17		12	
TO-15	2-Hexanone	ug/m3	2.6		3		13		4.9		0.4	U
TO-15	2-Propanol	ug/m3	7.3		4.6		7.7		4.2		18	
TO-15	4-Ethyltoluene	ug/m3	0.5	U	0.5	U	0.55		0.5	U	2.9	
TO-15	4-Methyl-2-pentanone	ug/m3	0.58		0.4	U	2.9		2.3		3.4	
TO-15	Acetone	ug/m3	76	J	160	J	350	J	66	J	370	J
TO-15	Benzene	ug/m3	0.93		1.2		5.8		52		14	
TO-15	Benzyl chloride	ug/m3	0.52	U	0.52	U	0.52	U	0.52	U	0.52	U
TO-15	Bromodichloromethane	ug/m3	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
TO-15	Bromoform	ug/m3	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
TO-15	Bromomethane	ug/m3	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U
TO-15	Butadiene, 1,3-	ug/m3	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
TO-15	Carbon disulfide	ug/m3	0.82		0.32	U	3.7		1.5		3.3	
TO-15	Carbon tetrachloride	ug/m3	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U
TO-15	Chlorobenzene	ug/m3	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
TO-15	Chlorodibromomethane	ug/m3	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U
TO-15	Chloroethane	ug/m3	0.26	U	0.26	U	0.85		0.26	U	0.26	U
TO-15	Chloroform	ug/m3	0.48	U	0.48	U	0.48	U	0.48	U	1.9	
TO-15	Chloromethane	ug/m3	1.4		1.5		2.6		1.4		0.34	
TO-15	Cis-1,2-Dichloroethene	ug/m3	0.4	U	0.4	U	0.4	U	3.4		5.4	
TO-15	cis-1,3-Dichloropropene	ug/m3	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U
TO-15	Cyclohexane	ug/m3	0.34	U	0.34	U	15		0.34	U	42	
TO-15	Dichlorodifluoromethane	ug/m3	2.3		2.1		2.2		2.2		2.1	
TO-15	Ethanol	ug/m3	18	J	20	J	36	J	13	J	86	J
TO-15	Ethyl acetate	ug/m3	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
TO-15	Ethyl benzene	ug/m3	0.58		0.84		1.1		2.1		11	
TO-15	Heptane	ug/m3	0.66		0.58		9.2		3.7		97	
TO-15	Hexachlorobutadiene	ug/m3	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
TO-15	Hexane	ug/m3	2.4		2.8		38		5.5		120	
TO-15	Methyl Tertbutyl Ether	ug/m3	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
TO-15	Methylene chloride	ug/m3	4.5	U	5.4	U	5.2	U	6	U	4.5	U
TO-15	Propylene	ug/m3	0.18	UJ	0.18	UJ	0.18	UJ	0.18	UJ	0.18	UJ
TO-15	Styrene	ug/m3	0.42	U	0.42	U	0.42	U	0.42	U	0.54	
TO-15	Tetrachloroethene	ug/m3	5.5	J	3	J	0.68	U	240		5500	
TO-15	Tetrahydrofuran	ug/m3	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
TO-15	Toluene	ug/m3	2.4		3.6		5.6		9.7		45	
TO-15	trans-1,2-Dichloroethene	ug/m3	0.4	U	0.4	U	0.4	U	0.63		0.4	U
TO-15	trans-1,3-Dichloropropene	ug/m3	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U
TO-15	Trichloroethene	ug/m3	0.9		0.54	U	0.54	U	130		3500	
TO-15	Trichlorofluoromethane	ug/m3	1.5		1.3		1.3		1.2		1.5	
TO-15	Vinyl acetate	ug/m3	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
TO-15	Vinyl chloride	ug/m3	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
TO-15	Xylene, m/p	ug/m3	1.5		2.3		2.3		4.5		43	
TO-15	Xylene, o	ug/m3	0.57		0.95		0.76		1.5		14	
Notes:												
Units: ug/m3 = micrograms per cubic meter												
Qualifier: U= non-detect, J= estimated, D= result from dilution analysis												

DATA USABILITY SUMMARY REPORT
IN SUPPORT OF THE REMEDIAL INVESTIGATION
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK

1.0 INTRODUCTION

Groundwater samples were collected on December 9 and December 10, 2009 at the Dinaburg Distributing Site (Site) in Rochester, New York. Groundwater samples were submitted to Chemtech Laboratories in Mountainside, NJ for analysis. Results were reported in Sample Delivery Group (SDG) A5518. A listing of samples included in this Data Usability Summary Report is presented in Table 1. A summary of the analytical results is presented in Table 2. Samples were analyzed for Volatile Organic Compounds (VOCs) by USEAP Method 8260B.

Deliverables for the off-site laboratory analyses included a Category B deliverable as defined in the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocols (NYSDEC, 2005).

A project chemist review was completed based on NYSDEC Division of Environmental Remediation guidance for Data Usability Summary Reports (NYSDEC, 2002). Laboratory QC limits were used during the data evaluation unless noted otherwise. The project chemist review included evaluations of sample collection, data package completeness, holding times, QC data (blanks, instrument calibrations, duplicates, surrogate recovery, and spike recovery), data transcription, electronic data reporting, calculations, and data qualification.

The following laboratory or data validation qualifiers are used in the final data presentation.

U = target analyte is not detected at the reported detection limit
J = concentration is estimated
UJ = target analyte is not detected at the reported detection limit and is estimated

Results are interpreted to be usable as reported by the laboratory unless discussed in the following sections.

2.0 VOLATILE ORGANIC COMPOUNDS (VOCS) by Method 8260B

VOC - Initial and Continuing Calibration Standards

SDG A5518

Acetone, in the initial calibration analyzed on December 18, 2009, had a percent relative standard deviation (%RSD) calculated on the response factors (RF) of 25.8, above the Region II control limit of 20 percent. The laboratory attempted to use an alternative method of calibrating acetone (i.e. linear regression), but failed to meet calibration criteria of 0.99. The average relative response factor was used to quantitate QC samples and field samples. Out of the six Dinaburg field samples quantitated using the initial calibration from December 18, 2009, only one sample (828103-GW081009) had a detection or acetone (at 12 µg/L). Acetone was subsequently qualified estimated (J/UJ) in the following samples due to the %RSD exceedance: 828103-GW071509, 828103-GW081009, 828103-GW082009, 828103-GW091509, 828103-GW101909, and 828103-GW111809.

The following compounds in the initial calibration analyzed on December 19, 2009 had %RSDs that were above 20 percent: dichlorodifluoromethane (21), methylene chloride (20.6), and 1,2,4-trichlorobenzene (31). These compounds were not detected in associated samples (828103-GW111109 and 828103-GW100809) and reporting limits were qualified estimated (UJ) in the final data set.

VOC – Lab Control Samples

SDG A5518

In the aqueous lab control sample (BSI1219W3) analyzed on December 19, 2009 at 17:52, 1,2,4-trichlorobenzene had percent recovery of 67 percent that was above the lower lab control limit of 61 percent, but below the Region II lower limit of 70 percent. Professional judgment was used to qualify the non-detect results for 1,2,4-trichlorobenzene estimated (UJ) in the following associated samples: 828103-GW100809 and 828103-GW111109.

Reference:

New York State Department of Environmental Conservation (NYSDEC), 2005. "Analytical Services Protocols"; July 2005.

New York State Department of Environmental Conservation (NYSDEC), 2002. "Technical Guidance for Site Investigation and Remediation-Appendix 2B"; Draft DER-10; Division of Environmental Remediation; December 2002.

USEPA Region II Hazardous Waste Support Branch, 2006. "Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B; SOP # HW-24, Revision #2; October 2006.

Data Validator: Tige Cunningham

Date: 3/3/2010

Reviewed by Chris Ricardi, NRCC-EAC
Quality Assurance Officer

Chris Ricardi

Date: 3/10/2010

Table 1 – Sample Listing

SDG	**Media**	**Location**	**Sample ID**	**Sample Date**	**Qc Code**	**VOCs by 8260B**
A5518	GW	GW-7	828103-GW071509	12/9/2009	FS	X
A5518	GW	GW-8	828103-GW081009	12/10/2009	FS	X
A5518	GW	GW-8	828103-GW082009	12/9/2009	FS	X
A5518	GW	GW-9	828103-GW091509	12/9/2009	FS	X
A5518	GW	GW-10	828103-GW100809	12/9/2009	FS	X
A5518	GW	GW-10	828103-GW101909	12/9/2009	FS	X
A5518	GW	GW-11	828103-GW111109	12/9/2009	FS	X
A5518	GW	GW-11	828103-GW111809	12/9/2009	FS	X
A5518	BW	QC	TRIP BLANK	12/3/2009	TB	X

TABLE 2 - SDG A5518
DATA USABILITY SUMMARY REPORT
IN SUPPORT OF THE REMEDIAL INVESTIGATION
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK

		Sample Delivery Group	A5518		A5518		A5518		A5518		A5518		A5518		A5518		A5518	
		Location	GW-10		GW-10		GW-11		GW-11		GW-8		GW-7		GW-9		GW-8	
		Sample Date	12/9/2009		12/9/2009		12/9/2009		12/9/2009		12/9/2009		12/9/2009		12/9/2009		12/10/2009	
		Sample ID	828103-GW101909		828103-GW100809		828103-GW111809		828103-GW111109		828103-GW082009		828103-GW071509		828103-GW091509		828103-GW081009	
		Qc Code	FS		FS		FS		FS		FS		FS		FS		FS	
Analysis	**Parameter**	**Units**	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,1,2,2-Tetrachloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,1,2-Trichloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,1-Dichloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,1-Dichloroethene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,2,4-Trichlorobenzene	ug/l	1	U	1	UJ	1	U	1	UJ	1	U	1	U	1	U	1	U
SW8260	1,2-Dibromo-3-chloropropane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,2-Dibromoethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,2-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,2-Dichloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,2-Dichloropropane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,3-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	1,4-Dichlorobenzene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	2-Butanone	ug/l	5	U	10		5	U	18		5	U	5	U	5	U	5	U
SW8260	2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	7.6		5	U	5	U	5	U	5	U
SW8260	Acetic acid, methyl ester	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Acetone	ug/l	5	UJ	32		5	UJ	59		5	UJ	5	UJ	5	UJ	12	J
SW8260	Benzene	ug/l	1	U	0.9	J	1	U	0.72	J	1	U	1	U	1	U	1	U
SW8260	Bromodichloromethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Bromoform	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Bromomethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Carbon disulfide	ug/l	1	U	1	U	1	U	0.86	J	1	U	1	U	1	U	1	U
SW8260	Carbon tetrachloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Chlorobenzene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Chlorodibromomethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Chloroform	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Chloromethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Cis-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	cis-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Cyclohexane	ug/l	1	U	1.2		1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Dichlorodifluoromethane	ug/l	1	U	1	UJ	1	U	1	UJ	1	U	1	U	1	U	1	U
SW8260	Ethyl benzene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Isopropylbenzene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Methyl cyclohexane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Methyl Tertbutyl Ether	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Methylene chloride	ug/l	1	U	1	UJ	1	U	1	UJ	1	U	1	U	1	U	1	U
SW8260	Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Tetrachloroethene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Toluene	ug/l	1	U	1.4		1	U	0.5	J	1	U	1	U	1	U	1	U
SW8260	trans-1,2-Dichloroethene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	trans-1,3-Dichloropropene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Trichloroethene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Trichlorofluoromethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
SW8260	Xylene, m/p	ug/l	2	U	1.6	J	2	U	2	U	2	U	2	U	2	U	2	U
SW8260	Xylene, o	ug/l	1	U	0.5	J	1	U	1	U	1	U	1	U	1	U	1	U

Notes:
ug/l = micrograms per liter
Qalifiers: U = Not detected at the reporting limit
J = Estimated value
QC Code: FS = Field sample

Produced by BJS 3/8/2010
Checked by TLC 3/8/2010

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Dina_Dist_A5518_Table_2.xls

TABLE 2 - SDG A5518
DATA USABILITY SUMMARY REPORT
IN SUPPORT OF THE REMEDIAL INVESTIGATION
DINABURG DISTRIBUTING SITE
ROCHESTER, NEW YORK

		Sample Delivery Group	A5518	
		Location	QC	
		Sample Date	12/3/2009	
		Sample ID	TRIPBLANK	
		Qc Code	TB	
Analysis	**Parameter**	**Units**	Result	Qualifier
SW8260	1,1,1-Trichloroethane	ug/l	1	U
SW8260	1,1,2,2-Tetrachloroethane	ug/l	1	U
SW8260	1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/l	1	U
SW8260	1,1,2-Trichloroethane	ug/l	1	U
SW8260	1,1-Dichloroethane	ug/l	1	U
SW8260	1,1-Dichloroethene	ug/l	1	U
SW8260	1,2,4-Trichlorobenzene	ug/l	1	U
SW8260	1,2-Dibromo-3-chloropropane	ug/l	1	U
SW8260	1,2-Dibromoethane	ug/l	1	U
SW8260	1,2-Dichlorobenzene	ug/l	1	U
SW8260	1,2-Dichloroethane	ug/l	1	U
SW8260	1,2-Dichloropropane	ug/l	1	U
SW8260	1,3-Dichlorobenzene	ug/l	1	U
SW8260	1,4-Dichlorobenzene	ug/l	1	U
SW8260	2-Butanone	ug/l	5	U
SW8260	2-Hexanone	ug/l	5	U
SW8260	4-Methyl-2-pentanone	ug/l	5	U
SW8260	Acetic acid, methyl ester	ug/l	1	U
SW8260	Acetone	ug/l	5	U
SW8260	Benzene	ug/l	1	U
SW8260	Bromodichloromethane	ug/l	1	U
SW8260	Bromoform	ug/l	1	U
SW8260	Bromomethane	ug/l	1	U
SW8260	Carbon disulfide	ug/l	1	U
SW8260	Carbon tetrachloride	ug/l	1	U
SW8260	Chlorobenzene	ug/l	1	U
SW8260	Chlorodibromomethane	ug/l	1	U
SW8260	Chloroethane	ug/l	1	U
SW8260	Chloroform	ug/l	1	U
SW8260	Chloromethane	ug/l	1	U
SW8260	Cis-1,2-Dichloroethene	ug/l	1	U
SW8260	cis-1,3-Dichloropropene	ug/l	1	U
SW8260	Cyclohexane	ug/l	1	U
SW8260	Dichlorodifluoromethane	ug/l	1	U
SW8260	Ethyl benzene	ug/l	1	U
SW8260	Isopropylbenzene	ug/l	1	U
SW8260	Methyl cyclohexane	ug/l	1	U
SW8260	Methyl Tertbutyl Ether	ug/l	1	U
SW8260	Methylene chloride	ug/l	1	U
SW8260	Styrene	ug/l	1	U
SW8260	Tetrachloroethene	ug/l	1	U
SW8260	Toluene	ug/l	1	U
SW8260	trans-1,2-Dichloroethene	ug/l	1	U
SW8260	trans-1,3-Dichloropropene	ug/l	1	U
SW8260	Trichloroethene	ug/l	1	U
SW8260	Trichlorofluoromethane	ug/l	1	U
SW8260	Vinyl chloride	ug/l	1	U
SW8260	Xylene, m/p	ug/l	2	U
SW8260	Xylene, o	ug/l	1	U

Notes:
ug/l = micrograms per liter
Qalifiers: U = Not detected at the reporting limit
J = Estimated value
QC Code: FS = Field sample

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Dina_Dist_A5518_Table_2.xls

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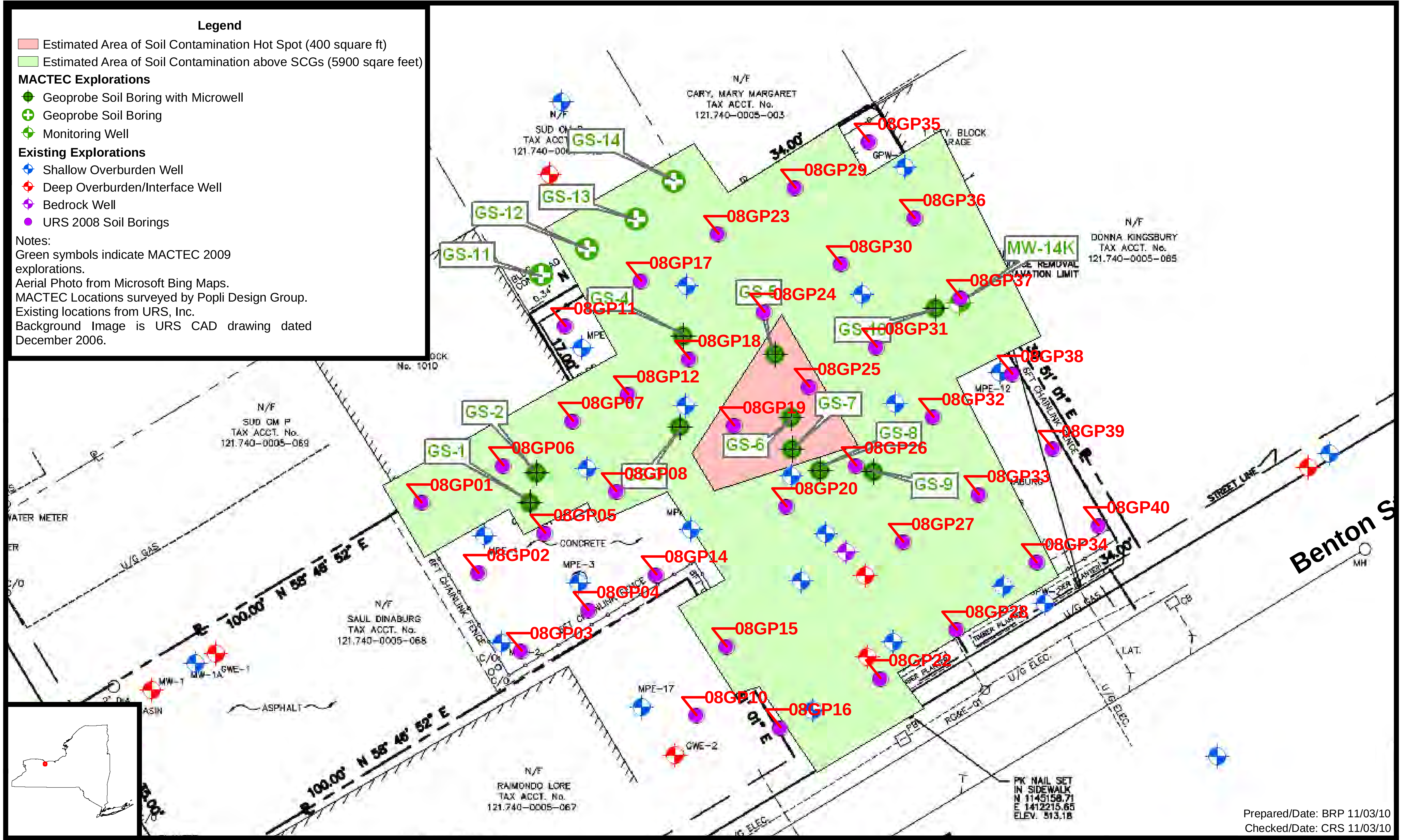
APPENDIX F

CALCULATIONS

Document: P:\Projects\nysdec1\projects\Dinaburg Distributing\4.0_Deliverables\4.5_Databases\GIS\MapDocument\RI FS Report\Dinaburg_RIFS_11x17LS.mxd PDF: P:\Projects\nysdec1\projects\Dinaburg Distributing\4.0_Deliverables\4.1_Reports\OU-2_RI-FS Report\Draft\Attachments\Appendix F - Calculations\Figure F.1_contamination area.pdf 11/03/2010 12:32 PM crstaples



Legend

🟥 Estimated Area of Soil Contamination Hot Spot (400 square ft)

🟩 Estimated Area of Soil Contamination above SCGs (5900 sqare feet)

MACTEC Explorations

- Geoprobe Soil Boring with Microwell
- Geoprobe Soil Boring
- Monitoring Well

Existing Explorations

- Shallow Overburden Well
- Deep Overburden/Interface Well
- Bedrock Well
- ● URS 2008 Soil Borings

Notes:
Green symbols indicate MACTEC 2009 explorations.
Aerial Photo from Microsoft Bing Maps.
MACTEC Locations surveyed by Popli Design Group.
Existing locations from URS, Inc.
Background Image is URS CAD drawing dated December 2006.

N
0 7.5 15
Feet

Prepared/Date: BRP 11/03/10
Checked/Date: CRS 11/03/10

RI/FS REPORT
DINABURG DISTRIBUTING
ROCHESTER, NEW YORK

MACTEC

Contaminated Soil Area Estimates

Project 3612-08-2107

Figure F.1

Location	Contamination Depth	Contamination Thickness Measured	PCE Concentrations - 1st Depth	PCE Concentrations - 2nd Depth	PCE Concentrations - 3rd Depth	TCE Concentrations - 1st Depth	TCE Concentrations - 2nd Depth	TCE Concentrations - 3rd Depth	Contamination Thickness to Rock (assumed)
GS-1	9 - 16+	7 +	52	3.7		9	27		11
GS-2	7 - 16+	9 +	1700	15		3.7	29		13
GS-3	8 - 16+	8 +	5.6	0.64		8.1	7		12
GS-4	8 - 16+	8 +	21	84		3	35		12
GS-5*	9 - 16+	7 +	990	340		630	370		11
GS-6*	8 - 16+	8 +	1200	670		150	490		12
GS-7*	7 - 16+	9 +	110	1200		160	1400		13
GS-8	7 - 16+	9 +	51	64		12	26		13
GS-9	7 - 16+	9 +	93	43		110	160		13
GS-10	9 - 16+	7 +	12	15		15	15		11
GS-11	0	0							
GS-12	10 - 16+	6 +	7.2	30		1.1	3		10
GS-13	10-21 (rock)	11	30	9.5	1.1	3.3	26	16	11
GS-14	10 - 16+	6 +	0	0		5.8	5.7		10

Notes:
Concentrations in mg/Kg
* = high source area borings

	Average Conc.	Geometric Mean Conc.	
PCE Source Area	751.67	573.88	
TCE Source Area	533.33	395.68	
PCE/TCE Source Area	1285.00	1039.88	(geometric mean of sum of PCE/TCE at each sample location)
PCE Outside Source	117.78	19.94	
TCE Outside Source	24.80	11.73	
PCE/TCE Source Area	142.57	37.95	(geometric mean of sum of PCE/TCE at each sample location)

Average Thickness Source=	12	* 400 sq ft	177.78	Cubic Yards
Average Thickness Other=	11.6	* 5900 sq ft	2534.81	Cubic Yards

Mass PCE/TCE = volume * concentration of contamination

Mass PCE/TCE Source = 178 cubic Yards *3000 lbs/cubic yard*1040E-6 =	555.36	lbs	Created by: CRS 11/1/2010
Mass PCE/TCE Other = 2530 cubic Yards *3000 lbs/cubic yard*38E-6 =	288.42	lbs	Checked by: NRL 11/4/2010

(3000 pounds per cubic yard based on assumed soil porosity of 0.32 = 2.65 gram/cubic cm [density of soil partical]*(1-0.32)*62.4 pounds per cubic foot * 27 feet per cubic yard = 3036 lbs/cubic yard)

APPENDIX G

MNA SCREENING FORMS

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-01

Score: 16

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	○	●	0
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	●	○	3
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	○	●	0
Methane*	<0.5 mg/L	VC oxidizes	●	○	0
	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	●	○	1
	<-100mV	Reductive pathway likely	●	○	2
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20°C	At T >20°C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	○	●	0
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	●	○	0
TCE*		Material released	●	○	0
		Daughter product of PCE $^{a/}$	●	○	2
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	●	○	2
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	●	○	2
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	●	○	2
Carbon Tetrachloride		Material released	○	○	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-01A

Score: 16

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	○	●	0
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	●	○	3
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Sulfide*	>1 mg/L	Reductive pathway possible	○	●	0
Methane*	<0.5 mg/L	VC oxidizes	●	○	0
	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	●	○	1
	<-100mV	Reductive pathway likely	●	○	2
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20°C	At T >20°C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	○	●	0
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	●	○	0
TCE*		Material released	●	○	0
		Daughter product of PCE [a/]	●	○	2
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE[a/]; 1,1-DCE can be a chem. reaction product of TCA	●	○	2
VC*		Material released	○	○	0
		Daughter product of DCE[a/]	●	○	2
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	○	●	0
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE   Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-03

Score: 6

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	○	●	0
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	●	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	○	●	0
Methane*	<0.5 mg/L	VC oxidizes	●	○	0
	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	○	●	0
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20°C	At T >20°C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	○	●	0
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	●	○	0
TCE*		Material released	●	○	0
		Daughter product of PCE $^{a/}$	●	○	2
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	●	○	2
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	○	●	0
1,1,1-Trichloroethane*		Material released	●	○	0
DCA		Daughter product of TCA under reducing conditions	●	○	2
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-03C

Score: 19

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	●	○	3
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	●	○	3
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	○	●	0
Methane*	<0.5 mg/L	VC oxidizes	●	○	0
	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	●	○	1
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20^{o}C	At T >20^{o}C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	●	○	2
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	●	○	0
TCE*		Material released	●	○	0
		Daughter product of PCE $^{a/}$	●	○	2
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	●	○	2
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	●	○	2
1,1,1-Trichloroethane*		Material released	●	○	0
DCA		Daughter product of TCA under reducing conditions	●	○	2
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-04

Score: 6

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	●	○	3
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	●	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	○	●	0
Methane*	<0.5 mg/L	VC oxidizes	●	○	0
	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	●	○	1
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20^{o}C	At T >20^{o}C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	○	●	0
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	○	●	0
TCE*		Material released	○	●	0
		Daughter product of PCE $^{a/}$	○	●	0
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	○	●	0
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	○	●	0
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	○	●	0
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-06

Score: 4

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	○	●	0
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	●	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	○	●	0
Methane*	<0.5 mg/L		●	○	0
	>0.5 mg/L		○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	○	●	0
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20°C	At T >20°C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	●	○	2
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	○	●	0
TCE*		Material released	●	○	0
		Daughter product of PCE $^{a/}$	○	●	0
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	○	●	0
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	○	●	0
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	○	●	0
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-09K

Score: 8

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	●	○	3
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	●	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	○	●	0
Methane*	<0.5 mg/L		●	○	0
	>0.5 mg/L		○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	●	○	1
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20^{o}C	At T >20^{o}C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	●	○	2
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	○	●	0
TCE*		Material released	○	●	0
		Daughter product of PCE $^{a/}$	○	●	0
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	○	●	0
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	○	●	0
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	○	●	0
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-10K

Score: 19

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	●	○	3
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	●	○	3
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	●	○	3
Methane*	<0.5 mg/L		●	○	0
	>0.5 mg/L		○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	●	○	1
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20^{o}C	At T >20^{o}C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	●	○	1
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	○	●	0
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	●	○	0
TCE*		Material released	●	○	0
		Daughter product of PCE $^{a/}$	●	○	2
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	●	○	2
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	●	○	2
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	○	●	0
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-11S

Score: 9

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	○	●	0
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	●	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	○	●	0
Methane*	<0.5 mg/L		●	○	0
	>0.5 mg/L		○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	○	●	0
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	$>20^{o}$C	At T $>20^{o}$C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	●	○	1
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	○	●	0
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	●	○	0
TCE*		Material released	●	○	0
		Daughter product of PCE $^{a/}$	●	○	2
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	●	○	2
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	●	○	2
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	○	●	0
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-12K

Score: 5

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	○	●	0
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	●	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	●	○	3
Methane*	<0.5 mg/L		●	○	0
	>0.5 mg/L		○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	○	●	0
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20°C	At T >20°C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	○	●	0
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	○	●	0
TCE*		Material released	●	○	0
		Daughter product of PCE [a/]	○	●	0
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE[a/]; 1,1-DCE can be a chem. reaction product of TCA	○	●	0
VC*		Material released	○	○	0
		Daughter product of DCE[a/]	○	●	0
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	○	●	0
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-12S

Score: 2

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	○	●	0
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	●	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	○	●	0
Methane*	<0.5 mg/L		●	○	0
	>0.5 mg/L		○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	○	●	0
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20^{o}C	At T >20^{o}C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	○	●	0
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	○	●	0
TCE*		Material released	○	●	0
		Daughter product of PCE $^{a/}$	○	●	0
DCE*		Material released	○	●	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	○	●	0
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	○	●	0
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	○	●	0
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-13K

Score: 19

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	●	○	3
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	●	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	●	○	3
Methane*	<0.5 mg/L		●	○	0
	>0.5 mg/L		○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	●	○	1
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20^{o}C	At T >20^{o}C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	●	○	2
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	●	○	0
TCE*		Material released	●	○	0
		Daughter product of PCE $^{a/}$	●	○	2
DCE*		Material released	●	○	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	●	○	2
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	●	○	2
1,1,1-Trichloroethane*		Material released	●	○	0
DCA		Daughter product of TCA under reducing conditions	●	○	2
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

* reductive dechlorination

MW-14K

Score: 15

Scroll to End of Table

Analysis	Concentration in Most Contam. Zone	Interpretation	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	●	○	3
	>5mg/L	Not tolerated; however, VC may be oxidized aerobically	○	●	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	●	○	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	○	●	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	○	●	0
Sulfide*	>1 mg/L	Reductive pathway possible	●	○	3
Methane*	<0.5 mg/L		●	○	0
	>0.5 mg/L		○	●	0
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	●	○	1
	<-100mV	Reductive pathway likely	○	●	0
pH*	5 < pH < 9	Optimal range for reductive pathway	●	○	0
	5 > pH >9	Outside optimal range for reductive pathway	○	●	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	○	●	0
Temperature*	>20^{o}C	At T >20^{o}C biochemical process is accelerated	○	●	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	○	●	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	○	●	0
Chloride*	>2x background	Daughter product of organic chlorine	●	○	2
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	○	○	0
	<1 nM	VC oxidized	○	○	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	○	○	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	○	●	0
PCE*		Material released	●	○	0
TCE*		Material released	●	○	0
		Daughter product of PCE $^{a/}$	●	○	2
DCE*		Material released	●	○	0
		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE$^{a/}$; 1,1-DCE can be a chem. reaction product of TCA	●	○	2
VC*		Material released	○	○	0
		Daughter product of DCE$^{a/}$	○	●	0
1,1,1-Trichloroethane*		Material released	○	●	0
DCA		Daughter product of TCA under reducing conditions	○	●	0
Carbon Tetrachloride		Material released	○	●	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	○	○	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	○	●	0
	>0.1 mg/L	Daughter product of VC/ethene	○	●	
Chloroform		Material released	○	●	0
		Daughter product of Carbon Tetrachloride	○	○	0
Dichloromethane		Material released	○	○	0
		Daughter product of Chloroform	○	○	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

SCORE

Reset

APPENDIX H

DETAILED COST ANALYSIS BACKUP

Alternative 2 - No Further Action: Continued Multiphase Extraction

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
Subtask								
Assembly (1)								
CAPITAL COSTS								
Institutional Controls								
Engineer's Estimate	Overnight Delivery, 8 oz Letter	12	EA	$ 13.18	$ -	$ -	$ 158.16	
Engineer's Estimate	Project Manager	20	HR	$ -	$ 115.00	$ -	$ 2,300.00	
Engineer's Estimate	Project Engineer	60	HR	$ -	$ 90.00	$ -	$ 5,400.00	
Engineer's Estimate	Staff Engineer	70	HR	$ -	$ 75.00	$ -	$ 5,250.00	
Engineer's Estimate	QA/QC Officer	15	HR	$ -	$ 90.00	$ -	$ 1,350.00	
Engineer's Estimate	Word Processing/Clerical	60	HR	$ -	$ 55.00	$ -	$ 3,300.00	
Engineer's Estimate	Draftsman/CADD	30	HR	$ -	$ 55.00	$ -	$ 1,650.00	
Engineer's Estimate	Computer Data Entry	30	HR	$ -	$ 55.00	$ -	$ 1,650.00	
Engineer's Estimate	Attorney, Senior Associate, Real	14	HR	$ -	$ 175.00	$ -	$ 2,450.00	
	Estate						$ -	
Engineer's Estimate	Paralegal, Real Estate	12	HR	$ -	$ 100.00	$ -	$ 1,200.00	
Engineer's Estimate	Other Direct Costs	1	LS	$ 751.16	$ -	$ -	$ 751.16	
Engineer's Estimate	Portable GPS Set with Mapping,	1	MO	$ 689.22	$ -	$ -	$ 689.22	
	5 cm Accuracy						$ -	
Engineer's Estimate	Local Fees	2	LS	$ 200.00	$ -	$ -	$ 400.00	
	Task Subtotal						**$ 26,548.54**	
ALTERNATIVE ANNUAL AND PERIODIC COSTS								
Annual OM&M: Years 1-10								Assume 10 years until asymptotic mass removal rates.
OM&M of MPE System								
	Labor, Indirect Costs, and Fees	1	LS		$ 65,268.40		$ 65,268.40	Contractor labor, actual
	Expenses - Total Actual, Breakdown Estimated							
	Analytical, Aqueous, VOCs	144	EA	$ 100.00			$ 14,400.00	36 per quarterly event, estimated rate
	Analytical, Vapor, VOCs	80	EA	$ 250.00			$ 20,000.00	20 per quarterly event, estimated rate
	Electrical	12	MO	$ 300.00			$ 3,600.00	estimated
	Telephone	12	MO	$ 150.00			$ 1,800.00	estimated
	Miscellaneous, Shipping Costs	12	MO	$ 100.00			$ 1,200.00	estimated
	Chemicals	12	MO	$ 140.00			$ 1,680.00	estimated
	Repairs	1	LS	$ 15,000.00		$ 5,000.00	$ 20,000.00	estimated
	Task Subtotal						**$ 127,948.40**	
Periodic Institutional Control Inspections and Reporting (Years 1-30)								
Refer to Alternative 5								
	Task Subtotal						$ 3,460.24	
Long-Term Monitoring (Years 11-30)								
Refer to Alternative 5								
	Task Subtotal						$ 30,993.85	Quarterly monitoring costs

Notes:
1) Assembly numbers presented indicate RACER/RS MEANS assembly code

PRESENT VALUE OF ANNUAL AND PERIODIC COSTS FOR ALTERNATIVE 2 (No Further Action: Continued Multiphase Extraction)

Year	**Cost***	**Number of Annual Periods**	**Annual Discount Rate**	**Number of 5-Year Periods**	**5-Year Discount Rate**	**Number of 10-Year Periods**	**10-Year Discount Rate**	**Total Non-Discounted Cost**	**Present Value Cost**
Capital (Year 0)	$ 37,000	1	0	NA	NA	NA	NA	$ 37,000.00	$ 37,000.00
Annual SSV OM&M (1-10)	$ 173,000	10	0.05	NA	NA	NA	NA	$ 1,730,000.00	$ 1,335,860.14
Periodic Inspections and Reporting (Years 1-30)	$ 3,460	30	0.05	NA	NA	NA	NA	$ 103,807.20	$ 53,192.37
Quarterly Monitoring (Years 11-12)	$ 30,994	2	0.05	NA	NA	NA	NA	$ 61,987.70	$ 57,630.29
Semi-Annual Monitoring (Years 13-14)	$ 15,497	2	0.05	NA	NA	NA	NA	$ 30,993.85	$ 28,815.14
Annual Monitoring (Years 15-30)	$ 7,748	16	0.05	NA	NA	NA	NA	$ 123,975.40	$ 83,976.05
Totals								**$ 2,087,764.15**	**$ 1,596,474.00**

*Annual and periodic costs include 10% for technical support and 25% contingency for unforeseen project complexities, including insurance, taxes, and licensing costs.
Capital costs include 25% contingency, as well as and project management, remedial design, and construction management costs per DER-10 guidance.

Discount rate of 5% (for 30-years) percent based on NYSDEC PRAP Outline / Instructions.

Prepared by: BPN 12/09/10
Checked by: NRL 12/14/10

Alternative 3 – Restoration to Pre-Disposal Conditions

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
ALTERNATIVE CAPITAL COSTS								
Pre-Design Investigation								
Sampling Crew								
33010104	Sample collection, vehicle mileage charge, car or van	500	MI	$ 0.49	$ -	$ -	$ 245.00	
33220108	Project Scientist	150	HR	$ -	$ 70.87	$ -	$ 10,630.50	
Engineer's Estimate	Field Technician	75	HR	$ -	$ 75.00	$ -	$ 5,625.00	
33010202	Per Diem	5.00	DAY	$ 89.40	$ -	$ -	$ 447.00	
Subsurface Soil Sampling (ten locations with five sample intervals and ten locations with one interval)								
							$ 8,814.00	
33021720	Testing, purgeable organics (624, 8260)	60	EA	$ 146.90	$ -	$ -		
Drilling								
33010101	Mobilize/DeMobilize Drilling Rig & Crew	1	LS	$ 1,500.00	$ -	$ -	$ 1,500.00	
Engineer's Estimate	Geoprobe	5	DAY	$ 1,000.00	$ -	$ -	$ 5,000.00	20 borings to 20'
33231813	Portland Cement Grout	400	LF	$ 9.78	$ -	$ -	$ 3,912.00	
Surveying								
33029903	Ground penetrating radar	1	DAY	$ 1,327.28	$ -	$ -	$ 1,327.28	
99041201	Surveying - 2-man Crew	2	DAY	$ -	$ 1,004.76	$ 240.97	$ 2,491.46	
Bench Testing - Reagent		1	LS	$ 20,000.00			$ 20,000.00	Engineer's estimate
GW monitoring well installation								Assume 4 additional monitoring wells will be installed as part of pre-design investigation activities.
Eng. Est	Driller mobilization	1	LS	$ 1,000.00	$ -	$ -	$ 1,000.00	
Eng. Est	Drill - Day rate	2	EA	$ -	$ -	$ 2,500.00	$ 5,000.00	
Eng. Est	4" -solid pipe PVC sch40	80	LF	$ 4.83	$ -	$ -	$ 386.08	Assume 20 feet deep
33-21-13.10-8130	4" stainless steel well screen	40	LF	$ 157.00	$ -	$ -	$ 6,280.00	Assume 10 foot screens
Eng. Est	Sand pack	80	LF	$ 12.00	$ -	$ -	$ 960.00	
Eng. Est	Bentonite chips	40	LF	$ 5.00	$ -	$ -	$ 200.00	
Eng. Est	Wellhead/vault	4	LS	$ 1,000.00	$ -	$ -	$ 4,000.00	
	Task Subtotal						$ 77,818.32	
Mobilization and Temporary Facilities and Controls								
Temporary Utilities								
Eng. Est	Site Superintendent	240	HR	$ -	$ 100.00	$ -	$ 24,000.00	
Eng. Est	Site Foreman	240	HR	$ -	$ 75.00	$ -	$ 18,000.00	
99040101	Temporary Office 20' x 8'	1	MO	$ 206.42	$ -	$ -	$ 270.41	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
99140201	Temporary Storage Trailer 16' x 8'	1	MO	$ 80.72	$ -	$ -	$ 105.74	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
99040501	Portable Toilets	1	MO	$ 82.65	$ -	$ -	$ 108.27	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
01520.550.0140	Telephone utility fee	1	MO	$ 210.00	$ -	$ -	$ 245.49	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
MACTEC	Electrical utility fee	1	MO	$ 200.00	$ -	$ -	$ 200.00	
01520.550.0100	Field office expenses, office equipment rental, average	1	MO	$ 145.00	$ -	$ -	$ 169.51	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation

Alternative 3 – Restoration to Pre-Disposal Conditions

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
Dewatering/Wastewater Treatment System								
Eng. Est.	Frac EQ Tank	30	DAY	$ 30.00	$ -	$ -	$ 900.00	Assumes 20,000 gallon FRAC EQ tank could be used to store water and existing MPE treatment tailer could be used for treatment.
02240.500.1000	Pumping 8 hr., attended 2 hrs. per day, including 20 LF of suction hose and 100 LF of discharge hose, w/ 4" diaphragm pumped used 8 hrs.	30	DAY	$ -	$ 405.00	$ 83.00	$ 17,114.16	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
Temporary Discharge Monitoring								
Eng. Est.	Aqueous Sampling, Metals	30	EA	$ 130.00			$ 3,900.00	24-hr turn around expedited at additional 100% of cost
Eng. Est.	Aqueous Sampling, VOCs	30	EA	$ 140.00			$ 4,200.00	24-hr turn around expedited at additional 100% of cost
Decontamination Facility								
33290401	25 gpm, 1-1/2" discharge, cast iron sump pu	1	EA	$ -	$ -	$ 2,317.00	$ 3,035.27	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
33290704	50' Flexible, Product Discharge Hose	1	EA	$ -	$ -	$ 175.00	$ 229.25	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
02060.150.0300	3/4" crushed stone borrow, spread w/ 200 HP dozer, no compaction, 2 mi rt haul	56	CY	$ 27.50	$ 1.43	$ 3.12	$ 2,081.47	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation, assume 30 ft by 50 ft by one foot thick
02315.310.5100	Compaction, General, riding vibrating roller, 12" lifts, 4 passes	56	ECY	$ -	$ 0.16	$ 0.16	$ 20.78	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
3308544	60-mil Polymeric Liner, Very Low Density I	167	SY	$ 1.97	$ -		$ 430.12	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation, assume 30 ft by 50 ft
							$ 521.82	
33080534	16 oz/sy nonwoven geotextile	167	SY	$ 2.39	$ -			RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
33170814	1,800 psi pressure washer, 6HP, 4.8 gpm	1	EA	$ -	$ -	$ 1,635.00	$ 2,141.85	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
19040605	2,000 gal steel sump, aboveground w/ supports and fittings	1	EA	$ 2,233.00	$ 853.69	$ 123.26	$ 4,205.03	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
33170823	Operation of pressure washer, including water, soap, electricity, and labor	40	HR	$ -	$ -	$ 41.69	$ 2,184.56	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation, assume 4 hours per day
33410101	Pump and motor maintenance/repair	1	EA	$ -	$ -	$ 431.15	$ 564.81	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
Erosion and Sediment Control Measures								
18050206	Filter Barrier, Silt Fences, Vinyl, 3' High with 7.5' Posts	500	LF	$ 0.70	$ 1.41	$ -	$ 1,382.05	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation, around work area
Demolition and MPE Trailer Demobilization								
024113.17.5100	Bituminous Driveways	500	SY	$ -	$ 2.22	$ 1.63	$ 2,015.48	RSMeans 2009 Heavy Construction Cost Data adjusted by 1.047 multiplier for escalation
024113.17.5200	Concrete to 6" thick	100	SY	$ -	$ 5.55	$ 4.10	$ 1,264.15	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
	C&D Debris Transportation and Disposal	114	TON	$ -	$ 85.00	$ -	$ 9,705.94	Engineer's estimate
	Trailer Demobilization	1	EA	$ -	$ -	$10,000	$ 10,000.00	Engineer's estimate
	Monitoring and Extraction Well Removal	256	LF	$ -	$ -	$20	$ 5,056.00	Engineer's estimate
1006 S. Clinton Ave. Building Demolition								
024116.17.2040	Single story concrete building - walls	1560	SF	$ -	$ 2.31	$ -	$ 3,603.60	RSMeans 2009 Heavy Construction Cost Data
024116.17.0400	Slab	1056	SF	$ -	$ 5.85	$ -	$ 6,177.60	RSMeans 2009 Heavy Construction Cost Data
024116.17.1000	Footings	130	LF	$ -	$ 14.30	$ -	$ 1,859.00	RSMeans 2009 Heavy Construction Cost Data
	C&D Debris Transportation and Disposal	114	TON	$ -	$ 85.00	$ -	$ 9,662.80	Engineer's estimate
	Utility capping	1	LS	$ -	$ 1,000.00	$ -	$ 1,000.00	Engineer's estimate
	Permitting	1	LS	$ -	$ 500.00	$ -	$ 500.00	Engineer's estimate

Alternative 3 – Restoration to Pre-Disposal Conditions

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
Survey of Work/Stockpile Areas								
	Surveying - 2-man Crew	1	DAY	$ 1,500.00	$ -	$ -	$ 1,500.00	Engineer's estimate
	Task Subtotal						$ 138,355.14	
Excavation and Off-site Disposal of Site Soil								
Eng. Est.	Sheet Piling	12900	SF	$ 35.00	$ -	$ -	$ 472,720.50	Excavation perimeter for 20' excavation. Piling driven, extracted and salvaged.
Eng. Est.	Sheet Pile bracing and anchoring	1	LS	$ -	$ -	$ -	$ 472,720.50	Assume that excavation bracing will be 100% of sheet piling cost
Eng. Est.	Excavation, soil, loading for stockpile	5,453	BCY	$ 9.21	$ -	$ -	$ 50,240.15	Refer to Excavation Rate Calculations
Eng. Est.	Absorbent	53,352	LB	$ 2.25	$ -	$ -	$ 120,041.67	Refer to Alternative 3 Calculations; assumes 25 lb/cy-soil
Eng. Est.	Absorbent application	120	HR	$ 65.70	$ -	$ -	$ 8,254.55	RSMeans Heavy Construction Cost Data 2009., assume labor crew B6.
Clean Stockpile								
02315.490.0310	Hauling, excavated material, 12 CY dump truck, 1/4 mile RT	2399	LCY	$ -	$ 0.79	$ 1.66	$ 6,872.19	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
Eng. Est.	Stockpile construction and management	1	LS	$ 5,000.00	$ -	$ -	$ 5,000.00	Assumed cost for construction of stockpiles and erosion controls
311413.23.0020	Stockpile loadout and management	2399	CY	$ -	$ 0.20	$ 0.47	$ 1,607.64	Assumed cost for management of stockpiles.
Contaminated Stockpile								
02315.490.0310	Hauling, excavated material, 12 CY dump truck, 1/4 mile RT	3599	LCY	$ -	$ 0.79	$ 1.66	$ 10,308.29	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
Eng. Est.	Stockpile construction and management	1	LS	$ 5,000.00	$ -	$ -	$ 5,000.00	Assumed cost for construction of stockpiles and erosion controls
311413.23.0020	Stockpile loadout and management	3599	CY	$ -	$ 0.20	$ 0.47	$ 2,411.46	Assumed cost for management of stockpiles.
33021720	Testing, purgeable organics (624, 8260)	9	EA	$ 146.90	$ -	$ -	$ 1,322.10	Confirmation Sampling per NYSDEC DER-10. 1 sample per 900 sf bottom; no sidewall sampling due to sheet pile
Transportation and Disposal								
Vendor	Transportation and Disposal, VOCs less than 60 ppm	4490	TON	$ 115.88	$ -	$ -	$ 520,282.08	Refer to Disposal Cost Calculations
Vendor	Transportation and Disposal, VOCs between 60 and 180 ppm	717	TON	$ 210.06	$ -	$ -	$ 150,576.78	Refer to Disposal Cost Calculations
Vendor	Transportation and Disposal, VOCs greater than 180 ppm	315	TON	$ 1,328.40	$ -	$ -	$ 418,436.04	Refer to Disposal Cost Calculations
	Task Subtotal						$ 2,245,793.95	
In-Situ Chemical Oxidation								
Contractor Costs								
Eng. Est	Mobilization	1	LS	$ -	$ -	$ 20,000.00	$ 20,000.00	
Eng. Est	Work Plan	1	LS	$ -	$ -	$ 10,000.00	$ 10,000.00	
Eng. Est	Field Technician	20	HR	$ -	$ 70.00	$ -	$ 1,400.00	
Eng. Est	Equipment	1	LS	$ -	$ -	$ 2,500.00	$ 2,500.00	
Vendor	Reagent	72,916	LB	$ 2.53			$ 184,476.98	Based on Carus product information
Eng. Est	Demobilization	1	LS	$ -	$ -	$ 15,000.00	$ 15,000.00	
	Task Subtotal						$ 233,376.98	

Alternative 3 – Restoration to Pre-Disposal Conditions

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
Site Restoration								
Backfill excavation								
02315.490.0310	Hauling, clean excavated material, 12 CY du truck, 1/4 mile RT	2399	LCY	$ -	$ 0.79	$ 1.66	$ 6,872.19	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
02315.210.4060	Borrow, Loading, commmon earth, 1-1/2 CY bucket	3,959	LCY	$ 8.25	$ 0.42	$ 0.25	$ 41,283.64	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
02315.490.0560	Hauling, excavated or borrow, loose CY, 12 CY dump truck, 20 mile round trip, 0.4 loads per hour	3959	LCY	$ -	$ 5.80	$ 12.20	$ 83,307.80	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation, assume 10% fluff
02315.120.3220	Backfill, Structural, dozer or FE Loader, from existing stockpile, no compaction, 105 HP, 150' haul, common earth	6359	LCY	$ -	$ 0.66	$ 0.76	$ 10,555.13	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
02315.310.7000	Compaction, Walk behind, vibrating plate 18" wide, 6" lifts, 2 passes	6359	ECY	$ -	$ 1.10	$ 0.13	$ 9,142.82	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation, assume 10% consolidation
321216.14.0020	Asphaltic Base Course	6350	SF	$ 2.07	$ 0.19	$ 0.24	$ 16,621.13	RSMeans Heavy Construction Cost Data 2009. Assume 9" thick. Assume repaved 1018 S. Clinton driveway. Adjusted by 1.047 multiplier for escalation.
	Task Subtotal						$ 167,782.71	

ALTERNATIVE ANNUAL AND PERIODIC COSTS

NONE

PRESENT VALUE OF ANNUAL AND PERIODIC COSTS FOR ALTERNATIVE 3 – Restoration to Pre-Disposal Conditions

Year	Cost*	Number of Annual Periods	Annual Discount Rate	Number of 2-Year Periods	2-Year Discount Rate	Number of 4-Year Periods	4-Year Discount Rate	Total Non-Discounted Cost	Present Value Cost
Capital (Year 0)	$ 4,125,000	1	0	NA	NA	NA	NA	$ 4,125,000.00	$ 4,125,000.00
Quarterly Monitoring (Years 1-2)	$ -	2	0.05	NA	NA	NA	NA	$ -	$ -
Semi-Annual Monitoring (Years 3-4)	$ -	2	0.05	1	0.1025	NA	NA	$ -	$ -
Annual Monitoring (Years 5-30)	$ -	26	0.05	NA	NA	1	0.215506	$ -	$ -
Annual Performance Reporting (Years 1-30)	$ -	30	0.05	NA	NA	NA	NA	$ -	$ -
Totals								**$ 4,125,000.00**	**$ 4,125,000.00**

*Annual and periodic costs include 10% for technical support and 15% contingency for unforeseen project complexities, including insurance, taxes, and licensing costs.
Capital costs include 25% contingency, as well as project management, remedial design, and construction management costs per DER-10 guidance.
Discount rate of 5% (for 30-years) percent based on NYSDEC PRAP Outline / Instructions.

Prepared by: BPN 12/13/10
Checked by: NRL 12/14/10

Alternative 4 - Enhanced Multiphase Extraction

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
Subtask								
Assembly (1)								
CAPITAL COSTS								
Pre-Design Investigation								
	Mobilization/Demobilization	1	LS	$ 1,500.00			$ 1,500.00	Engineer's estimate
	Geoprobe	2	DAY	$ 1,500.00			$ 3,000.00	Engineer's Estimate
	Small-Diameter Vacuum Monitoring Pts.	6	EA	$ 100.00			$ 600.00	Engineer's estimate
	Oversight	2	DAY		$ 1,000.00	$ 50.00	$ 2,100.00	Engineer's Estimate
						Subtotal	$ 7,200.00	
Installation of new extraction points (6 points total)								
	Hollow stem auger	7	DAY	$ 2,000.00	$ -	$ 250.00	$ 15,750.00	GeoSearch quote for track mounted drill rig (3 wells per day)
	Mobilization/Demobilization	1	LS	$ 1,500.00	$ -		$ 1,500.00	Engineer's estimate
	Trenching (Extractor and Crew)	5	DAY		$ 266.15	$ 2,500.00	$ 13,830.75	Engineer's estimate
	Pneumatic Pumps (1 per extraction well)	20	LS	$ 338.00	$ 250.00	$ -	$ 11,760.00	Engineer's estimate (14.2 gpm pump) and labor unit costs
	Valves, gauges, flexible tubing	20	LS	$ 75.00	$ 120.00	$ -	$ 3,900.00	Engineer's estimate of valves, gauges and flex tubbing per pump
	Air line (3/4" LLDPE)	600	LF	$ 0.74	$ -	$ -	$ 444.00	
	2" HDPE Piping	600	LF	$ 2.70	$ -	$ -	$ 1,620.00	Engineer's estimate (30' of piping per extraction point)
	2" tee and 2" elbow	20	LS	$ 37.00	$ -	$ -	$ 740.00	One per extraction well
	4-inch diameter PVC well screen	150	LF	$ 26.50	$ -	$ -	$ 3,975.00	Average 7.5 ft per well
	4-inch diameter PVC well riser	80	LF	$ 31.50	$ -	$ -	$ 2,520.00	Average 4 ft per well
	Decontamination	20	EA	$ -	$ 160.00	$ -	$ 3,200.00	per installation
	Flushmount Well Cover	20	EA	$ 160.00	$ -	$ -	$ 3,200.00	per installation
	Labor of water line, pump, and air line installation	8	DAY	$ -	$ 600.00	$ -	$ 4,800.00	3-laborer crew
	Connection, startup and proveout	2	DAY	$ -	$ 1,200.00	$ -	$ 2,400.00	2 field technicians for 2 days
						Subtotal	$ 69,639.75	

Prepared by: BPN 12/09/10
Checked by: NRL 12/14/10
Revised by: BPN 1/13/11
Checked by: RES 1/14/11

Institutional Controls

Task Subtotal						$ 26,548.54	

ALTERNATIVE ANNUAL AND PERIODIC COSTS

Annual OM&M (Years 1-5)

Assume 5 years until asymptotic mass removal rates.

OM&M of MPE System							
Labor, Indirect Costs, and Fees	1	LS		$ 81,585.50		$ 81,585.50	Contractor labor, assumed 25% increase
Expenses - Total Actual, Breakdown Estimated							
Analytical, Aqueous, VOCs	144	EA	$ 100.00			$ 14,400.00	36 per quarterly event, estimated rate
Analytical, Vapor, VOCs	160	EA	$ 250.00			$ 40,000.00	40 per quarterly event, estimated rate
Electrical	12	MO	$ 330.00			$ 3,960.00	estimated, asume 10% increase
Telephone	12	MO	$ 150.00			$ 1,800.00	estimated
Miscellaneous, Shipping Costs	12	MO	$ 125.00			$ 1,500.00	estimated, assume 25% increase
Chemicals	12	MO	$ 175.00			$ 2,100.00	estimated, assume 25% increase
Repairs	1	LS	$ 18,750.00		$ 6,250.00	$ 25,000.00	estimated, assume 25% increase
Task Subtotal						$ 170,345.50	

Periodic Institutional Control Inspections and Reporting (Years 1-30)

Refer to Alternative 5

Task Subtotal						$ 3,460.24	

Long-Term Monitoring (Years 6-30)

Refer to Alternative 5

Task Subtotal						$ 30,993.85	Quarterly monitoring costs

Notes:
1) Assembly numbers presented indicate RACER/RS MEANS assembly code

Prepared by: BPN 12/09/10
Checked by: NRL 12/14/10
Revised by: BPN 1/13/11
Checked by: RES 1/14/11

PRESENT VALUE OF ANNUAL AND PERIODIC COSTS FOR ALTERNATIVE 4 (Enhanced Multiphase Extraction)

Year	Cost*	Number of Annual Periods	Annual Discount Rate	Number of 5-Year Periods	5-Year Discount Rate	Number of 10-Year Periods	10-Year Discount Rate	Total Non-Discounted Cost	Present Value Cost
Capital (Year 0)	$ 177,000	1	0	NA	NA	NA	NA	$ 177,000.00	$ 177,000.00
Annual SSV OM&M (1-5)	$ 230,000	5	0.05	NA	NA	NA	NA	$ 1,150,000.00	$ 995,779.63
Periodic Inspections and Reporting (Years 1-30)	$ 3,460	30	0.05	NA	NA	NA	NA	$ 103,807.20	$ 53,192.37
Quarterly Monitoring (Years 6-7)	$ 30,994	2	0.05	NA	NA	NA	NA	$ 61,987.70	$ 57,630.29
Semi-Annual Monitoring (Years 8-9)	$ 15,497	2	0.05	NA	NA	NA	NA	$ 30,993.85	$ 28,815.14
Annual Monitoring (Years 10-30)	$ 7,748	21	0.05	NA	NA	NA	NA	$ 162,717.71	$ 99,344.22
Totals								**$ 1,686,506.46**	**$ 1,411,761.66**

*Annual and periodic costs include 10% for technical support and 25% contingency for unforeseen project complexities, including insurance, taxes, and licensing costs.
Capital costs include 25% contingency, as well as and project management, remedial design, and construction management costs per DER-10 guidance.

Discount rate of 5% (for 30-years) percent based on NYSDEC PRAP Outline / Instructions.

Prepared by: BPN 12/10/10
Checked by: NRL 12/14/10

Alternative 5 - In-Situ Source Treatment - Chemical Oxidation with Soil Mixing

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
Subtask								
Assembly (1)								
ALTERNATIVE CAPITAL COSTS								
Pre-Design Investigation								
Refer to Alternative 3								
	Task Subtotal						$ 77,818.32	
Institutional Controls								
Refer to Alternative 2								
	Task Subtotal						$ 26,548.54	
Mobilization and Temporary Facilities and Controls								
Refer to Alternative 3								Assume similar except for dewatering/wastewater treatment system, which is excluded.
	Task Subtotal						$ 112,240.98	
In-Situ Soil Mixing								
Contractor Costs								
	Mobilization	1	LS	$ -	$ -	$ 30,000.00	$ 30,000.00	Engineer's estimate
	Work Plan	1	LS	$ -	$ -	$ 20,000.00	$ 20,000.00	Engineer's estimate
MACTEC	Excavation, soil, loading for stockpile	1,484	CY	$ -	$ -	$ 12.00	$ 17,807.05	Refer to Excavation Rate Calculations. Assume top 5' must be removed to allow for mixing to bedrock.
Clean Stockpile								
02315.490.0310	Hauling, excavated material, 12 CY dump truck, 1/4 mile RT	1633	LCY	$ -	$ 0.79	$ 1.66	$ 4,676.53	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
Eng. Est.	Sheet Piling system	1175	SF	$ 40.00	$ -	$ -	$ 47,000.00	Shoring for building at 1006 South Clinton Ave.
Eng. Est.	Sheet Pile bracing and anchoring	1	LS	$ -	$ -	$ -	$ 47,000.00	Assume that bracing and anchoring will be 100% of sheet piling cost
	Reagent	81,439	LB	$ 2.53			$ 206,040.78	Engineer's estimate based on Carus permanganate product information (40% liquid solution)
	Soil Mixing	3,784	CY	$ -	$ -	$ 28.00	$ 105,964.44	Engineer's estimate
	Demobilization	1	LS	$ -	$ -	$ 25,000.00	$ 25,000.00	Engineer's estimate
	Task Subtotal						$ 503,488.81	

Alternative 5 - In-Situ Source Treatment - Chemical Oxidation with Soil Mixing

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
Subtask Assembly (1)								
Site Restoration								
02315.120.3220	Backfill, Structural, dozer or FE Loader, from existing stockpile, no compaction, 105 HP, 150' haul, common earth	1633	LCY	$ -	$ 0.66	$ 0.76	$ 2,710.48	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation. Assumes fill from 5 ' to 0.75' bgs
02315.310.7000	Compaction, Walk behind, vibrating plate 18" wide, 6" lifts, 2 passes	1633	ECY	$ -	$ 1.10	$ 0.13	$ 2,347.81	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation.
321216.14.0020	Asphaltic Base Course	6812	SF	$ 2.07	$ 0.19	$ 0.24	$ 17,830.41	RSMeans Heavy Construction Cost Data 2009. Assume 9" thick. Adjusted by 1.047 multiplier for escalation.
	Task Subtotal						$ 22,888.70	
ALTERNATIVE ANNUAL AND PERIODIC COSTS								
Periodic Institutional Control Inspections and Reporting								
MACTEC	Inspection	4	HR		$ 90.00	$ 25.00	$ 537.74	RACER 2006 adjusted by 1.169 multiplier for escalation
MACTEC	Report	1	LS	$ -	$ 2,500.00	$ -	$ 2,922.50	RACER 2006 adjusted by 1.169 multiplier for escalation
	Task Subtotal						$ 3,460.24	
Long-Term Monitoring (Example Annual costs for Quarterly Sampling)								
Groundwater Monitoring								
33020401	Disposable Materials per Sample	96	EA	$ 8.08	$ -	$ -	$ 775.68	
33020402	Decontamination Materials per Sample	96	EA	$ 6.82	$ -	$ -	$ 654.72	
Eng. Est.	Monitor well sampling equipment, rental, water quality testing parameter device rental	3	WK	$ 500.00	$ -	$ -	$ 1,500.00	Assume 3 days per event --> approximately 3 weeks
33021618	Volatile Organic Analysis (EPA 8260)	96	EA	$ 100.00	$ -	$ -	$ 9,600.00	Assumes 24 wells sampled quarterly for VOCs.
33021620	Testing, TAL metals (6010/7000s)	0	EA	$ 314.88	$ -	$ -	$ -	
33231186	Well Development Equipment Rental (weekly)	3	WK	$ 116.99	$ 64.76	$ -	$ 545.25	
33231189	DOT steel drums, 55 gal., open, 17C	5	EA	$ 456.14	$ -	$ -	$ 2,280.70	Assumes pickup, transport and disposal costs included
Eng. Est.	Field Technician	180	HR	$ -	$ 75.00	$ -	$ 13,500.00	1 tech; assume 3 days per sampling event
33010202	Per Diem	22.5	DAY	$ 95.00	$ -	$ -	$ 2,137.50	
	Task Subtotal						$ 30,993.85	

PRESENT VALUE OF ANNUAL AND PERIODIC COSTS FOR ALTERNATIVE 5 (In-Situ Source Treatment - Chemical Oxidation with Soil Mixing)

Year	Cost*	Number of Annual Periods	Annual Discount Rate	Number of 5-Year Periods	5-Year Discount Rate	Number of 10-Year Periods	10-Year Discount Rate	Total Non-Discounted Cost	Present Value Cost
Capital (Year 0)	$ 1,122,000	1	0	NA	NA	NA	NA	$ 1,122,000.00	$ 1,122,000.00
Periodic Inspections and Reporting (Years 1-30)	$ 3,460	30	0.05	NA	NA	NA	NA	$ 103,807.20	$ 53,192.37
Quarterly Monitoring (Years 1-2)	$ 30,994	2	0.05	NA	NA	NA	NA	$ 61,987.70	$ 57,630.29
Semi-Annual Monitoring (Years 3-4)	$ 15,497	2	0.05	NA	NA	NA	NA	$ 30,993.85	$ 28,815.14
Annual Monitoring (Years 5-30)	$ 7,748	26	0.05	NA	NA	NA	NA	$ 201,460.03	$ 111,385.58
Totals								**$ 1,520,248.78**	**$ 1,373,023.39**

*Annual and periodic costs include 10% for technical support and 25% contingency for unforeseen project complexities, including insurance, taxes, and licensing costs.
Capital costs include 25% contingency, as well as and project management, remedial design, and construction management costs per DER-10 guidance.

Discount rate of 5% (for 30-years) percent based on NYSDEC PRAP Outline / Instructions.

Prepared by: BPN 12/10/10
Checked by: NRL 12/14/10

Alternative 6 – Discrete Soil Source Excavation and Off-Site Disposal and in-Situ Enhanced Biodegradation with Groundwater Monitoring

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
ALTERNATIVE CAPITAL COSTS								
Pre-Design Investigation								
Refer to Alternative 3								
	Task Subtotal						$ 77,818.32	Assume bench testing for bioremediation amendment includes bench-scale study, soil/groundwater sampling and analysis, and pilot-scale injection
Institutional Controls								
Refer to Alternative 2								
	Task Subtotal						$ 26,548.54	
Mobilization and Temporary Facilities and Controls								
Temporary Utilities								
Eng. Est	Site Superintendent	120	HR	$ -	$ 100.00	$ -	$ 12,000.00	
Eng. Est	Site Foreman	120	HR	$ -	$ 75.00	$ -	$ 9,000.00	
99040101	Temporary Office 20' x 8'	0.5	MO	$ 206.42	$ -	$ -	$ 135.21	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
99140201	Temporary Storage Trailer 16' x 8'	0.5	MO	$ 80.72	$ -	$ -	$ 52.87	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
99040501	Portable Toilets	0.5	MO	$ 82.65	$ -	$ -	$ 54.14	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
01520.550.0140	Telephone utility fee	0.5	MO	$ 210.00	$ -	$ -	$ 122.75	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
MACTEC	Electrical utility fee	0.5	MO	$ 200.00	$ -	$ -	$ 100.00	
01520.550.0100	Field office expenses, office equipment rental, average	0.5	MO	$ 145.00	$ -	$ -	$ 84.75	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
Dewatering/Wastewater Treatment System								
Eng. Est.	Frac EQ Tank	15	DAY	$ 30.00	$ -	$ -	$ 450.00	Assumes 20,000 gallon FRAC EQ tank could be used to store water and existing MPE treatment tailer could be used for treatment.
02240.500.1000	Pumping 8 hr., attended 2 hrs. per day, including 20 LF of suction hose and 100 LF of discharge hose, w/ 4" diaphragm pumped used 8 hrs.	15	DAY	$ -	$ 405.00	$ 83.00	$ 8,557.08	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
Temporary Discharge Monitoring								
Eng. Est.	Aqueous Sampling, Metals	1	EA	$ 130.00			$ 130.00	24-hr turn around expedited at additional 100% of cost
Eng. Est.	Aqueous Sampling, VOCs	1	EA	$ 140.00			$ 140.00	24-hr turn around expedited at additional 100% of cost
Decontamination Facility								
33290401	25 gpm, 1-1/2" discharge, cast iron sump pum	1	EA	$ -	$ -	$ 2,317.00	$ 3,035.27	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
33290704	50' Flexible, Product Discharge Hose	1	EA	$ -	$ -	$ 175.00	$ 229.25	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
02060.150.0300	3/4" crushed stone borrow, spread w/ 200 HP dozer, no compaction, 2 mi rt haul	56	CY	$ 27.50	$ 1.43	$ 3.12	$ 2,081.47	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation, assume 30 ft by 50 ft by one foot thick
02315.310.5100	Compaction, General, riding vibrating roller, 12" lifts, 4 passes	56	ECY	$ -	$ 0.16	$ 0.16	$ 20.78	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
3308544	60-mil Polymeric Liner, Very Low Density Po	167	SY	$ 1.97	$ -		$ 430.12	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation, assume 30 ft by 50 ft
							$ 521.82	
33080534	16 oz/sy nonwoven geotextile	167	SY	$ 2.39	$ -			RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
33170814	1,800 psi pressure washer, 6HP, 4.8 gpm	1	EA	$ -	$ -	$ 1,635.00	$ 2,141.85	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
19040605	2,000 gal steel sump, aboveground w/ supports and fittings	1	EA	$ 2,233.00	$ 853.69	$ 123.26	$ 4,205.03	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
33170823	Operation of pressure washer, including water, soap, electricity, and labor	40	HR	$ -	$ -	$ 41.69	$ 2,184.56	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation, assume 4 hours per day

Alternative 6 – Discrete Soil Source Excavation and Off-Site Disposal and in-Situ Enhanced Biodegradation with Groundwater Monitoring

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
33410101	Pump and motor maintenance/repair	1	EA	$ -	$ -	$ 431.15	$ 564.81	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
Erosion and Sediment Control Measures								
18050206	Filter Barrier, Silt Fences, Vinyl, 3' High with 7.5' Posts	500	LF	$ 0.70	$ 1.41	$ -	$ 1,382.05	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation, around work area
Demolition and MPE Trailer Demobilization								
024113.17.5100	Bituminous Driveways	178	SY	$ -	$ 2.22	$ 1.63	$ 716.61	RSMeans 2009 Heavy Construction Cost Data adjusted by 1.047 multiplier for escalation
024113.17.5200	Concrete to 6" thick	28	SY	$ -	$ 5.55	$ 4.10	$ 351.15	RSMeans 2004 ECHOS adjusted by 1.31 multiplier for escalation
	C&D Debris Transportation and Disposal	38	TON	$ -	$ 85.00	$ -	$ 3,235.31	Engineer's estimate
	Trailer Demobilization	1	EA	$ -	$ -	$10,000	$ 10,000.00	Engineer's estimate
	Monitoring and Extraction Well Removal	56.5	LF	$ -	$ -	$20	$ 1,115.88	Engineer's estimate
Survey of Work/Stockpile Areas								
	Surveying - 2-man Crew	1	DAY	$ 1,500.00	$ -	$ -	$ 1,500.00	Engineer's estimate
	Task Subtotal						$ 64,542.75	Assume similar mobilization, facilities and controls as Alternative 3.
Excavation and Off-site Disposal of Source Area Soil								
Eng. Est.	Sheet Piling	6000	SF	$ 35.00	$ -	$ -	$ 219,870.00	Excavation perimeter for excavation depth of 20 ft bgs
Eng. Est.	Sheet Pile bracing and anchoring	1	LS	$ -	$ -	$ -	$ 219,870.00	Assume that excavation bracing will be 100% of sheet piling cost
Eng. Est.	Excavation, soil, loading for stockpile	1,463	BCY	$ 6.90	$ -	$ -	$ 10,088.61	Refer to Excavation Rate Calculations
Eng. Est.	Absorbent	14,815	LB	$ 2.25	$ -	$ -	$ 33,333.33	Refer to Alternative 6 Calculations; assumes 25 lb/cy-soil
Eng. Est.	Absorbent application	120	HR	$ 65.70	$ -	$ -	$ 7,884.00	RSMeans Heavy Construction Cost Data 2009., assume labor crew B6.
Clean Stockpile								
02315.490.0310	Hauling, excavated material, 12 CY dump truck, 1/4 mile RT	644	LCY	$ -	$ 0.79	$ 1.66	$ 1,843.60	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
Eng. Est.	Stockpile construction and management	1	LS	$ 2,000.00	$ -	$ -	$ 2,000.00	Assumed cost for construction of stockpiles and erosion controls
311413.23.0020	Stockpile loadout and management	644	CY	$ -	$ 0.20	$ 0.47	$ 431.28	Assumed cost for management of stockpiles.
Contaminated Stockpile								
02315.490.0310	Hauling, excavated material, 12 CY dump truck, 1/4 mile RT	966	LCY	$ -	$ 0.79	$ 1.66	$ 2,765.40	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
Eng. Est.	Stockpile construction and management	1	LS	$ 2,000.00	$ -	$ -	$ 2,000.00	Assumed cost for construction of stockpiles and erosion controls
311413.23.0020	Stockpile loadout and management	966	CY	$ -	$ 0.20	$ 0.47	$ 646.92	Assumed cost for management of stockpiles.
33021720	Testing, purgeable organics (624, 8260)	3	EA	$ 146.90	$ -	$ -	$ 440.70	Confirmation Sampling per NYSDEC DER-10
Transportation and Disposal								
Vendor	Transportation and Disposal, VOCs less than 60 ppm	484	TON	$ 115.88	$ -	$ -	$ 56,047.33	Refer to Disposal Cost Calculations
Vendor	Transportation and Disposal, VOCs between 60 and 180 ppm	694	TON	$ 210.06	$ -	$ -	$ 145,848.07	Refer to Disposal Cost Calculations
Vendor	Transportation and Disposal, VOCs greater than 180 ppm	303	TON	$ 1,328.40	$ -	$ -	$ 402,881.80	Refer to Disposal Cost Calculations
	Task Subtotal						$ 1,105,951.04	
In-Situ Enhanced Biodegradation								
Injection Well Installation								Total of 6 injection wells. Assume 3/day.
Eng. Est.	Field Technician	16	HR	$ -	$ 75.00	$ -	$ 1,200.00	Days includes per diem
33010102	Van Rental	2	DAY	$ 38.48	$ -	$ -	$ 76.96	
33010101	Mobilize/Demobilize Drilling Rig & Crew	1	LS	$ -	$ 2,855.00	$ 969.76	$ 3,824.76	Assume level D protection.
33231178	Move Rig/Equipment Around Site	6	EA	$ 58.00	$ 100.80	$ 139.40	$ 1,789.20	
33020303	Organic Vapor Analyzer Rental, per Day	2	DAY	$ 115.88	$ -	$ -	$ 231.75	
33170808	Decontaminate Rig, Augers,	6	DAY	$ -	$ 108.60	$ -	$ 651.60	

Prepared by: BPN 12/09/10
Checked by: NRL 12/14/10
Revised by: BPN 1/13/11
Checked by: RES 1/14/11

Alternative 6 – Discrete Soil Source Excavation and Off-Site Disposal and in-Situ Enhanced Biodegradation with Groundwater Monitoring

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
	Screen (Rental Equipment)							
Well Construction - Injection Grid								
33231103	Hollow Stem Auger, 11" Dia Borehole, Depth <=100 ft	120	LF	$ -	$ 11.62	$ 33.13	$ 5,370.00	Wells to 20 feet bgs
33230122	4" Stainless Steel, Well Casing	12	LF	$ 28.96	$ 3.51	$ 10.00	$ 509.69	2 feet to top of well screen
33230222	4" Stainless Steel, Well Screen	60	LF	$ 28.96	$ 3.51	$ 10.00	$ 2,548.44	10-foot screens
33231402	4" Screen, Filter Pack	60	LF	$ 5.50	$ 3.51	$ 10.00	$ 1,140.70	
33231802	4" Well, Grout	12	LF	$ 5.09	$ 19.98	$ 57.00	$ 984.79	
33232102	4" Well, Bentonite Seal	6	EA	$ 23.16	$ 19.72	$ 56.26	$ 594.84	
33231189	DOT steel drums, 55 gal., open,	18	EA	$ 81.00	$ -	$ -	$ 1,458.00	three drums per well
20836142	Load soil into 55 gal drums	18	EA	$ -	$ 29.33	$ -	$ 527.94	
33190303	Transport/Dispose (non-haz)	18	EA	$ 255.77	$ -	$ -	$ 4,603.86	
Injection Program								
HRC Backup	HRC Material (grid injections)	540	LBS	$ 0.53	$ -	$ -	$ 285.66	Includes 15% for tax and shipping
	HRC Material (excavations)	58,748	LBS	$ 0.46	$ -	$ -	$ 27,024.08	Includes 15% for tax and shipping
	Injection	2	DAYS		$ 1,000.00	$ 1,000.00	$ 4,000.00	Assumes 5 pts per day
	Task Subtotal						$ 56,822.27	
Site Restoration								
Backfill excavation								
02315.210.4060	Borrow, Loading, commmon earth, 1-1/2 CY bucket	966	LCY	$ 8.25	$ 0.42	$ 0.25	$ 10,068.31	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
02315.490.0560	Hauling, excavated or borrow, loose CY, 12 CY dump truck, 20 mile round trip, 0.4 loads per hour	966	LCY	$ -	$ 5.80	$ 12.20	$ 20,317.22	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation, assume 10% fluff
02315.120.3220	Backfill, Structural, dozer or FE Loader, from existing stockpile, no compaction, 105 HP, 150' haul, common earth	1609	LCY	$ -	$ 0.66	$ 0.76	$ 2,671.34	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation
02315.310.7000	Compaction, Walk behind, vibrating plate 18" wide, 6" lifts, 2 passes	1609	ECY	$ -	$ 1.10	$ 0.13	$ 2,313.91	RSMeans Site Work & Landscape Cost Data 2006 adjusted by 1.169 multiplier for escalation, assume 10% consolidation
321216.14.0020	Asphaltic Base Course	6812	SF	$ 2.07	$ 0.19	$ 0.24	$ 17,830.41	RSMeans Heavy Construction Cost Data 2009 adjusted by 1.047 multiplier for escalation. Assume 9" thick.
	Task Subtotal						$ 53,201.19	
ALTERNATIVE ANNUAL AND PERIODIC COSTS								
Follow-up Bioremediation Injection								
Injection Program								
HRC Backup	Mobilization	1	LS	$ -	$ -	$ 5,000.00	$ 5,000.00	
	HRC Material (grid injections)	540	LBS	$ 0.53	$ -	$ -	$ 285.66	Includes 15% for tax and shipping
	Injection	2	DAYS		$ 1,000.00	$ 1,000.00	$ 4,000.00	Assumes 5 pts per day
	Oversight	2	DAYS					
	Task Subtotal						$ 9,285.66	
Periodic Institutional Control Inspections and Reporting								
Refer to Alternative 5								
	Task Subtotal						$ 3,460.24	
Long-Term Monitoring (Years 1 through 30)								
Refer to Alternative 5								
	Task Subtotal						$ 30,993.85	Quarterly monitoring costs

PRESENT VALUE OF ANNUAL AND PERIODIC COSTS FOR ALTERNATIVE 6 (Discrete Soil Source Excavation and Off-Site Disposal and in-Situ Enhanced Biodegradation with Groundwater Monitoring)

Year	Cost*	Number of Annual Periods	Annual Discount Rate	Number of 2-Year Periods	2-Year Discount Rate	Number of 4-Year Periods	4-Year Discount Rate	Total Non-Discounted Cost	Present Value Cost
Capital (Year 0)	$ 2,100,000	1	0	NA	NA	NA	NA	$ 2,100,000.00	$ 2,100,000.00
Follow-up Amendment Injection (Year 1 or 2)	$ 9,286	1	0.05	NA	NA	NA	NA	$ 9,285.66	$ 8,843.49
Quarterly Monitoring (Years 1-2)	$ 30,994	2	0.05	NA	NA	NA	NA	$ 61,987.70	$ 57,630.29
Semi-Annual Monitoring (Years 3-4)	$ 15,497	2	0.05	NA	NA	NA	NA	$ 30,993.85	$ 28,815.14
Annual Monitoring (Years 5-30)	$ 7,748	26	0.05	NA	NA	NA	NA	$ 201,460.03	$ 111,385.58
Annual Performance Reporting (Years 1-30)	$ 3,460	30	0.05	NA	NA	NA	NA	$ 103,807.20	$ 53,192.37
Totals								**$ 2,507,534.44**	**$ 2,359,866.87**

*Annual and periodic costs include 10% for technical support and 15% contingency for unforeseen project complexities, including insurance, taxes, and licensing costs.
Capital costs include 25% contingency, as well as project management, remedial design, and construction management costs per DER-10 guidance.
Discount rate of 5% (for 30-years) percent based on NYSDEC PRAP Outline / Instructions.

Prepared by: BPN 12/09/10
Checked by: NRL 12/14/10

Alternative 7 – In-Situ Electrical Resistance Heating

Task	Description	Quantity	Unit of Measure	Material Unit Cost	Labor Unit Cost	Equipment Unit Cost	Extended Cost	Comments/ Assumptions
Subtask								
Assembly (1)								
ALTERNATIVE CAPITAL COSTS								
Electrical Resistance Heating								
Based upon estimate provided by Thermal Remediation Services								
	TRS services	1	LS			$ 747,000.00	$ 747,000.00	Includes mobilization/demobilization, design, work plans, permits, drilling, soil disposal, electrode connection and usage, electricity, vapor recovery and treatment, operations, confirmatory sampling and well abandonment. See vendor backup for further detail.
	Subcontracted services	1	LS			$ 476,000.00	$ 476,000.00	
	Guaranteed remediation	1	LS			$ 122,300.00	$ 122,300.00	
	Task Subtotal						$ 1,345,300.00	
ALTERNATIVE ANNUAL AND PERIODIC COSTS								
Long-Term Monitoring (Years 1 through 30)								
Refer to Alternative 5								
	Task Subtotal						$ 30,993.85	

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Checked by: NRL 12/14/10
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PRESENT VALUE OF ANNUAL AND PERIODIC COSTS FOR ALTERNATIVE 7 (In-Situ Electrical Resistance Heating)

Year	Cost*	Number of Annual Periods	Annual Discount Rate	Number of 5-Year Periods	5-Year Discount Rate	Number of 10-Year Periods	10-Year Discount Rate	Total Non-Discounted Cost	Present Value Cost
Capital (Year 0)	$ 1,900,000	1	0	NA	NA	NA	NA	$ 1,900,000.00	$ 1,900,000.00
Quarterly Monitoring (Years 1-2)	$ 30,994	2	0.05	NA	NA	NA	NA	$ 61,987.70	$ 57,630.29
Semi-Annual Monitoring (Years 3-4)	$ 15,497	2	0.05	NA	NA	NA	NA	$ 30,993.85	$ 28,815.14
Annual Monitoring (Years 5-10)	$ 7,748	5	0.05	NA	NA	NA	NA	$ 38,742.31	$ 33,546.79
Totals								**$ 2,031,723.86**	**$ 2,019,992.22**

*Annual and periodic costs include 10% for technical support and 25% contingency for unforeseen project complexities, including insurance, taxes, and licensing costs.
Capital costs include 25% contingency, as well as and project management, remedial design, and construction management costs per DER-10 guidance.
Discount rate of 5% (for 30-years) percent based on NYSDEC PRAP Outline / Instructions.

Prepared by: BPN 12/10/10
Checked by: NRL 12/14/10

Demolition and Disposal

	Pavement	Concrete	units		
Length	75	30	ft		
Width	60	30	ft		
Area	500	100	yd^2		
Thickness	0.25	0.50	ft		
Volume	1125	450	ft^3		
Weight	82	33	tons	Assume density =	145 lb/cf

Building - 1006 S. Clinton

Length	32	ft	
Width	33	ft	
Height	12	ft	
Wall Area	1560	ft^2	Assume 6" thick concrete block walls
Floor area	1056	ft^2	Assume 6" thick concrete slab on grade
Footing length	130	ft	Assume concrete footing, 1' thick, 2 ' wide
Volume	1568	ft^3	
Weight	113.68	tons	

Excavation Volume

	Section A	Section B	Section C			
Length	86	35	10	ft	Section A: Eastern property blocks of 1012 Clinton and250 Benton	
Width	67	40	20	ft	Section B: Western property block adjacent to 1006 Clinton building including portion of 1006 Clinton property	
Area	5762	1400	200	ft^2	Section C: Small extent of 491-493 Caroline street property north of Site.	
Depth	20	20	20	ft		
Volume	115240	28000	4000	ft^3		
Volume	4268	1037	148	yd^3		
Total	5453			yd^3		
Tonnage	7203	1750	250	tons	Assume density =	125 lb/cf

Absorbent Quantity

Waste Lock 770=	53352	lbs	Assume absorbent ratio =	25 lb/cy

Sheet Piling

Perimeter	516	ft	
Depth	25	ft	Assume depth into weathered bedrock of 25'
Area	12900	ft^2	

Dipsosal Characaterization

Clean soil	1707	415	59	yd^3	Assume top 8 feet of soil is clean	
Tonnage	2881	700	100	tons		
> 180 ppm	140	46	0	yd^3		
Tonnage	237	78	0	tons	Assume density =	3375 lb/cy
180 ppm > x > 60 ppm	336	89	0	yd^3		
Tonnage	567	150	0	tons		
< 60 ppm	2085	487	89	yd^3		
Tonnage	3518	822	150	tons		

Estimated Bedrock Contamination (including downgradient)

	10ppm	5ppm			
Area	2874	8223	ft^2		
GW Depth	10	10	ft		
GW Volume	7184	20557	ft^3	Assume porosity =	0.25
Contaminant Conc	10	10	ppm		
Contaminant Mass	4	13	lb		

Estimated Saturated Contamination Downgradient

	10ppm			
Area	8223	ft^2		
GW Depth	10	ft		
GW Volume	35359	ft^3	Assume porosity =	0.43
Contaminant Conc	10	ppm		
Contaminant Mass	22	lb		

MPE Wells

256	ft	demolished
18.9	ft	grouted and abandoned

Site Restoration - 1018 S. Clinton Ave. Driveway

Area	950	ft^2

Prepared by: BPN 12/09/10
Checked by: NRL 12/14/10
Revised by: BPN 1/13/11
Checked by: RES 1/14/11

Excavation Unit Cost Calculation Based on Crew and Equipment Production Rates, Source Soils

Production

1. Excavated volume of soil	**5,453**	bcy	
2. Excavator	Typ. Hyd.		
3. Bucket Size	**2.5**	cy	
4. Bucket Fill Factor	**90%**		Note 1
5. CY/bucket	2.3	cy	
6. Operator/Site Efficiency	**25%**		Note 2
7. Cycles/minute	1.5		Note 3
8. Actual cycles/minute	0.375	cycles/min	
9. LCY/minute	0.8	lcy/min	
10. Productive minutes/hour	**49**	min/hr	Note 4
11. LCY/hour	41.3		
12. Hours/day	8	hrs/day	
13. LCY/day	330.75	lcy/day	
14. BCY/day	298	bcy/day	Note 5
15. Days to complete	19.3		
16. Crew Hours	160.0		Note 6

Labor and Equipment Costs

Unit	Quantity	Rate	Hours	Cost
1. Laborer	1	$31.60	160.0	$5,056.00
2. Operator	1	$41.35	160.0	$6,616.00
3. Excavator	1	$202.38	160.0	$32,380.00

Diesel (Note 7)

Machine	HP	$/gallon	Gallons/hr	Cost
Typ. Hyd.	222	$3.05	12.68	$6,188.15

Bucket Fill Factors

Moist Loam Sandy Soil	100-110%
Sand & Gravel	95-110%
Hard Tough Clay	80-90%
Rock - Well Blasted	60-75%
Rock - Poorly Blasted	40-50%

Total Excavation Costs (Note 8)

Lump Sum	$50,240.15
Cost/BCY	$9.21

Notes:

1. See "Bucket Fill Factors Table".
2. All inefficiencies are carried in the "Operator/Site Efficiency" line item.
3. "Cycles/minute" line item assumes 100% efficiency.
4. "Productive minutes/hour" accounts for time lost to:safety talk, nonproductive time before/after breaks, early breakdown.

calculation: 8 hr work day
15 minute safety talk
15 minutes post talk prior to productive work
10 minutes nonproductive time before and after coffee break (20 min total)
10 minutes nonproductive time before and after lunch break (20 min total)
15 minutes nonproductive time at end of day
85 nonproductive minutes/day
11 nonproductive minutes/hour
49 productive minutes/hour

5. Assume 10% shrink/swell conversion between bank cubic yards (bcy) and loose cubic yards (lcy).
6. Assume hours are rounded up to the nearest whole day.
7. Diesel unit price based on data reported by Energy Information Administration (EIA), Official Energy Statistics of the U.S. government, reported for 12/15/10, <http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp>
8. Total excavation cost estimate does not include mobilization/demobilization or transportation.

RemOx® S and L ISCO Reagents Estimation Spreadsheet

Input data into boxes with blue font.

Proj/Area: Dinaburg Distributing - Alt 3 10ppm Backfill and Groundwater. NOD=2

	Estimates	Units
Treatment Area Volume		
Length	-	ft
Width	-	ft
Area	7362	sq ft
Thickness	10	ft
Total Volume	2727	cu yd
Soil Characteristics/Analysis		
Porosity	30	%
Total Plume Pore Volume	165215	gal
Avg Contaminant Conc	-	ppm
Mass of Contaminant	5.00	lb
PNOD	2	g/kg
Effective PNOD	100	%
Effective PNOD Calculated	2	
PNOD Oxidant Demand	16196.4	lb
Avg Stoichiometric Demand	2.4	lb/lb
Contaminant Oxidant Demand	12.00	lb
Theoretical Oxidant Demand	16208.40	lb
Confidence Factor	2	
Calculated Oxidant Demand	32416.8	
Injection Volumes for RemOx S		
RemOx S Injection Concentration	2.5%	%
Total Volume of Injection Fluid	155,383	gal
Pore Volume Replaced	94.05	%

Amount of RemOx S ISCO Reagent Estimated	**32,417 pounds**

Injection Volumes for RemOx L		
RemOx L Injection Concentration	40.0%	%
Calculated Specific Gravity	1.366492	g/ml
Total Volume of Injection Fluid	6,382	gal
Pore Volume Replaced	3.86	%

Amount of RemOx L ISCO Reagent Estimated	**72,776 pounds** **6,367 gallons**

RemOx® S and L ISCO Reagents Estimation Spreadsheet

Input data into boxes with blue font.

Proj/Area: Dinaburg Distributing - Alt 3 5ppm Groundwater. NOD=2

	Estimates	Units
Treatment Area Volume		
Length	**-**	ft
Width	**-**	ft
Area	6812	sq ft
Thickness	**10**	ft
Total Volume	0	cu yd
Soil Characteristics/Analysis		
Porosity	**30**	%
Total Plume Pore Volume	0	gal
Avg Contaminant Conc	**-**	ppm
Mass of Contaminant	13.00	lb
PNOD	**2**	g/kg
Effective PNOD	**100**	%
Effective PNOD Calculated	2	
PNOD Oxidant Demand	0	lb
Avg Stoichiometric Demand	**2.4**	lb/lb
Contaminant Oxidant Demand	31.20	lb
Theoretical Oxidant Demand	31.20	lb
Confidence Factor	**2**	
Calculated Oxidant Demand	62.4	
Injection Volumes for RemOx S		
RemOx S Injection Concentration	**2.5%**	%
Total Volume of Injection Fluid	299	gal
Pore Volume Replaced	#DIV/0!	%

Amount of RemOx S ISCO Reagent Estimated **62 pounds**

Injection Volumes for RemOx L		
RemOx L Injection Concentration	**40.0%**	%
Calculated Specific Gravity	1.366492	g/ml
Total Volume of Injection Fluid	12	gal
Pore Volume Replaced	#DIV/0!	%

Amount of RemOx L ISCO Reagent Estimated **140 pounds**
12 gallons

CARUS REMEDIATION TECHNOLOGIES

***In Situ* Chemical Oxidation (ISCO)   *In Situ* Bioremediation (BIO)   *In Situ* Biogeochemical Stabilization (ISBS)**

RemOx® S and L ISCO Reagents Estimation Spreadsheet

Input data into boxes with blue font.

Proj/Area: Dinaburg Distributing - Alt 3 Donwgradient Saturated. NOD=2

	Estimates	Units
Treatment Area Volume		
Length	**-**	ft
Width	**-**	ft
Area	8223	sq ft
Thickness	**10**	ft
Total Volume	3046	cu yd
Soil Characteristics/Analysis		
Porosity	**43**	%
Total Plume Pore Volume	264503	gal
Avg Contaminant Conc	**-**	ppm
Mass of Contaminant	22.00	lb
PNOD	**2**	g/kg
Effective PNOD	**100**	%
Effective PNOD Calculated	2	
PNOD Oxidant Demand	18090.6	lb
Avg Stoichiometric Demand	**2.4**	lb/lb
Contaminant Oxidant Demand	52.80	lb
Theoretical Oxidant Demand	18143.40	lb
Confidence Factor	**2**	
Calculated Oxidant Demand	36286.8	
Injection Volumes for RemOx S		
RemOx S Injection Concentration	**2.5%**	%
Total Volume of Injection Fluid	173,933	gal
Pore Volume Replaced	65.76	%
Amount of RemOx S ISCO Reagent Estimated	**36,287**	**pounds**
Injection Volumes for RemOx L		
RemOx L Injection Concentration	**40.0%**	%
Calculated Specific Gravity	1.366492	g/ml
Total Volume of Injection Fluid	7,144	gal
Pore Volume Replaced	2.70	%
Amount of RemOx L ISCO Reagent Estimated	**81,464** **7,127**	**pounds** **gallons**

Demolition and Disposal

	Pavement	Concrete	units			
Length	40	25	ft			
Width	40	10	ft			
Area	178	28	yd^2			
Thickness	0.25	0.50	ft			
Volume	400	125	ft^3			
Weight	29	9	tons	Assume density =	145	lb/cf

Excavation Volume

	Section A	Section B		
				Section A: Area including eastern block of contamination >= 100ppm
Length	40	25	ft	Section B: Area including western block of contamination >= 100ppm
Width	40	15	ft	
Area	1600	375	ft^2	
Depth	20	20	ft	
Volume	32000	7500	ft^3	
Volume	1185	278	yd^3	
Total	1463		yd^3	
Tonnage	2000	469	tons	Assume desnity = 125 lb/cf

Sheet Piling

Perimeter	240	ft	
Depth	25	ft	Assume depth of 25' driven into fractured bedrock
Area	6000	ft^2	

Absorbent Quantity

Waste Lock 770=	14815	lbs	Assume absorbent r	25	lb/cy

Dipsosal Characaterization

Clean soil	474	111	yd^3	Assume top 8 feet of soil is clean		
Tonnage	800	188	tons			
> 180 ppm	140	39	yd^3			
Tonnage	237	66	tons	Assume density =	3375	lb/cy
180 ppm > x > 60 ppm	336	76	yd^3			
Tonnage	567	128	tons			
< 60 ppm	235	52	yd^3			
Tonnage	396	87	tons			

Treatment Area

	Source	Outside Source			
Length	20	77	ft		
Width	20	77	ft		
Area	400	5900	ft^2		
Depth	15	15	ft		
GW Depth	10	10	ft		
GW Volume	1720	0	ft^3	Assume porosity =	0.43
Soil Volume	3420	88500	ft^3		

MPE Wells

56.5 ft demolished

Enhanced Biodegradation Injections

6	number of wells
5	points per day for injection program
3	wells installed per day

Assume excavation areas (40ftx40ft and 25ftx10ft) backfilled with reagent and have influence within those areas plus 15' out from perimiter. 70ftx70ft and 55ftx40ft areas would allow for 22 fewer injection points assuming 15' spacing in the grid.

Excavation Unit Cost Calculation Based on Crew and Equipment Production Rates, Source Soils

Production			
1. Excavated volu	**1,463**	bcy	
2. Excavator	Typ. Hyd.		
3. Bucket Size	**2.5**	cy	
4. Bucket Fill Fact	**90%**		Note 1
5. CY/bucket	2.3	cy	
6. Operator/Site E	**25%**		Note 2
7. Cycles/minute	1.5		Note 3
8. Actual cycles/m	0.375	cycles/min	
9. LCY/minute	1.5	lcy/min	
10. Productive min	**49**	min/hr	Note 4
11. LCY/hour	73.5		
12. Hours/day	8	hrs/day	
13. LCY/day	588	lcy/day	
14. BCY/day	529	bcy/day	Note 5
15. Days to comple	3.8		
16. Crew Hours	32.0		Note 6

Labor and Equipment Costs

Unit	Quantity	Rate	Hours	Cost
1. Laborer	1	$31.60	32.0	$1,011.20
2. Operator	1	$41.35	32.0	$1,323.20
3. Excavator	1	$202.38	32.0	$6,476.00

Diesel (Note 7)

Machine	HP	$/gallon	Gallons/hr	Cost
Typ. Hyd.	222	$3.15	12.68	$1,278.21

Bucket Fill Factors	
Moist Loam Sandy Soil	100-110%
Sand & Gravel	95-110%
Hard Tough Clay	80-90%
Rock - Well Blasted	60-75%
Rock - Poorly Blasted	40-50%

Total Excavation Costs (Note 8)	
Lump Sum	$10,088.61
Cost/BCY	$6.90

Notes:

1. See "Bucket Fill Factors Table".
2. All inefficiencies are carried in the "Operator/Site Efficiency" line item.
3. "Cycles/minute" line item assumes 100% efficiency.
4. "Productive minutes/hour" accounts for time lost to:safety talk, nonproductive time before/after breaks, early breakdown.

calculation:		
	8	hr work day
	15	minute safety talk
	15	minutes post talk prior to productive work
	10	minutes nonproductive time before and after coffee break (20 min total)
	10	minutes nonproductive time before and after lunch break (20 min total)
	15	minutes nonproductive time at end of day
	85	nonproductive minutes/day
	11	nonproductive minutes/hour
	49	productive minutes/hour

5. Assume 10% shrink/swell conversion between bank cubic yards (bcy) and loose cubic yards (lcy).
6. Assume hours are rounded up to the nearest whole day.
7. Diesel unit price based on data reported by Energy Information Administration (EIA), Official Energy Statistics of the U.S. government, reported for 12/15/10, <http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp>
8. Total excavation cost estimate does not include mobilization/demobilization or transportation.

Prepared by: BPN 12/09/10
Checked by: NRL 12/14/10
Revised by: BPN 1/13/11
Checked by: RES 1/14/11

3DMe Design Software for Grid Treatment

Date

Regenesis Technical Support: USA (949) 366-8000

www.regenesis.com

Site Name: Dinaburg Distributing
Location: Rochester, NY
Consultant: MACTEC

3DMe capacity to supply hydrogen	14.0	lbs. 3DMe/lb H_2
Density of 3DMe `	1.00	g/cm^3
Density of 3DMe	8.345	lb/gal
Density of 3DMe	30.0	lb per bucket
Hydrogen Required (lbs)		
Dissolved Phase CAHs	0.13	lb
Adsorbed Phase CAHs	0.49	lb
CEAs	2.83	lb
Competing Microbial Processes	1.84	lb
Total	5.29	lb

Minimum Contributed TOC Calculation

Conc. (mg/L)	Required TOC to Contrib. (kg)	3DMe FOC (kg/kg)	3DMe Required (lbs)
1000.0	318.4	0.61	521.9386868
		3DMe FOC (mg/kg)	
		610000	

3DMe Requirements

Dissolved Phase	2 lb	
Adsorbed Phase	7 lb	3DMe mg/L
CEAs	40 lb	697.36
Competing Microb	26 lb	
Total wo/ continge	74 lb	L Acid (mg/L)
Total 3DMe	222 lb --------->	1,861.96

Standard Microemulsion Production

Water to Concentrate Volume Ratio (gal/gal)	10
Emulsion to Concentrate Volume Ratio (gal/gal)	11
Water to Conconcentrate Mass Ratio (lbs/lbs)	10
Emulsion to Concentrate Mass Ratio (lbs/lbs)	11

Site Conceptual Model/Extent of Plume Requiring Remediation

Width of plume (intersecting gw flow direction)	85	ft			
Length of plume (parallel to gw flow direction)	15	ft	=	1,275	ft^2
Depth to contaminated zone	10	ft			
Thickness of contaminated saturated zone	10	ft	=	12750	ft^3
Nominal aquifer soil (gravel, sand, silty sand, silt, clay, etc.)	silty sand				
Total porosity	0.4		Effective porosity:	0.2	
Hydraulic conductivity	10	ft/day	=	3.5E-03	cm/sec
Hydraulic gradient	0.013	ft/ft			
Seepage velocity	237.4	ft/yr	=	0.650	ft/day
Treatment Zone Pore Volume	5,100	ft^3		38,151	gallons

Dissolved Phase Electron Donor Demand

	Contaminant Conc (mg/L)	Contaminant Mass (lb)	Stoichiometry cont/H_2 (wt/wt)	H_2 Req. (lb)
Tetrachloroethene (PCE)	4.58	1.5	20.7	0.07
Trichloroethene (TCE)	3.51	1.1	21.9	0.05
cis-1,2-dichloroethene (DCE)	0.26	0.1	24.2	0.00
Vinyl Chloride (VC)	0.03	0.0	31.2	0.00
1,1,1-Trichloroethane (TCA)	0.00	0.0	22.2	0.00
1,1-Dichlorochloroethane (DCA)	0.00	0.0	24.7	0.00
User added, also add stoich. demand and Koc (see pull-down)	0.00	0.0	0.0	0.00
User added, also add stoich. demand and Koc (see pull-down)	0.00	0.0	0.0	0.00

Sorbed Phase (SP) Electron Donor Demand:

Soil bulk density	2	g/cm^3	=	125	lb/ft^3
Fraction of organic carbon (foc)	0.003	range: 0.0001 to 0.01			

(Values are estimated using SP = foc*Koc*Cgw) (Adjust Koc as necessary to provide realistic estimates)	Koc (L/kg)	Contaminant Conc (mg/kg)	Contaminant Mass (lb)	Stoichiometry cont/H_2 (wt/wt)	H_2 Req. (lb)
Tetrachloroethene (PCE)	371	5.10	8.1	20.7	0.39
Trichloroethene (TCE)	122	1.29	2.0	21.9	0.09
cis-1,2-dichloroethene (DCE)	80	0.06	0.1	24.2	0.00
Vinyl Chloride (VC)	2.5	0.00	0.0	31.2	0.00
1,1,1-Trichloroethane (TCA)	304	0.00	0.0	22.2	0.00
1,1-Dichlorochloroethane (DCA)	33	0.00	0.0	24.7	0.00
User added, also add stoich. demand and Koc (see pull-down)	0	0.00	0.0	0.0	0.00
User added, also add stoich. demand and Koc (see pull-down)	0	0.00	0.0	0.0	0.00

Competing Electron Acceptors:

	CEA Conc (mg/L)	CEA Mass (lb)	Stoich. (wt/wt) e⁻ acceptor/H_2	H_2 Req. (lb)
Oxygen Demand	1.80	0.6	8.0	0.07
Nitrate Demand	2.85	0.9	12.4	0.07
Bioavailable Manganese Demand	0.07	0.0	27.5	0.00
Bioavailable Iron Demand	0.94	0.3	55.9	0.01
Sulfate Demand	101.00	32.2	12.0	2.68

Microbial Demand Factor	3	Recommend 1-4x
Safety Factor	3	Recommend 1-4x

3DMe Weight and Volume Estimations

Project 3DMe Concentrate Material Requirements:

	Mass (lbs)	Volume (gals)
Amoung of 3DMe Concentrate Required	**540**	**65**

Minimum Contributed TOC 1000.0 (mg/L) * Minimum Dose Override due to TOC contribution minimum requirement.

Standard 10:1 Vol (H_2O):Vol (3DMe) Emulsion Production Requirements:

	Lbs.		Gallons
3DMe Concentrate	540	3DMe Concentrate	65
Water	5,400	Water	647
Total	5,940	**Total**	712

Delivery Array Evaluation:

Injection spacing within rows (ft)	15.0	# points per row:	6
Injection spacing between rows (ft)	15.0	# of rows:	1
Advective travel time between rows (days)	23	Total # of points:	6
		Irregular Treatment Area # of points:	9

3DMe Application Evaluation:

	Lbs.		Gallons
10:1 V/V Emulsion App. Rate per Foot	99.0	10:1 V/V Emulsion App. Rate per Foot	11.9
10:1 V/V Emulsion App. Rate per Point	990	10:1 V/V Emulsion App. Rate per Point	119
		Est.% of Effective Pore Vol. Displaced by 3DMe Emulsion	3.7%

Approximate Solution Weights and Volumes

Water : 3DMe	3DMe Lbs.	3DMe Gallons	Water Lbs.	Water Gallons	3DMe + Water Gallons	Est. Eff. Pore Space Used (%)
10:1	540	65	5,425	650	715	3.7%
20:1	540	65	10,849	1300	1,365	7.2%
30:1	540	65	16,274	1950	2,015	10.6%
40:1	540	65	21,698	2600	2,665	14.0%
50:1	540	65	27,123	3250	3,315	17.4%
100	540	65	54,245	6500	6,565	34.4%
Base Design						

Additional 3DMe Dilution Calculations:

	Gallons
Effective Pore Space Used	8.0%
Add. Water Required to Mix with Standard Microemulsion	814
Total Vol. of Water Required	1,461
Total Vol. of Diluted Microemulsion	1,526
Vol. of Diluted 3DMe Emulsion applied per ft	25
Vol. of Diluted 3DMe Emulsion applied per pt	254

Application Evaluations:

Direct Push Method

Direct Push Application Point - Estimation

Injection Rate (gpm):	**5**	gpm
Dilution Volume (gals):	1,461	Water
Product Volume (gals):	65	3DMe Concentrate

Application Design

Spacing **within** Rows	Spacing **between** Rows	Number of Points	Max. Estimated Gal./Ft.	Solution Gal./Ft.	Solution Theoretical ROI* (ft)	Est. Pumping Time Mins./Pt.
5	**5**	51	20	3	0.8	6
7.5	**7.5**	24	20	6	1.2	13
10	**10**	18	20	8	1.3	17
12.5	**12.5**	14	20	11	1.5	22
15	**15**	6	20	25	2.3	51
20	**20**	5	20	31	2.5	61

* Asssumes 100% effective pore vol. displacement

Aquif. Pull Down A:52

Injection Well Method

Injection Well Configuration - Evaluation

Injection Rate :	**10**	gpm
Dilution Volume (gals):	1,461	Water
Product Volume (gals):	65	3DMe Concentrate

Application Design

Spacing within Rows	Spacing between Rows	Number of Points	Max. Estimated Gal./Ft.	Solution Gal./Ft.	Solution Theoretical ROI* (ft)	Est. Pumping Time Mins./Pt.
5	**5**	51	25	3	0.8	3
7.5	**7.5**	24	25	6	1.2	6
10	**10**	18	25	8	1.3	8
12.5	**12.5**	14	25	11	1.5	11
15	**15**	6	25	25	2.3	25
20	**20**	5	25	31	2.5	31

* Asssumes 100% effective pore vol. displacement

Project Summary:

Number of 3DMe delivery points (adjust as necessary for site)			6
10:1 (by vol) 3DMe Emulsion application rate in Lbs/ft			99.0
Mass of 10:1 (by vol) 3DMe Emulsion per point (lb)			990
Number of 30 lb 3DMe concentrate buckets/application point			3.0
Total 30 lb 3DMe concentrate buckets			18
Total mass of 3DMe concentrate (lb)			540
Mass of 10:1 (by vol) 3DMe Emulsion (lb)	**Total**		**5,940**
3DMe unit cost ($/lb of 10:1 (by vol) Emulsion)		$	0.46
Material Cost 10:1 (by vol) 3DMe Emulsion	**Total**	**$**	**2,732**
Shipping and Tax Estimates in US Dollars			
Sales tax	rate: 0.00%	$	-
Total material cost		$	2,732
Shipping of 3DMe (call for quote)		$	-
3DMe Emulsion Material Cost	**Total**	**$**	**2,732**
Unit Costs			
Product Cost per yd3 treated		**$**	**14**
Cost per gallon of aquifer treated		**$**	**0.07**
Material Cost per lb of contmintant		**$**	**4,448**

Pricing Structure

10:1 Emulsion Mass Above (lb)	Price ($/lb)	Warning
0	0.46	
55000	0.40	
110000	0.38	
220000	0.38	t Regenesis for Bulk Pricing

Unit Price:
0.46
Output Warning :
0

3DMe Grid Treatment Summary Page - Consultant Output

Regenesis Technical Support: USA (949) 366-8000 www.regenesis.com

Site Name: Dinaburg Distributing
Location: Rochester, NY
Consultant: MACTEC

Aquifer Characteristics

Soil Type	silty sand	
Total Porosity	0.4	
Effective Porosity	0.2	
Hydraulic Conductivity	10	ft/day
Hydraulic Gradient	0.013	ft/ft
Seepage Velocity	237.4	ft/yr
Pore Volume	5,100	ft^3
Pore Volume	38,151	gals

Design Assumptions

Area of Application	1,275	ft^2
Thickness of Application	10	ft
Dissolved Contaminant Mass	2.67	lbs
Adsorbed Contaminant Mass	10.26	lbs
Mass of Competing Electron Acceptors	33.96	lbs

3DMe Grid Treatment Summary Page - Consultant Output

Regenesis Technical Support: USA (949) 366-8000 www.regenesis.com

Site Name: Dinaburg Distributing
Location: Rochester, NY
Consultant: MACTEC

Direct Push Injection Application

3DMe-Related

Concentrate Mass	540	lbs
Concentrate Volume	65	gals

Base 10:1 Emulsion Formulation

3DMe Concentrate Volume	65	gals
Water Volume	647	gals
Emulsion Total Volume	712	gals
Effective Pore Space Displaced	3.7%	%

Recommended Emulsion Formulation

Additional Water Volume	814	gals
Total Water Volume (base+recommended)	1,461	gals
Total Mass of Recommended Emulsion	12,733	lbs
Total Volume of Recommended Emulsion	1,526	gals

Application-Related

Number of Direct Push Injection Points	6	points
Mass of 3DMe 10:1 Base Emulsion per Point	990	lbs/point
Volume of 3DMe 10:1 Base Emulsion per Point	119	gals/point
Mass of 3DMe 10:1 Base Emulsion per Lineal Foot	99.0	lbs/ft
Volume of Recommended Emulsion per Point	254	gals/point
Volume of Recommended Emulsion per Foot	25	gals/ft
Estimated Application Rate	5	gpm
Estimated Application Time per Point	6	min/point

Purchasing-Related Information

Number of Buckets of 3DMe Concentrate	18	buckets
Estimated Number of Pallets	1	pallets
Total Required Volume of Water	1,461	gals
Mass of 10:1 Base Emulsion	5,940	lbs
Unit Price ($/lb) of 10:1 Base Emulsion	$ 0.46	
Material Cost at 10:1 Base Emulsion (total)	$ 2,732	
Sales Tax	$ -	
Shipping Estimate	$ -	Call Regenesis For Quote

3DMe Grid Treatment Summary Page - Consultant Output

Regenesis Technical Support: USA (949) 366-8000 www.regenesis.com

Site Name: Dinaburg Distributing
Location: Rochester, NY
Consultant: MACTEC

Fixed Well Application

3DMe-Related		
Concentrate Mass	540	lbs
Concentrate Volume	65	gals
Base 10:1 Emulsion Formulation		
3DMe Concentrate Volume	65	gals
Water Volume	647	gals
Emulsion Total Volume	712	gals
Effective Pore Space Displaced	3.7%	%
Recommended Emulsion Formulation		
Additional Water Volume	814	gals
Total Water Volume (base+recommended)	1,461	gals
Total Mass of Recommended Emulsion	12,733	lbs
Total Volume of Recommended Emulsion	1,526	gals
Application-Related		
Number of Wells	6	wells
Mass of 3DMe 10:1 Base Emulsion per Well	990	lbs/well
Volume of 3DMe 10:1 Base Emulsion per Well	119	gals/well
Mass of 3DMe 10:1 Base Emulsion per Lineal Foot	99.0	lbs/ft
Volume of Recommended Emulsion per Well	254	gals/well
Volume of Recommended Emulsion per Foot	25	gals/ft
Estimated Application Rate	10	gpm
Estimated Application Time per Well	3	min/well
Purchasing-Related Information		
Number of Buckets of 3DMe Concentrate	18	buckets
Estimated Number of Pallets	1	pallets
Total Required Volume of Water	1,461	gals
Mass of 10:1 Base Emulsion	5,940	lbs
Unit Price ($/lb) of 10:1 Base Emulsion	$ 0.46	
Material Cost at 10:1 Base Emulsion (total)	$ 2,732	
Sales Tax	$ -	
Shipping Estimate	$ -	Call Regenesis For Quote

3DMe Grid Treatment Summary Page - Contractor Output

Regenesis Technical Support: USA (949) 366-8000 www.regenesis.com

Site Name: Dinaburg Distributing
Location: Rochester, NY
Consultant: MACTEC

Direct Push Application

Aquifer-Related Information		
Soil Type	silty sand	
Area of Application	1,275	ft^2
Application Dimensions		
Length	15	ft
Width	85	ft
Thickness	10	ft
3DMe-Related Information		
3DMe Concentrate Mass	540	lbs
Number of Buckets of 3DMe Concentrate	18	buckets
Estimated Number of Pallets	1	pallets
Base 10:1 Emulsion Water Requirement	647	gals
Additional Water Needed to Make Recom. Emulsion	814	gals
Total Volume of Water Required	1,461	gals
Application-Related Information		
Spacing Within Rows	15	ft
Spacing Between Rows	15	ft
Number of Direct Push Injection Points	6	points
Volume of 3DMe As Applied, Emulsion per Point	254	gals/point
Volume of 3DMe As Applied, Emulsion per Foot	25	gals/ft
Estimated Application Rate	5	gals/minute
Estimated Application Time Per Point	6	mins/point
Purchasing-Related Information		
Number of Buckets of 3DMe Concentrate	18	buckets
Estimated Number of Pallets	1	pallets
Total Required Volume of Water	1,461	gals
Mass of 10:1 Base Emulsion	5,940	lbs
Unit Price ($/lb) of 10:1 Base Emulsion	$ 0.46	
Sales Tax	$ -	
Shipping Estimate	$ -	Call Regenesis For Quote

3DMe Grid Treatment Summary Page - Contractor Output

Regenesis Technical Support: USA (949) 366-8000 www.regenesis.com

Site Name: Dinaburg Distributing
Location: Rochester, NY
Consultant: MACTEC

Fixed Well Application

Aquifer-Related Information		
Soil Type	silty sand	
Area of Application	1,275	ft^2
Application Dimensions		
Length	15	ft
Width	85	ft
Thickness	10	ft
3DMe-Related Information		
3DMe Concentrate Mass	540	lbs
Number of Buckets of 3DMe Concentrate	18	buckets
Estimated Number of Pallets	1	pallets
Base 10:1 Emulsion Water Requirement	647	gals
Additional Water Needed to Make Recom. Emulsion	814	gals
Total Volume of Water Required	1,461	gals
Application-Related Information		
Spacing Within Rows	15	ft
Spacing Between Rows	15	ft
Number of Injection Wells	6	points
Volume of 3DMe As Applied, Emulsion per Well	254	gals/point
Volume of 3DMe As Applied, Emulsion per Foot	25	gals/ft
Estimated Application Rate	10	gals/minute
Estimated Application Time Per Point	3	mins/point
Purchasing-Related Information		
Number of Buckets of 3DMe Concentrate	18	buckets
Estimated Number of Pallets	1	pallets
Total Required Volume of Water	1,461	gals
Mass of 10:1 Base Emulsion	5,940	lbs
Unit Price ($/lb) of 10:1 Base Emulsion	$ 0.46	
Sales Tax	$ -	
Shipping Estimate	$ -	Call Regenesis For Quote

3DMe Design Software for Excavation Applications

Date

Regenesis Technical Support: USA (949) 366-8000 www.regenesis.com

Site Name:
Location:
Consultant:

Site Conceptual Model/Extent of Area Requiring Remediation

Planned Excavation:	Width of planned excavation	40	ft		
	Length of planned excavation	40	ft	1,600	ft^2
	Thickness of saturated zone to be excavated	10	ft	16,000	ft^3
GW Plume:	Width of plume area containing contaminant	70	ft		
	Length of plume area containing contaminant	70	ft	4,900	ft^2
	Thickness of contaminated saturated zone	10	ft	49,000	ft^3
	Total porosity	0.4			
	Nominal aquifer soil (gravel, sand, silty sand, silt, clay)	silty sand			
	Treatment Zone Pore Volume	19,600	ft^3	146,628	gallons

Dissolved Phase Electron Donor Demand	Contaminant Conc. (mg/L)	Contaminant Mass (lb)	Stoichiometry cont/H_2 (wt/wt)
Tetrachloroethene (PCE)	4.58	5.6	20.7
Trichloroethene (TCE)	3.51	4.3	21.9
cis-1,2-dichloroethene (DCE)	0.26	0.3	24.2
Vinyl Chloride (VC)	0.03	0.0	31.2
1,1,1-Trichloroethane (TCA)	0.00	0.0	22.2
1,1-Dichlorochloroethane (DCA)	0.00	0.0	24.7
User added, also add stoich. demand and Koc (see pull-down)	0.00	0.0	0.0
User added, also add stoich. demand and Koc (see pull-down)	0.00	0.0	0.0

Sorbed Phase (SP) Electron Donor Demand

Soil bulk density	2	g/cm^3 =	125	lb/cf
Fraction of organic carbon (foc)	0.003	range: 0.0001 to 0.01		

(Values are estimated using SP = foc*Koc*Cgw) (Adjust Koc as necessary to provide realistic estimates)	Koc (L/kg)	Contaminant Conc. (mg/kg)	Contaminant Mass (lb)	Stoichiometry cont/H_2 (wt/wt)
Tetrachloroethene (PCE)	371	5.10	21.0	20.7
Trichloroethene (TCE)	122	1.28	5.3	21.9
cis-1,2-dichloroethene (DCE)	80	0.06	0.3	24.2
Vinyl Chloride (VC)	2.5	0.00	0.0	31.2
1,1,1-Trichloroethane (TCA)	304	0.00	0.0	22.2
1,1-Dichlorochloroethane (DCA)	33	0.00	0.0	24.7
User added, also add stoich. demand and Koc (see pull-down)	0	0.00	0.0	0.0
User added, also add stoich. demand and Koc (see pull-down)	0	0.00	0.0	0.0

Competing Electron Acceptors (CEAs):	CEA Conc (mg/L)	CEA Mass (lb)	Stoich. (wt/wt) e^- acceptor/H_2
Oxygen Demand	1.80	2.2	8.0
Nitrate Demand	2.85	3.5	12.4
Bioavailable Manganese Demand	0.07	0.1	27.5
Bioavailable Iron Demand	0.94	1.1	55.9
Sulfate Demand	101.00	123.5	12.0

Microbial Demand Factor	3	Recommend 1-4x
Additional Demand Factor	3	Recommend 1-4x
3DMe polymer makeup	161%	Std matl is 50%

3DMe Weight and Volume Estimations

Project 3DMe Concentrate Material Requirements:

Amount of 3DMe Concentrate Required (lbs) **3,630** **Volume of 3DMe Concentrate Requ** **435**

Water TOC (mg/L): 1000.0

Standard 10:1 Vol (H2O):Vol (3DMe) Emulsion Production Requirements:

	Lbs.		Gallons
3DMe Concentrate	3,630	3DMe Concentrate	435
Water	36,301	Water	4,350
Total	39,931	**Total**	4,785

Project Summary:

Mass of 10:1 3DMe Emulsion Lbs.			39,931
3DMe Concentrate Lbs.			3,630
Number of 30 lb 3DMe concentrate buckets			121
3DMe unit cost ($/lb of 10:1 Emulsion)		$	0.46
Material Cost 10:1 (V:V) 3DMe Emulsion	**Total**	**$**	**18,368**
Shipping and Tax Estimates in US Dollars			
Sales tax	rate: 0.00%	$	-
Total material cost		$	18,368
Shipping of 3DMe (call for quote)		$	-
3DMe Emulsion Material Cost	**Total**	**$**	**18,368**
Unit Costs			
Product Cost per yd3 treated		**$**	**10**
Cost per gallon of aquifer treated			**$0.13**

Pricing

Mass Above (lb)	Price ($/lb)
0	0.46
55000	0.40
110000	0.38
220000	0.38

Other Project Cost Estimates		
Design	$	-
Permitting and reporting	$	-
Excavation contractors	$	-
Construction management	$	-
Laboratory costs	$	-
Groundwater monitoring	$	-
Other	$	-
Other	$	-
Other	$	-
Other	$	-
Other	$	-
Total Project Cost	**$**	**-**

3DMe Design Software for Excavation Applications

Regenesis Technical Support: USA (949) 366-8000 www.regenesis.com

Date

Site Name:
Location:
Consultant:

Site Conceptual Model/Extent of Area Requiring Remediation

Planned Excavation:	Width of planned excavation	25	ft		
	Length of planned excavation	20	ft	500	ft^2
	Thickness of saturated zone to be excavated	10	ft	5,000	ft^3
GW Plume:	Width of plume area containing contaminant	55	ft		
	Length of plume area containing contaminant	40	ft	2,200	ft^2
	Thickness of contaminated saturated zone	10	ft	22,000	ft^3
	Total porosity	0.4			
	Nominal aquifer soil (gravel, sand, silty sand, silt, clay)	silty sand			
	Treatment Zone Pore Volume	8,800	ft^3	65,833	gallons

Dissolved Phase Electron Donor Demand	Contaminant Conc. (mg/L)	Contaminant Mass (lb)	Stoichiometry cont/H_2 (wt/wt)
Tetrachloroethene (PCE)	4.58	2.5	20.7
Trichloroethene (TCE)	3.51	1.9	21.9
cis-1,2-dichloroethene (DCE)	0.26	0.1	24.2
Vinyl Chloride (VC)	0.03	0.0	31.2
1,1,1-Trichloroethane (TCA)	0.00	0.0	22.2
1,1-Dichlorochloroethane (DCA)	0.00	0.0	24.7
User added, also add stoich. demand and Koc (see pull-down)	0.00	0.0	0.0
User added, also add stoich. demand and Koc (see pull-down)	0.00	0.0	0.0

Sorbed Phase (SP) Electron Donor Demand

Soil bulk density	2	g/cm^3 =	125	lb/cf
Fraction of organic carbon (foc)	0.003	range: 0.0001 to 0.01		

(Values are estimated using SP = foc*Koc*Cgw) (Adjust Koc as necessary to provide realistic estimates)	Koc (L/kg)	Contaminant Conc. (mg/kg)	Contaminant Mass (lb)	Stoichiometry cont/H_2 (wt/wt)
Tetrachloroethene (PCE)	371	5.10	10.8	20.7
Trichloroethene (TCE)	122	1.28	2.7	21.9
cis-1,2-dichloroethene (DCE)	80	0.06	0.1	24.2
Vinyl Chloride (VC)	2.5	0.00	0.0	31.2
1,1,1-Trichloroethane (TCA)	304	0.00	0.0	22.2
1,1-Dichlorochloroethane (DCA)	33	0.00	0.0	24.7
User added, also add stoich. demand and Koc (see pull-down)	0	0.00	0.0	0.0
User added, also add stoich. demand and Koc (see pull-down)	0	0.00	0.0	0.0

Competing Electron Acceptors (CEAs):	CEA Conc (mg/L)	CEA Mass (lb)	Stoich. (wt/wt) e^- acceptor/H_2
Oxygen Demand	1.80	1.0	8.0
Nitrate Demand	2.85	1.6	12.4
Bioavailable Manganese Demand	0.07	0.0	27.5
Bioavailable Iron Demand	0.94	0.5	55.9
Sulfate Demand	101.00	55.4	12.0

Microbial Demand Factor	3	Recommend 1-4x
Additional Demand Factor	3	Recommend 1-4x
3DMe polymer makeup	161%	Std matl is 50%

3DMe Weight and Volume Estimations

Project 3DMe Concentrate Material Requirements:

Amount of 3DMe Concentrate Required (lbs)	**1,710**	**Volume of 3DMe Concentrate Requ**	**205**
Water TOC (mg/L): 1000.0			

Standard 10:1 Vol (H2O):Vol (3DMe) Emulsion Production Requirements:

	Lbs.		Gallons
3DMe Concentrate	1,710	3DMe Concentrate	205
Water	17,107	Water	2,050
Total	18,817	**Total**	2,255

Project Summary:

Mass of 10:1 3DMe Emulsion Lbs.			18,817
3DMe Concentrate Lbs.			1,710
Number of 30 lb 3DMe concentrate buckets			57
3DMe unit cost ($/lb of 10:1 Emulsion)		$	0.46
Material Cost 10:1 (V:V) 3DMe Emulsion	**Total**	**$**	**8,656**
Shipping and Tax Estimates in US Dollars			
Sales tax	rate: 0.00%	$	-
Total material cost		$	8,656
Shipping of 3DMe (call for quote)		$	-
3DMe Emulsion Material Cost	**Total**	**$**	**8,656**
Unit Costs			
Product Cost per yd3 treated		**$**	**11**
Cost per gallon of aquifer treated			**$0.13**

Pricing

Mass Above (lb)	Price ($/lb)
0	0.46
55000	0.40
110000	0.38
220000	0.38

Other Project Cost Estimates		
Design	$	-
Permitting and reporting	$	-
Excavation contractors	$	-
Construction management	$	-
Laboratory costs	$	-
Groundwater monitoring	$	-
Other	$	-
Other	$	-
Other	$	-
Other	$	-
Other	$	-
Total Project Cost	**$**	**-**