REMEDIAL CONSTRUCTION/CLOSURE REPORT

80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

NYSDEC Spill #0270474
USEPA Assistance ID No. BF97298603

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1.0 INTRODUCTION

Day Environmental, Inc. (DAY) prepared this remedial construction/closure report to document remediation activities that were completed in accordance with a Corrective Action Plan (CAP) dated September 2005, as approved by the New York State Department of Environmental Conservation (NYSDEC) in a letter dated January 19, 2006. These remediation activities were completed at a 0.78-acre vacant parcel located at 80-100 Charlotte Street, City of Rochester, County of Monroe, New York (Site). The location of the Site is shown on Figure 1 (Project Locus Map) and Figure 2 (Site Location Plan). The work was completed under a stipulation agreement between the City of Rochester (City) and the NYSDEC that was signed by the City on February 24, 2006.

1.1 Background

DAY prepared a Phase I Environmental Site Assessment (Phase I ESA) report dated May 2002 for the Site. The Phase I ESA report identified the following recognized environmental conditions (RECs):

1.) Adjoining NYSDEC active spill sites;

2.) Historic uses of the Site;

3.) Drums and containers;

4.) Suspect asbestos-containing materials (SACM); and,

5.) Lead-based paint (LBP)

DAY subsequently performed a Phase II Environmental Site Assessment (Phase II ESA) at the Site. This study included the collection and analytical laboratory testing of concrete floor samples; the advancement of test borings; the installation of groundwater monitoring wells; field observations and monitoring; analytical laboratory testing of selected soil and groundwater samples, evaluation of groundwater flow; and preparation of a Phase II ESA report dated July 2002. RECs associated with drums and containers (REC #3), SACM (REC#4) and LBP (REC#5) were not evaluated as part of the Phase II ESA, but were later addressed by others prior to the demolition of the building on the Site in September 2003. The following conclusions were provided in the Phase II ESA report:

REC #1: Active Spills on Adjoining/Nearby Properties: Evidence of petroleum-type contamination was detected in saturated soil and groundwater on the northwest and southwest portions of the Site (i.e., at previous test locations MW-2 and TB-27 depicted on Figure 3). This contamination appears attributable to active spills on adjoining/nearby properties located west and northwest of the Site. Total petroleum hydrocarbons (TPH) were not detected in soil samples from these locations; however, light-weight TPH designated as gasoline was detected in a groundwater sample on the northwest portion of the Site.

REC #2: Historic uses of the Site

- Former On-Site Gasoline UST System: Evidence of petroleum contamination exceeding recommended soil cleanup objectives (RSCOs) as referenced in NYSDEC document titled "Technical and Administrative Guidance Memorandum: *Determination of Soil Cleanup Objectives and Cleanup Levels*" (TAGM 4046) dated January 24, 1994, as amended by the NYSDEC's supplemental Tables dated August 22, 2001 and/or groundwater standards or guidance values as referenced in the NYSDEC Division of

Water Technical and Operational Guidance Series 1.1.1 document titled "*Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*" (TOGS 1.1.1) dated June 1998 (as amended by an April 2000 addendum) was detected in proximity to, and hydraulically downgradient from, a former underground storage tank (UST) system used to store gasoline (refer to Figure 3). The contamination in soil was encountered in an approximately 2-foot to 4-foot layer immediately above bedrock. Previous analytical laboratory testing confirmed the contamination to be related to gasoline, and toxicity characteristic leaching procedure (TCLP) test results on a contaminated sample indicate the contamination should not be considered a characteristic hazardous waste based on its lead content. The NYSDEC was notified regarding the petroleum contamination that was encountered, and the NYSDEC subsequently generated a spill file (NYSDEC Spill #0270474), which currently has an "active" status.

- Floor Drains: Suspect historical discharges of chemicals or petroleum products to floor drains did not appear to impact soil or groundwater at the Site.
- Stained Concrete Floor: Historic storage, repair, etc. of transformers, light ballasts and mercury vapor lights, did not appear to impact the concrete floor (i.e., polychlorinated biphenyls and mercury were not detected in concrete samples).
- Stained Surface Soils: Several approximate three-foot diameter or less areas of stained surface soils, observed on an unpaved area in the northwest portion of the Site, were determined to be impacted with heavy-weight TPH designated as lube oil. One sample of the stained soil contained the semi-volatile organic compound (SVOC) benzo(b)fluoranthene at a concentration exceeding its respective NYSDEC TAGM 4046 RSCO.
- Fill Material: Heterogeneous fill material generally consisting of re-worked soil with lesser amounts of coal, ash, concrete, asphalt, brick, slag and wood is present generally across the Site. Analytical laboratory test results for samples of this fill material indicate it contains concentrations of arsenic, barium, cadmium, lead or mercury that exceed RSCOs or typical background ranges referenced in TAGM 4046.

1.2 Proposed Future Use of Site

Currently, the conceptual future use of the Site includes mixed use redevelopment for a combination of commercial and residential purposes with a parking lot and landscaped areas. The City is currently working on residential redevelopment plans for contiguous vacant lots to the west (i.e., addressed as 14-58 Charlotte Street).

1.3 Objectives

The objectives of this project are to implement remedial activities, engineering controls, institutional controls, and environmental monitoring activities that allow the redevelopment of the Site for the proposed future use while satisfying cleanup criteria and concerns of regulatory agencies related to human health and the environment.

2.0 REMEDIAL ACTIVITIES

Remedial activities that were completed and presented in this remedial construction/closure report include: a waste characterization study; the removal and off-site disposal of petroleum-contaminated soil attributable to the former UST system at the Site; environmental monitoring; confirmatory soil sampling and analytical laboratory testing; and, backfilling the excavation, installation of groundwater monitoring wells, and one round of post-excavation groundwater sampling and analysis. A hand-held Geo-XT global positioning system (GPS) unit was used to document pertinent information in the field during remedial activities. The remedial activities are further described herein. The analytical laboratory program for samples discussed in this report included as Table 1.

2.1 Waste Characterization Study

Prior to conducting the soil removal work, seventeen test borings (designated as B-1 through B-17) were advanced on February 10, 2006 using direct-push sampling equipment to further characterize the soil for disposal and define the removal areas. A licensed land surveyor located and marked out the initial test boring locations in the field and recorded the ground elevations. A hand-held Geo-XT (or similar) GPS unit was also used to locate additional and off-set test boring locations in the field. Test boring locations were later transferred to a Geographical Information System (GIS). The locations of test borings B-1 through B-17 and previous test borings/wells are shown on Figure 3. As the test borings were advanced, continuous soil samples were collected for visual observation and screening with a photoionization detector (PID) equipped with a 10.6 eV lamp. Pertinent information is provided on test boring logs that are included in Appendix A. The peak PID results measured at each waste characterization study test boring location are presented on Figure 3 and Figure 4.

The analytical laboratory program for this project is summarized on Table 1. As shown, ten soil samples (designated as Samples 001 through 010) collected from these test borings were submitted to Paradigm Environmental Services, Inc. (Paradigm), a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified analytical laboratory. Paradigm analyzed the samples for NYSDEC Spill Technology and Remediation Series (STARS) listed volatile organic compounds (VOCs) plus up to 20 tentatively identified compounds (TICS) using United States Environmental Protection Agency (USEPA) Method 8260. In addition, Samples 004 and 007 that exhibited the greatest potential for petroleum contamination were tested by Paradigm for ignitability, TCLP metals and polychlorinated biphenyls (PCBs) using USEPA Methods 1010, 1311/6010/7470 and 8082A, respectively.

A copy of the analytical laboratory report and chain-of-custody control are included in Appendix B. Table 2 provides a comparison of detected VOCs in waste characterization study soil samples to RSCOs as referenced in the NYSDEC TAGM 4046 RSCOs. The analytical laboratory test results for ignitability and TCLP Metals are compared to toxicity and ignitability characteristics levels referenced in 6 New York Codes, Rules and Regulations (NYCRR) Part 371.3 (Characteristics of a Hazardous Waste). The test results for these samples are summarized as follows:

<u>VOCs</u>

Table 2 shows that STARS-list VOCs were detected in 4 of 10 samples that were tested [i.e., Sample 004 from B-4(10.5'); 006 from B-6(8.0'); 007 from B-7(8.0') and 010 from B-16(9.0')]. Specific STARS VOCs detected in one or more of these samples at concentrations ranging between 10.7 ug/kg or parts per billion (ppb) and 1,580 ug/kg or ppb included: ethylbenzene; n-

butylbenzene; sec-butylbenzene; n-propylbenzene; 1,3,5-trimethylbenzene; 1,2,4-trimethylbenzene; and total xylenes. TICs were detected in 5 of the 10 samples, and total TIC concentrations detected in these samples ranged between 154.2 ug/kg or ppb and 30,710 ug/kg or ppb. Total VOCs (i.e., sum of STARS VOCs and TICs) detected in the five samples ranged between 178.6 ug/kg or ppb and 30,774.9 ug/kg or ppb. The concentrations of specific STARS-list VOCs did not exceed their respective NYSDEC TAGM 4046 RSCOs; however, the total VOC concentrations detected in Sample 004 from B-4(10.5') and 010 from B-16(9.0') exceeded the RSCO of 10,000 ug/kg or ppb.

Ignitability

Test results indicate the ignitability of Sample 004 from test boring B-4(10.5') and Sample 007 from test boring B-7(8.0') are greater than 70° C. The 6 NYCRR Part 371.3 regulatory limit for ignitability is less than 60° C; thus, the samples are not considered non-hazardous based on the characteristic of ignitability.

TCLP Metals

The metal barium was detected in the TCLP extraction for samples 004 and 007 at concentrations of 2.08 mg/l or parts per million (ppm) and 2.42 mg/l or ppm, respectively. The other seven Resource Conservation and recovery Act (RCRA) listed metals were not detected at concentrations above the reported analytical laboratory detection limits in samples 004 and 007. The detected concentrations of barium are below the 6 NYCRR Part 371.3 regulatory limit of 100 mg/l or ppm. Based on these test results, the samples are considered to be non-hazardous based on their metals content.

PCBs

PCBs were not detected in Samples 004 and 007 above the reported analytical laboratory detection limits.

The results of the waste characterization study were used to assist in obtaining approvals from a regulated disposal facility (i.e., landfill), and to refine the area of contaminated soils to be removed at the Site. Based on the results of this study and previous analytical laboratory data for the Site, the City generated a waste profile for the soil to be disposed off-site. Based upon the testing completed, the soil was profiled as non-hazardous soil contaminated with petroleum (apparent weathered gasoline) that may contain less than 3% of bedrock, brick, concrete, wood, asphalt, ash and slag.

2.2 Soil Remediation

This section of the report describes the actions that were implemented in relation to the soil remediation at the Site. This includes site preparation and control, soil removal, air monitoring, backfilling, and site restoration activities.

2.2.1 Site Preparation and Control

Pre-removal photographs of the Site were collected on January 18, 2006, and copies of these photographs are included in Appendix C.

On February 2, 2006, project signage was installed at the Site to notify persons parking on the Site that the remediation project was to commence. Between February 7, 2006 and February 8, 2006, approximately 305 linear feet of existing four-foot high chain link fence and one gate along Haags Alley and the southern portion of the Site was removed and stored off-site by New York State Fence, Inc. (refer to Figure 5). During this timeframe, New York State Fence, Inc. also furnished and installed approximately 650 linear feet of temporary six-foot high chain link fence equipped with one 20-foot temporary six-foot high chain link gate with padlock for additional Site control (refer to Figure 5). The City, DAY, and its subcontractor maintained control of the keys to the padlock on the six-foot temporary fence for site security purposes. The section of this temporary six-foot high fencing along Haags Alley was set as close as possible to the curb of Haags Alley to enhance access to petroleum-impacted soil located on the Site along Haags Alley. Copies of select photographs showing site preparation activities are included in Appendix C.

In addition, temporary four-foot plastic barrier fencing was installed around the specific areas as the removal work described in Section 2.2.2 was performed. This fencing was adjusted as needed during the source removal work, and used as a site control measure to inhibit access to the work area, including during nights and weekends.

2.2.2 Soil Removal, Air Monitoring and Disposal

The primary remedial objective of the CAP was to complete a source removal program to physically and permanently remove the majority of petroleum-impacted soil and fill materials from the Site. Soil removal activities were conducted at the Site between February 27, 2006 and March 20, 2006 (refer to photographs included in Appendix C). The source removal work was conducted to address petroleum-impacted soil attributable to the former gasoline UST system, and was limited to the boundaries of the Site. Heavy equipment used at the Site during the removal work included trucks, an excavator, a dozer, and a loader. The handheld Geo-XT GPS was used to assist in documenting this work, which was later transferred to a GIS.

A DAY or City representative documented and monitored that soil removal work, and also performed health and safety air monitoring for VOCs and particulates during this work in accordance with provisions of the Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) included in the CAP. Based on the health and safety monitoring, corrective actions were not warranted for the protection of on-site workers of the nearby community. Further details concerning the soil removal work are provided below:

Initial Clearing of Soil/Fill Not Impacted with Petroleum

On February 27, 2006 and February 28, 2006, an approximately one-foot layer of mixed crushed stone, soil, asphalt millings (i.e., material used for open parking lot surface) and approximately one foot of underlying soil was removed from the majority of the anticipated limits of excavation. These materials were then staged in separate piles on the southeast portion of the Site. On February 28, 2006, deeper soil up to three feet thick with no field evidence of petroleum contamination (i.e., no elevated PID readings, odors, staining, etc.) was removed from an area at the western end of the anticipated limits of excavation in order to prepare this portion of the excavation for the removal of deeper petroleum-impacted soils for off-site disposal.

Source Removal Excavation

Between March 1, 2006 and March 20, 2006, soil removal work was completed in "cells" starting at the western end of the Site and progressing eastward. This soil removal progression is shown on Figure 6. The soil removal program was designed to target petroleum-impacted soil that exhibited olfactory or visual evidence of impact and/or yielded elevated PID readings that exceeded approximately 50 ppm. Some fractured/weathered petroleum-impacted bedrock was also removed from the former underground tank location at the western end of the removal area for off-site disposal. In order to remove petroleum-impacted soil to the top of bedrock, overlying soil/fill not impacted with petroleum was removed and staged on-site for subsequent re-use as backfill. To the extent practicable, the removal work continued in any given direction on the Site until the top of bedrock was encountered, or until the vertical extent of contamination in the excavation sidewall was observed to be approximately six inches or less. As the only exception, an approximate 1.5-foot thick layer of petroleum-impacted soil had to be left in place above bedrock along approximately six feet of the excavation sidewall that abuts Haags Alley (i.e., in proximity to confirmatory soil sample location C-11 shown of Figure 7). Petroleum-impacted soil and bedrock removed from the Site were typically loaded directly onto trucks from Silvarole Trucking (NYSDEC Part 364 permit #8A-190) and transported to Mill Seat Landfill in Riga, New York for disposal.

Backfilling

Prior to starting full excavation of a new cell, the previous removal cell was backfilled. This was completed to reduce the area and depth of excavations left open over night or over weekends. In some instances, portions of cells/excavations would be "stepped" or "terraced" as a precautionary measure refer to Section 2.4 for further details).

Former UST Location

During the soil removal work, the former underground storage tank location was observed to be filled with fine sand. Former tank system piping was observed to protrude from the east wall of the former tank pit and extend eastward. The piping was excavated and determined to be approximately ten feet long. The piping was observed to have been previously cut at both ends and did not contain any petroleum product. The piping was removed, staged on-site, and later transported off-site for disposal/recycling.

Dewatering

During the source removal work, it became evident that dewatering of the excavation was warranted. Based on olfactory and visual observations (e.g., petroleum-like odors and sheen) and elevated PID headspace readings on several samples, groundwater that had infiltrated into the excavation appeared impacted with petroleum. Groundwater was initially encountered in the overburden at approximately one or two feet above the top of bedrock. In order to better facilitate the removal of petroleum-impacted soils to the top of bedrock, and to address to petroleum-impacted groundwater, the City Division of Environmental Quality (DEQ) authorized DAY to pump the contaminated groundwater into an aboveground storage tank. On March 2, 2006, an approximate 21,000-Gallon Steel Bi-Level aboveground storage

tank (Frac tank) provided by Rain-for-Rent was brought to the Site for the temporary holding of water removed from excavations during the project. On March 6, 2006, a 12-inch diameter recovery well was installed within the excavation. Between March 3, 2006 and March 17, 2006, a pump was used to remove water from this recovery well and/or the bottom of open excavations, and this water was discharged to the 21,000-gallon holding tank. On March 16, 2006, a sample of the Frac tank contents (designated as Sample 031) was collected and delivered under chain-of-custody control to Paradigm. Paradigm analyzed the sample for purgeable aromatics using Method 602 or equivalent in order to characterize the staged water to evaluate necessary pre-treatment and/or disposal options. A copy of Paradigm's laboratory report is included in Appendix B. As shown, the purgeable aromatics ethylbenzene; m,p-xylene; and o-xylene were detected in Sample 0312 at concentrations of 84.7 ug/l or ppb, 145 ug/l or ppb and 38.1 ug/l or ppb, respectively. Based on these analytical laboratory test results and on observations made on March 22, 2006, Monroe County Pure Waters approved the discharge of the Frac tank contents to the combined sewer in Charlotte Street under a Sewer Use Permit. On March 23, 2006 and March 24, 2006, the liquid contents of the Frac tank (i.e., a total of approximately 12,000 gallons) were discharged to a catch basin on the north side of Charlotte Street that is connected to combined sewer system. The tank was then cleaned, and three 55-gallon drums of sediments and/or liquid washwaters were generated and temporarily staged on-site. Water from these three drums was later pumped into a 4,900-gallon holding tank (refer to Section 3.5). The solids in the drums were later disposed off-site at Environmental Products and Services of VT located in Syracuse, New York. As discussed in Section 3.5, the liquids were discharged to the combined sewer under a Sewer Use Permit. Disposal documentation is included in Appendix D.

Wet Soil Disposal

On March 15, 2006, approximately 42 cubic yards or 70 tons of wet soil that accumulated in a cell excavation was removed and staged on polyethylene plastic sheeting in order to allow for backfilling of that excavation cell. This wet soil was believed to consist of clean soil that fell into the excavation overnight, but had mixed with presumed contaminated standing water in the excavation. On March 16, 2006, a 3:1 composite sample (designate as Sample 029) and a discrete sample (designated as Sample 030) were collected from the pile of staged wet soil. The two soil samples were analyzed by Paradigm for NYSDEC STARS-list VOCs using USEPA Method 8260. On March 21, 2006, a discrete sample (designated as Sample 032) was collected from the pile of staged wet soil and analyzed by Paradigm for paint filter test using USEPA Method 9095A. Copies of Paradigm's laboratory reports and chain-of-custody documentation are included in Appendix B. Based on the analytical laboratory test results, it was decided that the soils could not be re-used on-site, and the staged wet soils were disposed off-site at Mill Seat Landfill.

Source Removal Reduction Calculation

A total of approximately 2,486 cubic yards (or about 4,102 tons) of soil/fill not containing petroleum contamination required removal and on-site staging in order to remove deeper petroleum-contaminated soil. A total of 1,257.28 tons of petroleum-impacted soil/fill, including some loose bedrock from the former tank pit area, were disposed at the Mill Seat Landfill. A copy of transport and disposal documentation is included in Appendix D.

Assuming that an average 0.33-foot thick layer of petroleum-impacted soil was left in-place in a 15-foot wide strip around the perimeter of the excavation on the Site itself, it is estimated that approximately 60 cubic yards (i.e., about 100 tons) of petroleum contaminated soil exhibiting olfactory or visual evidence of impact and/or yielding elevated PID readings that exceed approximately 50 ppm-v remains on this area of the Site immediately above the bedrock. As such, it is estimated that the soil removal work resulted in an approximate 93% reduction in the volume of petroleum-impacted soil that was initially present at the Site.

2.2.3 Application of ORC Advanced ™

Based on high PID readings measured on bedrock and standing water in the bottom of excavation and on the presence of greater than six inches of petroleum-impacted soil needing to be left in-place along a portion of the excavation wall that abuts Haags Alley, 125 pounds of Regenesis' Oxygen Release Compound (ORC) Advanced ™ were placed in the bottom of the excavation adjacent to Haags Alley (refer to Figure 6). A total of approximately 125 pounds of ORC Advanced ™ were placed in the excavation on March 9, 16 and 17, 2006. The material was placed dry onto the bottom and northern sidewall of the excavation at elevations that are likely within the groundwater table on at least a seasonal basis (refer to photographs included in Appendix C). ORC Advanced ™ is a formulation of calcium oxy-hydroxide that releases oxygen for period of up to 12 months when hydrated. The released oxygen is used to enhance the rate of naturally occurring aerobic contaminant biodegradation in groundwater and saturated soils.

2.3 Confirmatory Soil Sampling and Analysis

To evaluate the effectiveness of the source removal of contaminated media from the Site relative to the CAP soil cleanup objectives, 22 confirmatory soil samples (designated as Laboratory Samples 011 through 028 and 033 through 036) were collected from the sidewalls of the excavation at 18 locations (designated as C-1 through C-18) along the perimeter of the excavation (refer to Figure 7 and Figure 8). Based on olfactory, visual and PID readings, the majority of the excavation sidewalls appeared free of petroleum impact with the exception of the intersection of the excavation sidewalls and floor of the excavation, which generally consisted of a few inches of soil on top of bedrock. Since soil in the excavation was generally removed to the top of bedrock, confirmatory soil samples were not collected from the bottom of the excavation. Confirmatory samples were collected at approximate 30-foot intervals along the sidewalls of the excavation. Since the excavation was completed in a series of removal cells that were backfilled as the project progressed, the confirmatory samples were collected over a period of approximately three weeks (i.e., March 1, 2006 through March 21, 2006). A hand-held Geo-XT GPS unit was used to record the locations of confirmatory soil samples for transfer to a GIS. One or two confirmatory soil samples were collected at each location:

- One confirmatory soil sample each was collected at locations C-1 through C-6, C-9, C-10, C-12, C-13, and C-15 through C-18. These confirmatory soil samples were generally collected within six (6) inches of the invert of the excavation walls with the bottom of the excavation.
- Two confirmatory soil samples each were collected at locations C-7, C-8, C-11, and C-14. The deeper samples C-7(7.5'), C-8(7.5'), C-11(8'), and C-14(7.5') were collected from petroleum-impacted soil near the invert of the excavation walls with the bottom of the excavation that had to be left in place due to abutting the Haags Alley right-of-way. The shallower samples C-7(6.8'), C-8(6.5'), C-11(6.5'), and C-14(6.8') were collected approximately 0.7 feet to 1.5 feet above the deeper samples in soil that did not show field evidence of petroleum impact requiring remediation.

In order to evaluate the areal extent of a relatively small 1.5 foot thick "hotspot" located in the northern sidewall excavated parallel to Haags Alley centered at confirmatory soil sampling point C-11, confirmatory soil samples were collected approximately three feet east (C-13) and three feet west (C-12) of the suspected hotspot.

The post-source removal confirmatory soil samples were submitted under chain-of-custody control to Mitkem Corporation, (Mitkem), which is a NYSDOH ELAP-certified analytical laboratory. As summarized on Table 1, Mitkem tested these samples for NYSDEC STARS-list VOCs plus TICs using USEPA Method 8260. Copies of Mitkem's laboratory reports and chain-of-custody documentation for these samples are included in Appendix B. Table 3 includes a comparison of detected VOCs to recommended soil cleanup objectives as referenced in the NYSDEC's TAGM 4046.

As shown on Table 3, only one soil sample [i.e., Sample 024 from test location C-11(8.5')] contained individual VOCs that exceeded NYSDEC TAGM 4046 RSCOs. Four samples [i.e., Sample 018 from test location C-7(7.5'), Sample 020 from test location C-8(7.5'), Sample 24 from test location C-11(8.5') and Sample 028 from test location C-14(7.5')] contained total VOC concentrations that exceeded the RSCO for total VOCs of 10,000 (ug/kg). Figure 8 shows confirmatory samples that and exceeded RSCOs ("Fail") in relation to confirmatory samples that did not exceed RSCOs ("Pass"). A more detailed discussion of the confirmatory test locations where samples exceeded NYSDEC TAGM 4046 RSCOs is provided below:

- **Confirmatory Test Location C-7:** Two confirmatory soil samples were collected from test location C-7 located on the northern excavation sidewall along Haags Alley. Suspect contamination was not encountered in the excavation sidewall in this area until about 7.0 feet below grade, and the bottom of the excavation was approximately 7.5 feet below grade. Sample 017 was collected from test location C-7 at a depth of 6.8 feet below grade, and Sample 018 was collected from test location C-7 at a depth of 7.5 feet below grade. VOCs were not detected in Sample 017 from C-7(6.8') at a concentration above reported analytical laboratory detection limits. Sample 018 from C-7(7.5') contained target VOCs and the SVOC naphthalene at concentrations ranging between 18 and 110 ug/kg or parts per billion (ppb), which are below NYSDEC TAGM 4046 RSCOs. Total TICs were detected at a concentration of 9,938 ug/kg or ppb, and total VOCs were detected at a concentration of 10,243 ug/kg, which exceeds the RSCO of 10,000 ug/kg for total VOCs.

- **Confirmatory Test Location C-8:** Two confirmatory soil samples were collected from test location C-8 located on the northern excavation sidewall along Haags Alley. Suspect contamination was not encountered in the excavation sidewall in this area until about 7.0 feet below grade, and the bottom of the excavation was approximately 7.5 feet below grade in this area. Sample 019 was collected from test location C-8 at a depth of 6.5 feet below grade, and Sample 020 was collected from test location C-8 at a depth of 7.5 feet below grade. VOCs were not detected in Sample 019 from C-8(6.5') at concentrations above reported analytical laboratory detection limits. Sample 020 from C-8(7.5') contained target VOCs and the SVOC naphthalene at concentrations ranging between 9 and 3,800 ug/kg or ppb, which are below NYSDEC TAGM 4046 RSCOs. Total TICs were detected at a concentration of 12,510 ug/kg or ppb, and total VOCs were detected at a concentration of 21,394 ug/kg, which exceeds the RSCO of 10,000 ug/kg for total VOCs.

- **Confirmatory Test Location C-11:** Two confirmatory soil samples were collected from test location C-11 located on the northern excavation sidewall along Haags Alley. Field observations and field measurements indicated that a relatively small hotspot of petroleum-contaminated soil was present at confirmatory soil sampling location C-11 located on the northern excavation sidewall along Haags Alley. Suspect contamination was not encountered in the excavation sidewall in this area until about 7.0 feet below grade, and the bottom of the excavation was approximately 8.5 feet below grade in this area. Sample 023 was collected from test location C-11 at a depth of 6.5 feet below grade, and Sample 024 was collected from test location C-11 at a depth of 8.5 feet below grade. Target VOCs and TICS were not detected in Sample 023 from C-11(6.5') at concentrations above reported analytical laboratory detection limits. Sample 024 from C-11(8.5') contained target VOCs and the SVOC naphthalene at concentrations ranging between 1,100 and 81,000 ug/kg or ppb. Six target VOCs and naphthalene were detected at concentrations that exceed their respective NYSDEC TAGM 4046 RSCOs. Total TICs were detected at a concentration of 83,340 ug/kg or ppb, and total VOCs were detected at a concentration of 238,040 ug/kg, which exceeds the RSCO of 10,000 ug/kg for total VOCs.

  In an effort to delineate the areal extent of contamination in proximity to the "hotspot" at confirmatory test location C-11, Sample 025 was collected from test location C-12 at a depth of 8 feet below grade, and Sample 026 was collected from test location C-13 at a depth of 8 feet below grade. Confirmatory Test locations C-12 and C-13 are located approximately three feet west and three feet east of confirmatory test location C-11, respectively. The analytical laboratory test results for Sample 025 from C-12 (8') and Sample 026 from C-13(8') indicate that VOCs and TICs were not detected in either sample at concentrations above reported analytical laboratory detection limits. The confirmatory soil sample results at locations C-11, C-12, and C-13 confirm the conclusions obtained via field observations and field measurements that the lateral extent of contamination at this hotspot above bedrock in the sidewall that abuts Haags Alley is approximately six feet long.

- **Confirmatory Test Location C-14:** Two confirmatory soil samples were collected from test location C-14 located on the northern excavation sidewall along Haags Alley near the intersection of Haags Alley and Pitkin Street. Suspect contamination was not encountered in the excavation sidewall in this area until about 7.0 feet below grade, and the bottom of the excavation was approximately 7.5 feet below grade. Sample 027 was collected from test location C-14 at a depth of 6.8 feet below grade, and Sample 028 was collected from test location C-14 at a depth of 7.5 feet below grade. Target VOCs were not detected in Sample 027 from C-14(6.8') at concentrations above reported analytical laboratory detection limits. Total TICs detected in this sample were 14 ug/kg or ppb. As such, total VOCs detected in Sample 027 are below the NYSDEC RSCO of 10,000 ug/kg for total VOCs. Sample 028 from C-14(7.5') contained target VOCs and the SVOC naphthalene at concentrations ranging between 59 and 1,300 ug/kg or ppb, which are below NYSDEC TAGM 4046 RSCOs. Total TICs were detected at a concentration of 28,620 ug/kg or ppb, and total VOCs were detected at a concentration of 32,061 ug/kg, which exceeds the RSCO of 10,000 ug/kg for total VOCs.

In conclusion, the source removal program removed the majority of petroleum-contaminated soil exceeding NYSDEC TAGM 4046 RSCOs. The sample results at the locations confirm the conclusions obtained via field observations and field measurements that the majority of overburden

soil in proximity to the soil removal area excavation does not contain petroleum-related VOCs, and that the vertical extent of contamination left in-place in the sidewalls of the excavation is limited to a relatively thin seam of contamination that is situated on-top of bedrock. In most cases, this seam of contamination above the top of bedrock is less than six inches thick. However, the seam of contamination left in-place along portions of the excavation sidewall that abuts Haags Alley (i.e., in proximity to confirmatory test locations C-7, C-8, C-11 and C-14) ranges between approximately 1.0 and 1.5 feet thick.

2.4 Backfilling the Source Removal Excavation and Site Restoration

Select geotechnical fill materials (i.e., pea gravel, bank run, crusher run) were used as backfill to replace the petroleum-contaminated soil that was removed. This work was performed in sections as the excavation progressed. Pea gravel replacement fill was used at the bottom of the excavation in one-foot lifts as a desired material for enhancing delivery of in-situ groundwater remediation products (if deemed necessary in the future). This select fill material didn't require compaction; thus, the excavation walls did not require sloping for access by compaction equipment or personnel. Bank run sourced off-site and/or clean reworked soil/fill that was removed and staged on-site in order to access the petroleum-contaminated soil was then placed in the excavation over the pea gravel. Other types of compactable select geotechnical replacement fill that were placed in the excavation included crusher run. A layer of crusher run stone was also placed on the portion of the Site inside the six-foot temporary fence and compacted with a vibratory roller in order to restore the surface of the open parking lot. A total of 1,455.52 tons of clean fill sourced off-site was used as backfill to replace the petroleum-impacted soil that was disposed at the landfill and to restore the Site for temporary use as an open parking lot. This total was comprised of approximately 198.18 tons of pea gravel, 922.36 tons of bank run, and 334.98 tons of crusher run.

[Note: During backfilling of the excavation, three four-inch diameter wells (designated as MW-101, MW-102 and MW-103) were installed in the source-removal area. Installation of these wells is described in Section 3.1.]

The temporary 6-foot chain link fence and associated gate were removed, and the previously removed portions of the original four-foot chain link fence were then re-installed (refer to May 1, 2006 photographs included in Appendix C).

3.0 GROUNDWATER MONITORING PROGRAM

Since contaminated groundwater was observed to be present at the Site after completion of the source area removal, a groundwater monitoring well network was installed, and a groundwater monitoring program was implemented to evaluate groundwater quality at the Site.

3.1 Installation of Groundwater Monitoring Wells

To evaluate post-source removal groundwater quality, a total of eight groundwater monitoring wells were initially installed at the Site (designated as wells MW-101 to MW-108). Subsequent to the installation of these eight wells, two additional wells were installed at the Site (designated as MW-109 and MW-110). The locations of these ten monitoring wells are shown on Figure 9. Three of the wells were installed within the limits of the source removal area during backfilling, five wells were installed outside the source removal area subsequent to its backfilling in up-gradient, cross-gradient, and down-gradient of the source removal area. After the completion of the first round of groundwater sampling, overburden wells MW-109 and MW-110 were installed to further evaluate the overburden groundwater quality at down-gradient locations.

Three Source Area Wells

During backfilling of the removal area excavation, three four-inch diameter wells (i.e., MW-101 to MW-103) were installed within the source-removal area excavation. Utilizing heavy equipment, the bottom of these wells was placed within the upper one or two feet of fractured or ripped bedrock. Each well consists of a five-foot long section of four-inch inner diameter (I.D.) Schedule 40 polyvinyl chloride (PVC) screen connected to threaded four-inch I.D. Schedule 40 PVC riser. Each well was installed inside a temporary minimum 8-inch I.D. solid pipe. The annulus between the temporary 8-inch solid pipe and four-inch well was backfilled with sand at least two feet above the screen, then a minimum one foot thick bentonite seal followed by Portland cement grout to near the ground surface. The temporary pipe around each well was removed as the excavation was backfilled. Each well is equipped with a locked J-plug and also an outer protective flush-mount curb box that is cemented in-place at the ground surface. Monitoring Well Construction Diagrams for each well are included in Appendix A. In addition, Table 4 summarizes the well construction details such as well elevations, well diameters, screened intervals and well depths.

Five Rotary-Drilled Wells

Five rotary-drilled 2-inch diameter PVC overburden/bedrock groundwater monitoring wells (i.e., MW-104 to MW-108) were installed at the Site. The five rotary-drilled groundwater monitoring wells were installed in the following locations:

- two up-gradient locations on the northwest and southwest portions of the Site (two wells),
- a down-gradient location (one well), and
- two cross-gradient locations (two wells).

A right-of-way permit was secured to install well MW-107 within the Haags Alley right-of-way. Improvements in the right-of-way were disturbed and damaged during the well installation, and these improvements were repaired to the extent deemed necessary by the City's Department of Environmental Services.

SJB Services was retained by DAY to install the five rotary-drilled wells. SJB Services utilized a truck-mounted drill-rig to advance hollow stem augers at the five well locations. Continuous split spoon samples of soil/fill were collected ahead of the augers in general accordance with American Society of Testing and Materials (ASTM) 1586 (Standard Penetration Test). These borings were sampled to refusal (suspected top of bedrock). The recovered split spoon samples were visually examined for evidence of suspect contamination (e.g., staining, unusual odors). Portions of the recovered split spoon samples were also screened with a PID in order to evaluate if VOCs were present in the samples.

Pertinent information for the test borings were recorded on field logs, and pertinent portions of this information was subsequently transcribed onto final test boring logs which are included in Appendix A of this report. The recorded information included:

- Date, boring/well identification, and project identification.
- Name of individual developing the log.
- Name of drilling company.
- Drill make and model, auger size, core barrel.
- Identification of alternative drilling methods used and justification thereof (e.g., rotary drilling with a specific bit type to remove a sand plug from within the hollow stem augers).
- Depths recorded in feet and fractions thereof (tenths of inches) referenced to ground surface.
- Standard penetration test (ASTM D-1586) blow counts.
- The length of the sample interval and the percent of the sample recovered.
- The depth of the first encountered water table, along with the method of determination, referenced to ground surface.
- Drilling and borehole characteristics.
- Sequential stratigraphic boundaries.
- Visual and/or olfactory evidence of suspected impact (e.g., unusual odors, staining, etc.).
- Initial PID screening results of split-spoon samples, and/or PID screening results of ambient headspace air above selected samples.

The top of bedrock was encountered typically at a depth of approximately 7.5 to 9.8 feet below the ground surface, and consisted of a gray massive crystalline dolomite with both vertical and horizontal fractures. Fracture density appeared to slightly decrease after the first two or three feet of rock. Some discontinuous vugs and voids were observed, as well as some styolitic partings. For each well, the first five feet of bedrock was cored using an H-sized coring barrel in order to complete the advancement of the boring into rock. Each rock core was observed and described, including adjusted Rock Quality Designation (RQD) values. Adjusted RQD were determined by measuring and summing each piece of sound rock 10.2 centimeters (4 inches) or longer in length in the core run, and dividing this by the total length of recovered rock for that core run. Subsequently, this value is multiplied by a factor of 100, which results in an adjusted RQD percentage. Adjusted RQD values ranged between 46% and 73%, with an average adjusted RQD value of 63%.

The recovered split spoon soil samples and recovered rock cores were visually examined for evidence of suspect contamination (e.g., staining, unusual odors). Portions of the samples were placed in sealable plastic baggies and the ambient headspace air above selected samples was screened with a PID. Soil samples collected during the well installations were not submitted for

analytical laboratory testing. PID readings for rock cores that were collected as part of this work were non-detect. In addition, evidence of suspect contamination was not observed in the recovered rock cores. PID readings for split spoon soil samples were 4.1 ppm-v or less in four of the five wells, and maximum PID reading of 62 ppm-v was recorded from a sample collected 8-9.8 feet below the ground surface at well MW-108.

Following the completion of the boring at each of the well locations, monitoring wells were constructed within each boring. Each well consisted of a pre-cleaned six-foot long to eight-foot long, two-inch I.D., threaded, flush-jointed, No. 10 slot, schedule 40 PVC screen with attached solid riser casing of the same material. The well screens were installed within the fractured zone of the bedrock extending through the interface with the overburden. The well installations included a washed and graded sand pack surrounding the screens and extending approximately 0.0 to 2.2 feet below it, and approximately 1.0 to 1.5 feet above it. An approximate two-foot thick bentonite seal was placed in the annulus above the sand pack, and the remaining annulus was filled with cement/bentonite grout. A steel flush-mounted curb box with an internal cap was placed over each well and cemented in-place at the ground surface. A rubber gasket was installed beneath each curb box access plate in order to reduce the release of volatile vapors from the wells. Monitoring Well Construction Diagrams for each well are included in Appendix A, and Table 4 summarizes well construction details.

Two Overburden Wells

Utilizing direct-push GeoProbe equipment, overburden wells MW-109 and MW-110 were installed at down-gradient locations. A test boring was advanced to refusal (presumed top of bedrock), and the wells was were constructed by installing a five-foot long section of one-inch I.D. Schedule 40 PVC screen connected to threaded one-inch I.D. Schedule 40 PVC riser. The annulus was backfilled with sand at least two feet above the screen, then a minimum one foot thick bentonite seal followed by Portland cement grout to near the ground surface. Each well is equipped with a locked J-plug and also an outer protective flush-mount curb box that is cemented in-place at the ground surface. Monitoring Well Construction Diagrams for each well are included in Appendix A, and Table 4 summarizes well construction details. [Note: One or more round of groundwater samples are to be collected and from these wells during future sampling event(s) to evaluate groundwater quality strictly in the overburden at these locations.]

3.2 Well Development

Based on past experience with installing wells at other properties in proximity to the Site, it was anticipated that an unknown volume of drill water would be lost to the formation at the interface of the overburden and top of bedrock during HQ rock coring. The following are approximate quantities of water lost during drilling/coring of bedrock for the five monitoring wells installed using rotary drilling equipment:

- MW-104: ~300 gallons
- MW-105: ~200 gallons
- MW-106: ~100 gallons
- MW-107: ~100 gallons
- MW-108: ~175 gallons

The five overburden/bedrock interface groundwater monitoring wells were developed by generally evacuating a similar volume of groundwater that was lost during coring for each respective well. The three wells installed during backfilling of the source removal excavation, and the two overburden monitoring wells, were developed by removing three or more casing volumes of water from each well.

The new monitoring wells were developed prior to sampling and/or measurement of static water levels for use in development of a potentiometric groundwater contour map. Well development was performed utilizing either new disposable bailers with dedicated cord or a centrifugal pump and dedicated tubing. No fluids were added to the wells during development, and well development equipment was decontaminated prior to development of each well. The well development procedure is described below:

- Obtain pre-development static water level readings.
- Calculate water/sediment volume in the well.
- Obtain groundwater sample for field analysis using bailer.
- Select development method and set up equipment depending on method used.
- Begin pumping or bailing.
- Obtain initial field water quality measurements (e.g., conductance, temperature, turbidity, and PID readings). Record water quantities and rates removed.
- Obtain field water quality measurements during varying volume intervals of water removed.
- Stop development when water quality criteria are met.
- Obtain post-development water level readings.
- Document development procedures, measurements, quantities, etc.

Development was continued until pH, specific conductance, temperature and turbidity were generally stable for three consecutive measurements. Prior to well development, an oil/water interface meter was used to detect light non-aqueous phase liquid (LNAPL). During development, the purge water was observed for the presence of LNAPL or globules of free floating petroleum project. LNAPL was not measured or observed in any of the wells, and the results of the well development and LNAPL evaluation has been documented on Well Development Logs, which are included in Appendix E.

3.3 Groundwater Sampling and Analysis

Following development and a suitable period of time to allow stabilization, the first round of groundwater sampling was conducted using the eight overburden/bedrock interface wells (i.e., MW-101 through MW-108). These wells were sampled using low-flow sampling methods with a bladder pump connected to a control box. The low-flow sampling method is ideal for collecting generally turbid free groundwater samples and dissolved oxygen (DO) readings. The low-flow purging and sampling procedures utilized are outlined below:

- Prior to purging and sampling, static water level measurements were taken from each well using an oil/water interface meter. The presence of LNAPL was evaluated by using visual observations and the oil/water interface meter at each well location.

- A portable bladder pump connected to new disposable polyethylene tubing was lowered and positioned at or slightly above the mid-point of the well screen. The pump was positioned adjacent to the zone of highest hydraulic conductivity (generally the interface of the overburden and top of weathered bedrock). The bladder pump was introduced slowly in order to minimize disturbance of the water column.

- The pump was connected to a control box that was operated on compressed air and is capable of varying pumping rates. An in-line flow-through cell attached to a Horiba U-22 water quality meter was connected to the bladder pump effluent tubing to measure water quality data.

- The pump was started at a pumping rate of 100 ml/min or less. The water level in the well was measured and the pump rate was adjusted (i.e., increased or decreased) until the drawdown stabilized. In order to establish the optimum flow-rate for purging and sampling, the water level in the well was measured on a periodic basis using an electronic water level meter or an oil/water interface meter. When the water level in the well stabilized (i.e., use goal of <0.33 ft of constant drawdown), the water level measurements were collected less frequently.

- While purging the well at the stabilized water level, water quality indicator parameters were monitored on a periodic basis with the Horiba U-22 water quality meter. Water quality indicator parameters were considered stabilized after three consecutive readings for each of the following parameters were generally achieved:

  - pH (+ 0.1);
  - specific conductance (+ 3%);
  - DO (+ 10 %);
  - oxidation-reduction potential (+ 10 mV);
  - temperature (+ 10%); and
  - turbidity (+ 10%, when turbidity is greater than 10 NTUs)

Table 5 summarizes the water quality parameters obtained for each well. Following stabilization of the water quality parameters, the flow-through cell was disconnected and a groundwater sample was collected from the bladder pump effluent tubing. Portions of samples to be analyzed for soluble parameters were first passed through disposable 0.45 micron filter media prior to filling respective laboratory sample containers. The pumping rate remained at the established purging rate (or adjusted downward) to minimize aeration, bubble formation, or turbulent filling of sample containers. Typically, a pumping rate of 250 ml/min or less was used when collecting VOC samples.

The procedures and equipment used during the purging and groundwater sampling, and the field measurement data, were documented in the field and recorded on Monitoring Well Sampling Logs that are included in Appendix E.

The groundwater samples were submitted for analytical laboratory testing by Mitkem for the following parameters;

- STARS-list VOCs using USEPA Method 8260;

- TPH using NYSDOH Method 310.13;
- Soluble biological oxygen demand (BOD) using USEPA Method 405.1;
- Soluble chemical oxygen demand (COD) using USEPA Method 5220;
- Soluble sulfate using USEPA Method 4500;
- Soluble nitrate using USEPA Method 353.2; and,
- Soluble iron using USEPA Method 6010.

VOC test results for the groundwater samples were compared to groundwater standards and guidance values as referenced in NYSDEC TOGS 1.1.1. Appendix B of this report contains the Analytical Laboratory Reports and the Chain of Custody Documentation for the groundwater samples that were analyzed.

A summary of the test results for groundwater samples is presented on the following tables:

- Table 6: STARS-list VOCs
- Table 7: TPH

As Table 6 shows, STARS-list VOCs were not detected in four of the eight monitoring well sampled. VOCs were detected in the remaining four well samples, and concentrations of total STARS-list VOCs ranged from 7 ug/l to a maximum of 268 ug/l which was detected in monitoring well MW-103 that is located within the northeastern portion of the former source removal excavation. It is important to note that well MW-108 is located hydraulically downgradient of well MW-103, and well MW-108 only contained 41 ug/l of total STARS-list VOCs, indicating that contamination in well MW-103 appears to be attenuating as the contaminant plume migrates northeast toward the property line. Well MW-107 was installed off-site in Haags Alley to evaluate groundwater quality as groundwater migrates off-site into the Haags Alley Right-of-way (ROW), and this well contained 7 ug/l of total VOCs, indicating that relatively low concentrations of VOCs are migrating into the Haags Alley ROW. As Table 6 shows, benzene was not detected in any well sampled, and napthalene was detected in three wells at concentrations ranging between 1 ug/l and 14 ug/l. Total concentrations of TICs ranged from non-detect in several wells to a maximum of 825 ug/l in well MW-103. Figure 10 summarizes the total STARS-list VOCs and naphthalene concentrations detected in each well.

Table 7 summarizes TPH detected in groundwater samples. As this table illustrates, seven of the eight wells did not contain detectable concentrations of TPH. Well MW-103 contained 0.56 mg/l of TPH. There are no NYSDEC criteria for TPH in groundwater.

Table 8 summarizes the analytical laboratory test results for BOD, COD, sulfate, nitrate and iron for the groundwater samples.

3.4 Evaluation of Aquifer Properties

This section of the report presents the scope of work and findings associated with an evaluation of various aquifer properties using data obtained from the groundwater monitoring wells that were installed as part of this project.

3.4.1 Hydraulic Conductivity and Transmissivity

On May 4, 2006, slug testing was conducted at three of the rotary-drilled wells installed at upgradient, cross-gradient, and downgradient positions. The three wells tested include:

- MW-104 (Upgradient)
- MW-106 (Cross-Gradient)
- MW-108 (Downgradient)

DAY used the SuperSlug software to calculate hydraulic conductivity and transmissivity. The hydraulic conductivities were calculated using the "Bouwer and Rice" method for unconfined aquifers. The input and output data and hydraulic conductivity logarithmic graphs for the slug tests performed on these wells are included in Appendix F. Table 9 summarizes the hydraulic conductivity and transmissivity calculations.

As Table 9 shows, "Slug In" hydraulic conductivities for the wells tested at the Site ranged between 1.79×10^{-2} cm/sec to 4.6×10^{-2} cm/sec, and "Slug Out" hydraulic conductivities ranged between 2.51×10^{-2} cm/sec and 5.64×10^{-3} cm/sec, with an average hydraulic conductivity of 2.55×10^{-2} cm/sec for all three wells tested. These hydraulic conductivities are consistent with values for silty sand to clean sand unconsolidated deposits and karst limestone as referenced in Groundwater, R. Allan Freeze & John A. Cherry, 1979. The relatively high hydraulic conductivities may be partially due to the bedrock fracture network observed during the source removal excavation, which terminated on top of the fractured and weathered bedrock, and also during the bedrock coring of the monitoring wells. The average transmissivity for specifically tested wells ranged from about 133 ft^2/day to 629 ft^2/day, and the average transmissivity for the Site was calculated to be about 352 ft^2/day.

3.4.2 Potentiometric Groundwater Contour Map and Groundwater Flow Direction

A licensed surveyor has surveyed the locations and elevations of the six two-inch diameter overburden/bedrock interface groundwater monitoring wells, and the two four-inch diameter overburden wells that are installed in the source removal excavation. A handheld Geo-XT (or similar) GPS unit was used to record the locations of the wells for transfer to a GIS.

On April 26, 2006, the depth to the top of groundwater in each monitoring well was measured using a static water level probe. The measured static water levels and surveyed well elevations were utilized to calculate the adjusted groundwater elevations for each well, and this data is summarized in Table 10. As Table 10 shows, the depth to water ranged from 6.04 feet below the ground surface in well MW-107 to a maximum of 8.28 feet below the ground surface in well MW-101.

The City DEQ used ESRI's ArcMap 9.1 software program to generate a potentiometric groundwater contour map, which is included as Figure 11. As illustrated on this figure, groundwater for the April 26, 2006 monitoring event appears to generally flow toward the northeast

3.4.3 Hydraulic Gradient and Groundwater Velocity

Based on the April 26, 2006 groundwater elevation data for upgradient well MW-104 and downgradient well MW-108, the average hydraulic gradient across the Site was calculated to be 0.004 ft/ft. The relatively low hydraulic gradient indicates that the water table at the Site is relatively flat.

The velocity of groundwater flow at the Site was calculated using the following equation:

$$\mathbf{V= Ki/n}$$

Where: V= Velocity
k = Hydraulic Conductivity
i = Hydraulic Gradient
n = porosity

Using the average hydraulic gradient of 0.004 ft/ft, the average hydraulic conductivity of 2.55 x 10-2 cm/sec (or approximately 72.3 ft/day) and an estimated range of porosity from a low of 0.2 (dolomite) to a maximum of 0.5 (karst limestone) as referenced from Groundwater, R. Allan Freeze & John A. Cherry, 1979, the calculated groundwater velocity at the Site ranges from approximately 0.58 ft/day to1.45 ft/day (i.e., 21.17 ft/year to 529.25 ft/year).

3.5 Post Source Removal Well Monitoring-Derived Wastes

Post source removal well monitoring-derived wastes were containerized in New York State Department of Transportation approved drums (i.e., soil cuttings) or staged in a 4,900-gallon holding tank (i.e., development water, purge water). Washwaters generated during cleaning of the 21,000-gallon frac tank and staged in three 55-gallon drums were also transferred to this 4,900-gallon holding tank. The solid wastes were characterized, transported, and disposed off-site in accordance with applicable regulations. The liquid wastes were discharged to the combined sewer system under a Sewer Use Permit with Monroe County Pure Waters. Associated documentation is included in Appendix B and Appendix D.

4.0 SOIL VAPOR SAMPLING AND ANALYSIS

On September 28, 2006, in-situ soil vapor samples were collected from six locations on the Site to evaluate the presence of VOCs in the soil vapor pore space (designated as Samples 060/SV-1 through 065/SV-6). In addition, one background outdoor ambient air sample (designated as Sample 066/BKG-1) was collected from an upwind location on the Site. The locations of the soil vapor samples and background outdoor air sample were tape-measured to existing site structures/boundaries and are shown on Figure 12. The soil vapor sampling locations were selected based upon the actual limits of the source-removal work and on proposed new building locations shown by Christa development on a "Proposal for Charlotte Square" dated June 30, 2005.

The soil vapor samples and ambient outdoor air background sample were collected in general accordance with Section 2.7.1 of the NYSDOH document titled "Final - Guidance for Evaluating Soil Vapor Intrusion in the State of New York", dated October 2006. Each soil vapor sample point was advanced approximately six feet below the ground surface. Plastic tubing that was perforated on the bottom four inches was then inserted to near the bottom of each soil vapor point. Clean sand was used to backfill the annulus around, and at least 0.5 foot above, the perforated tubing in each soil vapor point. A hydrated bentonite grout was used to backfill the annulus above the sand to the ground surface at each soil vapor point.

Prior to collect of soil vapor samples, a helium tracer gas test was performed at five of the six soil vapor points in accordance with the NYSDOH document "Final - Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006. Airgas, Inc. provided the laboratory grade helium used for the tracer gas test. Helium was not detected at the soil vapor locations tested; thus, DAY proceeded with collecting the soil vapor and background samples in over a 6-hour period in accordance with provisions set forth in the NYSDOH document "Guidance for Evaluating Soil vapor Intrusion in the State of New York".

The samples collected were delivered under chain-of-custody control to Paradigm, which is a NYSDOH ELAP-certified laboratory. Paradigm analyzed the samples for USEPA target compound list (TCL) VOCs using Method TO-15. Table 11 summarizes the VOCs detected in one or more air sample, and Paradigm's laboratory report and executed chain-of-custody documentation for the air samples are included in Appendix B.

Target VOCs detected in one or more soil vapor samples included: acetone; benzene; 2-butanone (MEK); carbon disulfide; chloroform; 1,1-dichloroethane; ethylbenzene; freon 11; 4-methyl-2-pentanone; methylene chloride; styrene; toluene; 1,1,1-trichloroethane; m/p-xylene; and o-xylene. [Note: The laboratory identified that the VOCs acetone and 1,1,1-trichloroethane were also detected in the associated laboratory method blank. Based on a review of the concentrations of these two VOCs detected in the method blank and in the field samples, only a portion of the concentrations of these two VOCs detected in the field samples can be considered attributable to laboratory artifacts.]

[Note: the laboratory indicated that precipitation interfered with the correct operation of the regulator on the summa canister for the ambient outdoor air background sample 066/BKG-1. As such, sample volume was not collected which prohibited analysis of this ambient outdoor air background sample.]

Based on review of site operations and test results for soil samples and groundwater samples in relation to the soil vapor air samples, many of the VOCs detected in the soil vapor samples do not appear attributable to the Site. Examples include: 2-butanone (MEK); carbon disulfide; chloroform; 1,1-dichloroethane; freon 11; 4-methyl-2-pentanone; methylene chloride; and 1,1,1-trichloroethane.

The following sets of data were compared to the regulatory standards, criteria and guidance (SCG) values noted:

- The concentrations of detected VOCs in the soil vapor samples were compared to the 25th and 75th percentile ranges of indoor air levels of VOCs as referenced in the NYSDOH document titled "Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003", revised November 14, 2005. As shown, the following VOCs were detected in one or more soil vapor sample at concentrations exceeding their respective 75th percentile of indoor levels: acetone; benzene; 2-butanone (MEK); chloroform; 1,1-dichlroethane; ethylbenzene; 4-methyl-2-pentanone; methylene chloride; styrene; toluene; 1,1,1-trichloroethane; m/p-xylene; and o-xylene.
- The concentrations of the VOC methylene chloride detected in sample 063/SV-4 (i.e., 51.9 ug/m^3) does not exceed its air guidance value (i.e., 60 ug/m^3) referenced in the NYSDOH document titled "Final - Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006.

In summary, VOCs are present in soil vapor at the Site at concentrations that appear to warrant institutional controls at the Site and engineering controls on future buildings.

5.0 EXPOSURE ASSESSMENT

A qualitative human health exposure assessment was conducted as part of this project in accordance with the guidelines referenced in the document titled "*New York State Department of Health Qualitative Human Health Exposure Assessment*" that is included as part of the NYSDEC document titled "Dr*aft DER-10 Technical Guidance for Site Investigation and Remediation*" (December 2002). The site-specific soil vapor sampling and analysis results and initially groundwater monitoring results were also considered during performance of this exposure assessment. The purpose of the qualitative human health exposure assessment was to identify the exposure setting and exposure pathways, and evaluate contaminant fate and transport in relation to human health exposure subsequent to completing the soil removal work at the Site.

An exposure pathway is comprised of the following components:

1. A contaminant source;
2. Contaminant release and transport mechanisms;
3. A point of exposure;
4. A route of exposure; and
5. A receptor population.

Contaminant Sources

On-going point sources of contamination (e.g., USTs) are not present at the Site. However, the following environmental media are identified as sources of contaminants-of-concern at the Site:

- Residual petroleum-related VOCs in deep soil above bedrock, in bedrock itself, and in groundwater.
- The metals arsenic barium, cadmium, lead and mercury are present in heterogeneous fill material.

The types of contaminants discussed above have been detected in soil, fill or groundwater samples on-site at concentrations exceeding SCGs. VOCs have also been detected in soil vapor samples collected from the Site after the soil removal work.

Contaminant Release and Transport Mechanisms

Release and transport mechanisms for known or suspected contaminants-of-concern include:

- VOCs and SVOCs in soil leaching and impacting groundwater through precipitation or contact with groundwater;
- VOCs, SVOCs and metals migrating in a dissolved groundwater plume;
- VOCs migrating as a vapor in the unsaturated zone;
- VOC volatilization from groundwater or soil to indoor air of future buildings;
- VOC volatilization to air if impacted media are disturbed; and
- VOCs or SVOCs in soil migrating on construction equipment/workers, if impacted media are disturbed.

Point of Exposure

Current points of exposure have not been identified. The soil vapor sampling and analysis results indicate that VOCs in soil have the potential to adversely impact indoor air quality inside future buildings.

Chapter 59 (Health and Sanitation), Article III (Nuisances and Sanitation) § 59-27 (Water Supply) of the current Charter and Code of the City of Rochester, New York states:

A. No person shall use for drinking purposes, or in the preparation of food intended for human consumption, any water except the potable water supply authorized for public use by the City of Rochester; and

B. Other water supplies, wells or springs used for cooling and washing purposes only, where food is prepared or sold for human consumption, shall be tested and approved by the Monroe County Health Director. All auxiliary water supplies used for commercial or industrial use shall have all hydrants and faucets conspicuously posted indicating that such water is not for drinking use, and such water supplies shall not be cross-connected or interconnected with the public water supply."

This City Code has been interpreted by the City DEQ to mean groundwater cannot be used as a source of potable water within the city limits. As such, ingestion of groundwater originating from the Site that contains low levels of VOCs is not considered a point of exposure.

In addition, the groundwater monitoring data do not exceed contaminant concentration limits for volatilization to indoor air or outdoor air for adult residential, child residential, commercial worker and construction worker receptors that are referenced in the NYSDEC document titled "Guidelines for Petroleum Spill Site Inactivation" dated February 23, 1998. As such, post-excavation concentrations of VOCs in groundwater do not appear to have the potential to volatilize to an extent that would adversely impact indoor air quality inside future buildings or outdoor air quality.

Based on the above discussion, potential future points of exposure include the following:

- The air space within new buried utilities (e.g., sewer piping, utility vaults, etc.) if they are entered.
- Future intrusive work or excavations that come into contact with contaminated soil, fill, or groundwater.
- Indoor air of future buildings if constructed over areas of soil or groundwater containing VOCs and depending upon construction details.

Routes of exposure

Under current site conditions and use, inhalation is considered the primary potential route of exposure. If contaminated soil or groundwater is disturbed or used in the future, potential routes of exposure may include inhalation, ingestion, dermal contact, eye contact, and puncture/injection.

Receptor Population

The receptor population includes:

- Construction workers and occupants of future buildings that are located over areas of soil, fill, or groundwater containing VOCs.
- Future workers that may enter buried utility confined spaces, or that may disturb contaminated soil, fill, or groundwater, as part of their work in the future.

Findings

The findings of this human health exposure assessment have identified the following potential exposure pathway: Future site workers and occupants of future buildings that are constructed over areas of soil, groundwater or fill material could be exposed to VOCs, SVOCs and metals that are present in these media at concentrations exceeding SCGs. Examples of exposure include: during disturbance of contaminated material; and potential volatilization of VOCs into future site structures. Routes of exposure to future Site workers could include inhalation, ingestion, dermal contact, eye contact, and puncture/injection.

The findings of this human health exposure assessment have been considered in the conclusions and recommendations presented in Section 6.0 of this report.

6.0 CONCLUSIONS AND RECOMMENDATIONS

RECs identified for this Site included: 1) active spills on adjoining/nearby properties; 2) historic uses of the Site; 3) stained surface soils; 4) former on-site gasoline UST system; and 6) fill material. Currently, the conceptual future use of the Site includes redevelopment for a combination of commercial and residential purposes with a parking lot and landscaped areas. A CAP dated September 2005 was developed that identifies the remedial activities, engineering controls, institutional controls, and environmental monitoring activities to be implemented in order to allow the redevelopment of the Site for the proposed future use while satisfying regulatory agencies' cleanup criteria and concerns to human health and the environment. The CAP was approved by the NYSDEC in a letter dated January 19, 2006.

This report presents the waste characterization, soil remediation, confirmatory soil sampling and analysis, backfilling, site restoration, post-removal groundwater monitoring, and soil vapor sampling and analysis activities that were completed at the Site in accordance with the CAP, and outlined the engineering controls and institutional controls that are required to allow the redevelopment of the Site for the proposed future use while satisfying regulatory agencies' concerns to human health and the environment.

6.1 Findings and Conclusions

Waste Characterization Study

In February 2006, seventeen test borings (designated as B-1 through B-17) were advanced at the Site. Ten selected soil samples from these test borings were analyzed for VOCs. In addition, two of the soil samples that exhibited the greatest potential for petroleum contamination were also tested for ignitability, TCLP metals, and PCBs. Based on the results of this study and previous analytical laboratory data for the Site, the City generated a waste profile for the soil to be disposed off-site. The soil was profiled as non-hazardous soil contaminated with petroleum (apparent weathered gasoline)that may contain less than 3% of bedrock, brick, concrete, wood, asphalt, ash and slag.

Soil Remediation

In February 2006, project signage was installed, portions of an existing four-foot chain-link fence were removed and stored off-site, and a six-foot temporary chain-link fence with 20-foot wide gate was installed for site control.

As a primary remedial objective of the CAP, a source removal program was completed to physically and permanently remove the majority of petroleum-impacted soil and fill materials from the Site. Soil removal activities were conducted at the Site between February 27, 2006 and March 20, 2006. The source removal work was conducted to address petroleum-impacted soil attributable to the former gasoline UST system, and was limited to the boundaries of the Site. A total of 1,257 tons of petroleum-impacted soil/fill, including some loose bedrock from the former tank pit area, were loaded onto trucks from Silvarole Trucking (NYSDEC Part 364 permit #8A-190) and transported to Mill Seat Landfill in Riga, New York for disposal. A total of approximately 2,486 cubic yards (or about 4,102 tons) of soil/fill not containing petroleum contamination required removal and on-site staging in order to remove the deeper petroleum-contaminated soil.

A DAY or City representative documented and monitored that soil removal work, and also performed health and safety air monitoring for VOCs and particulates during this work in accordance with provisions of the HASP and CAMP included in the CAP. Based on the health and safety monitoring, corrective actions were not warranted for the protection of on-site workers of the nearby community.

During the source removal work, dewatering of the excavation was conducted in order to facilitate completion of the source removal program. Water was removed from cells of the excavation or from a 12-inch recovery well that was installed within a portion of the excavation. The removed water was temporarily stored in a 21,000-gallon frac tank. Subsequent to required analytical laboratory testing and obtaining approvals from Monroe County Pure Waters (MCPW), the water from the frac tank (i.e., a total of approximately 12,000 gallons) was discharged to the combined public sewer system located in Charlotte Street, The frac tank was cleaned prior to being transported off-site. Six 55-gallon drums of sediments and one 55-gallon drum of liquids that were generated during the tank cleaning were later disposed off-site.

During the soil removal work, 125 pounds of Regenesis' ORC Advanced ^{TM} were placed in the bottom of the excavation adjacent to Haags Alley to enhance in-situ bioremediation of contamination that had to be left in-place along this portion of the Site in order to preclude potential damage to improvements (i.e., pavement, curbing, buried active utilities) within the Haags Alley right-of-way. The material was placed dry onto the bottom and northern sidewall of the excavation at elevations that are likely within the groundwater table on at least a seasonal basis. ORC Advanced ^{TM} is a formulation of calcium oxy-hydroxide that releases oxygen for period of up to 12 months when hydrated. The released oxygen is used to enhance the rate of naturally occurring aerobic contaminant biodegradation in groundwater and saturated soils.

In addition to the soil/fill that was excavated at the Site in order to remove underlying petroleum-impacted soil, a total of 1,455.52 tons of clean fill sourced off-site was used as backfill to replace the petroleum-impacted soil that was disposed at the landfill and to restore the Site for temporary use as an open parking lot. The clean fill consisted of 922.36 tons of run-of-bank soil, 198.18 tons of pea gravel, and 334.98 tons of crusher run stone. As part of the site restoration, the temporary 6-foot chain link fence and associated gate were subsequently removed, and the previously removed portions of the original four-foot chain link fence were then re-installed.

Assuming that an average 0.33-foot thick layer of petroleum-impacted soil was left in-place in a 15-foot wide strip around the perimeter of the excavation on the Site, it is estimated that approximately 60 cubic yards (i.e., about 100 tons) of petroleum contaminated soil exhibiting olfactory or visual evidence of impact and/or yielding elevated PID readings that exceed approximately 50 ppm remains on this area of the Site immediately above the bedrock. As such, it is estimated that the soil removal work resulted in an approximate 93% reduction in the volume of petroleum-impacted soil that was initially present at the Site.

Confirmatory Soil Sampling and Analysis

In order to verify that the source removal adequately removed contaminated media from the Site to levels that meet the CAP soil cleanup objectives, 22 confirmatory soil samples were collected from sidewalls of the excavation at 18 locations along the perimeter of the excavation. Based on

olfactory, visual and PID readings, the majority of the excavation sidewalls appeared free of petroleum impact with the exception of the intersection of the excavation sidewalls and floor of the excavation. Since soil in the excavation was generally removed to the top of bedrock, confirmatory soil samples were not collected from the bottom of the excavation.

The post-source removal confirmatory soil samples were analyzed by Mitkem for NYSDEC STARS-list VOCs plus TICs using USEPA Method 8260. Based on the test results, only one soil sample [i.e., Sample 024 from test location C-11 (8.5')] contained individual VOCs that exceeded NYSDEC TAGM 4046 RSCOs. Four samples [i.e., Sample 018 from test location C-7(7.5'), Sample 020 from test location C-8(7.5'), Sample 24 from test location C-11 (8.5') and Sample 028 from test location C-14(7.5')] contained total VOC concentrations that exceeded the RSCO for total VOCs of 10,000 ug/kg. These samples were collected from the northern wall of the excavation along the right-of-way of Haags Alley. The analytical laboratory test results confirmatory soil samples collected from east, west and south walls of the excavation did not exceed RSCOs.

In conclusion, the source removal program removed the majority of petroleum-contaminated soil that exceeds NYSDEC TAGM 4046 RSCOs. The sample results at the locations confirm the conclusions obtained via field observations and field measurements that the majority of overburden soil in proximity to the soil removal area excavation does not contain petroleum-related VOCs, and that the vertical extent of contamination left in-place in the sidewalls of the excavation is limited to a relatively thin seam of contamination that is situated on-top of bedrock. In most cases, this seam of contamination above the top of bedrock is less than six inches thick. However, the seam of contamination left in-place along portions of the excavation sidewall that abuts Haags Alley (i.e., in proximity to confirmatory test locations C-7, C-8, C-11 and C-14) ranges between approximately 1.0 and 1.5 feet thick.

Groundwater Monitoring Program

Initially, eight groundwater monitoring wells were installed and sampled after completion of the source removal program to evaluate groundwater quality at the Site. These wells were installed within, upgradient, cross-gradient, and downgradient of the source removal excavation. Each of the eight wells was constructed as overburden/bedrock interface wells. The wells were sampled and monitored for NYSDEC STARs Memo#1 VOCs, TPH, and other groundwater parameters (e.g., DO, BOD, COD, etc.). In addition, the location and elevation of each well was surveyed, and the depth to the top of water in each well was measured on April 26, 2006.

Based on the first round of groundwater monitoring results, VOCs were not detected in four of the eight monitoring wells sampled, and total VOCs in the remaining four wells ranged from 7 ug/l to a maximum of 268 ug/l (detected in downgradient monitoring well MW-103 located in northeastern portion of the source removal excavation). Well MW-108, located hydraulically downgradient of well MW-103, only contained 41 ug/l of total VOCs, indicating that contamination in well MW-103 appears to be attenuating as the contaminant plume migrates toward the northeastern property line. Well MW-107, installed off-site in Haags contained 7 ug/l of total VOCs, indicating that relatively low concentrations of VOCs in groundwater are migrating into the Haags Alley ROW. Total concentrations of TICs ranged from non-detect in several wells to a maximum of 825 ug/l in well MW-103.

Seven of the eight wells did not contain detectable concentrations of TPH. Well MW-103 contained 0.56 mg/l of TPH. There are no NYSDEC criteria for TPH in groundwater. Water quality parameters, including DO, indicate that the groundwater environment is conducive for aerobic natural attenuation of VOCs. Given that approximately 93% of the overburden contaminant mass has been permanently removed during the source removal excavation, it is anticipated that target VOCs will continue to decline via natural attenuation. Likewise, it is likely that the relatively low concentrations of VOCs detected in the off-site well installed in Haags Alley will also continue to decline.

Concentrations of total VOCs detected in wells sampled during a pre-source removal investigation conducted in 2002 indicated that total VOCs ranged from 19 ug/l to a maximum of 10,607 ug/l detected in former well MW-4 which was installed in the same general location as existing well MW-103. Based on the initial round of post-source removal groundwater sampling, target VOCs in groundwater have declined significantly when compared to the concentration of VOCs detected in pre-source removal investigations. For example, target VOCs in groundwater in the downgradient portion of the Site near well MW-103 have exhibited a 97% reduction, indicating that the source removal program was successful in significantly reducing the concentration of target VOCs leaching to groundwater.

Based on the initial round of groundwater monitoring, on-site groundwater does not appear to require the installation of an active groundwater remediation system, and off-site groundwater migration of target VOCs does not appear to require remediation or mitigation at this time.

Soil Vapor Sampling and Analysis

In-situ soil vapor samples were collected from six locations on the Site to evaluate the presence of VOCs in the soil vapor pore space. In addition, one background outdoor ambient air sample (designated as Sample 066/BKG-1) was collected from an upwind location on the Site . [Note: the laboratory indicated that precipitation interfered with the correct operation of the regulator on the summa canister, which prohibited analysis of this ambient outdoor air background sample.]

Paradigm analyzed the samples for USEPA TCL VOCs using Method TO-15. Target VOCs detected in one or more soil vapor samples included: acetone; benzene; 2-butanone (MEK); carbon disulfide; chloroform; 1,1-dichlroethane; ethylbenzene; freon 11; 4-methyl-2-pentanone; methylene chloride; styrene; toluene; 1,1,1-trichloroethane; m/p-xylene; and o-xylene.

Based on review of site operations and test results for soil samples and groundwater samples in relation to the soil vapor air samples, many of the VOCs detected in the soil vapor samples do not appear attributable to the Site. Examples include: 2-butanone (MEK); carbon disulfide; chloroform; 1,1-dichlroethane; freon 11; 4-methyl-2-pentanone; methylene chloride; and 1,1,1-trichloroethane. In addition, the laboratory identified that the VOCs acetone and 1,1,1-trichloroethane were also detected in the associated laboratory method blank. As such, the detection of these two VOCs in the field samples may be laboratory artifacts.

The following VOCs were detected in one or more soil vapor sample at concentrations exceeding their respective 75th percentile of indoor levels as referenced in the NYSDOH document titled "Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003", revised November 14, 2005: acetone; benzene; 2-butanone (MEK);

chloroform; 1,1-dichloroethane; ethylbenzene; 4-methyl-2-pentanone; methylene chloride; styrene; toluene; 1,1,1-trichloroethane; m/p-xylene; and o-xylene.

In summary, VOCs are present in soil vapor at the Site at concentrations that appear to warrant institutional controls at the Site and engineering controls on future buildings.

Exposure Assessment

A qualitative human health exposure assessment was conducted as part of this project in accordance with the guidelines referenced in the document titled "*New York State Department of Health Qualitative Human Health Exposure Assessment*" that is included as part of NYSDEC DER-10 dated December 2002). The site-specific soil vapor sampling and analysis results and initially groundwater monitoring results were also considered during performance of this exposure assessment. The findings of the human health exposure assessment identified the following potential exposure pathways:

- Future site workers and occupants of future buildings that are constructed over areas of soil or fill material containing VOCs could be exposed to VOCs, SVOCs and metals that are present in the media at concentrations exceeding SCGs. Routes of exposure to future Site workers could include inhalation, ingestion, dermal contact, eye contact, and puncture/injection.
- Even though groundwater analytical laboratory test results show relatively low concentrations of VOCs, future potential use of groundwater that originates from the Site as a potable source of water could pose a potential exposure pathway to VOCs that are present in groundwater at concentrations exceeding SCGs. The primary potential route of exposure would be ingestion. However, other potential routes of exposure include inhalation, dermal contact, eye contact, and puncture/injection.

Summary of Conclusions

The soil removal was successful in remediating approximately 93% of the volume of petroleum-contaminated soil from the Site. The results of the post-excavation confirmatory soil sampling indicates contaminated soil exceeding NYSDEC TAGM 4046 RSCOs that is greater than six inches thick above the top of bedrock is only present on a portion of the northern excavation wall that bounds the right-of-way of Haags Alley.

The groundwater monitoring results show that four of the eight well sampled after completion of the source removal did not contain any target VOCs, and the remaining wells contained total VOC concentrations ranging from 7 ug/l to a maximum of 268 ug/l. Target VOCs in groundwater have exhibited a 97% reduction when compared to pre-remediation sampling results. This indicates that the source removal program was successful in significantly reducing the concentration of target VOCs leaching to groundwater.

These results suggest that the soil removal has improved groundwater quality at the Site to a point where groundwater VOCs are present at concentrations that are below, or only slightly exceed, respective groundwater standards or guidance values. Based on the initial round of groundwater monitoring, on-site groundwater does not appear to require the installation of an active groundwater remediation system, and off-site groundwater migration of target VOCs does not appear to require remediation or mitigation at this time. Continued quarterly groundwater monitoring is recommended to confirm that concentrations of target VOCs in groundwater continue to decline.

Soil vapor sampling and analysis results, groundwater monitoring results, and the findings of the human health exposure assessment suggest institutional controls and engineering controls are warranted at the Site.

6.2 Recommendations

Based on the work completed in accordance with the CAP, and the planned future use of the Site, the following recommendations are made for the Site:

1. It is recommended that the groundwater monitoring program be continued in accordance with the provisions set forth in the CAP (i.e., a total of four quarterly groundwater monitoring events). If test results for VOCs remain similar or lower to that of the first round of groundwater sampling and analysis, then further monitoring or remediation do not appear warranted.

2. It is recommended that an environmental management plan (EMP) be developed for the Site in accordance with the provisions set forth in the CAP. The EMP should address future disturbance, handling, characterization, disposal or re-use of site media (e.g., fill material, soil, bedrock or groundwater) that may contain concentrations of VOCs, SVOCs or metals above SCGs. As identified in the CAP, the EMP will also include identification of required engineering controls and institutional controls that are intended to prevent potential future exposure to residual contaminants in soil, fill or groundwater at the Site.

3. It is recommended that a copy of this report be provided to appropriate regulatory agencies that are involved with the project.

8.0 REFERENCES

Corrective Action Plan; 80-100 Charlotte Street, Rochester, New York; NYSDEC Spill #0270474; USEPA Assistance ID No.BF97298603; September 2005; Day Environmental, Inc.

NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 document titled "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (TOGS 1.1.1) dated June 1998, including April 2000 Addendum Table 1

NYSDEC Division of Technical and Administrative Guidance Memorandum, Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046) dated January 24, 1994, as amended by Memorandums dated December 20, 2000, April 10, 2001, and July 10, 2001

NYSDEC Proposed Division of Technical and Administrative Guidance Memorandum, Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046) dated 1995

NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York; October 2006

NYSDOH Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003"; revised November 14, 2005

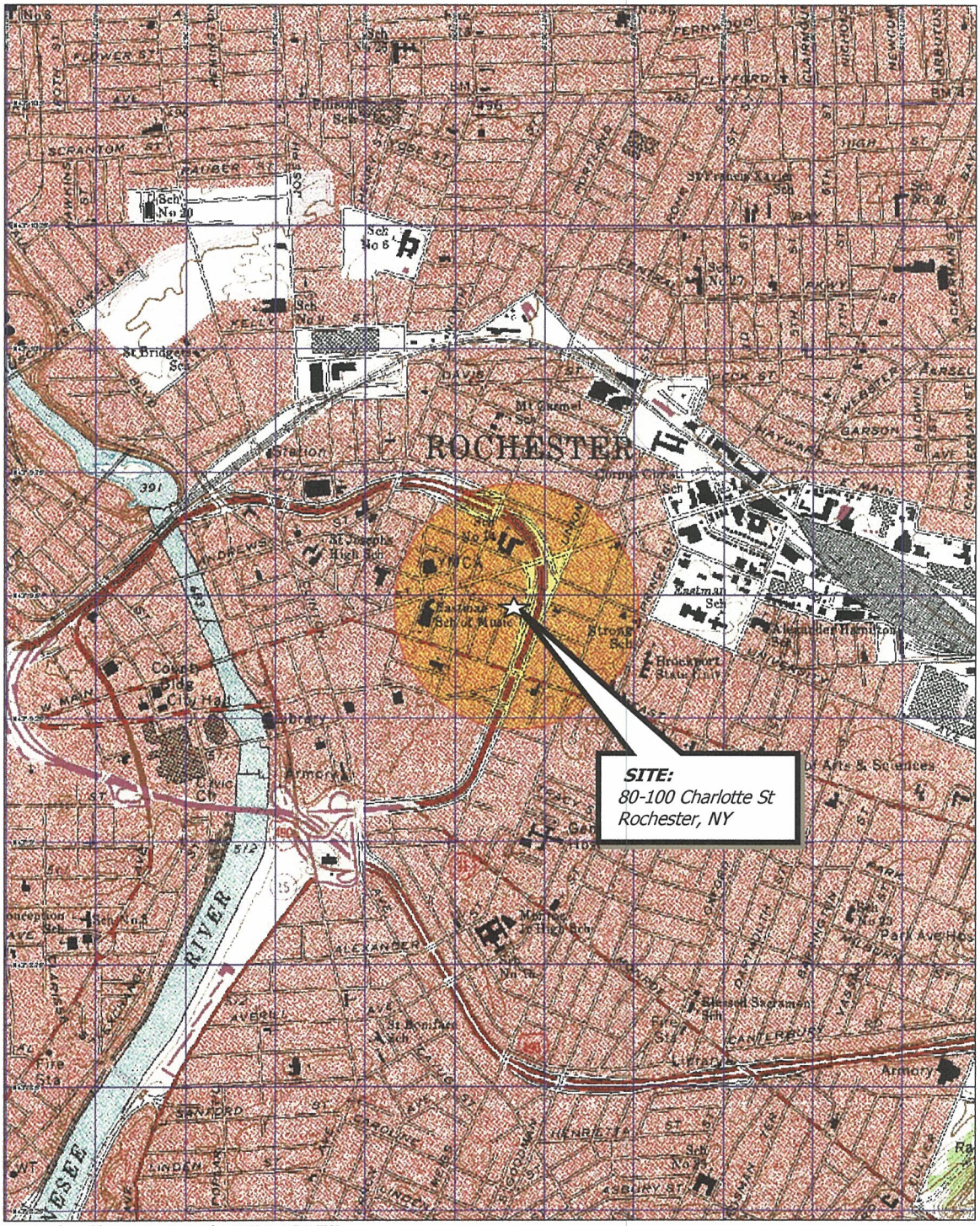
NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, December 2002

NYSDEC Guidance for Petroleum Spill Site Inactivation; February 23, 1998

USGS topographic map for the Rochester East, New York quadrangle, 1995

Groundwater; R. Allan Freeze & John A. Cherry; 1979

FIGURES



Drawing Produced From: 3-D TopoQuads, DeLorme Map Co., referencing USGS quad map Rochester East (NY) 1995. Site Lat/Long: N43°09.48' – W77°35.83'

DATE **05-30-2002** DRAWN BY **Jad** SCALE **1" = 2000'**	DAY ENVIRONMENTAL, INC. ENVIRONMENTAL CONSULTANTS ROCHESTER, NEW YORK 14614-1008	PROJECT TITLE **80-100 CHARLOTTE STREET ROCHESTER, NY** **BROWNFIELD CLEANUP PROJECT** DRAWING TITLE **PROJECT LOCUS MAP**	PROJECT NO. **3638R-05** **FIGURE 1**

S:\GPS Data2005\Charlotte Street Real\Rocity3638R-05 - Site Location - Figure 2.mxd

Project No. 3638R-05 FIGURE 2	day DAY ENVIRONMENTAL, INC. Environmental Consultants Rochester, New York 14614-1008 New York, New York 10165-1617	Project Title BROWNFIELD CLEANUP PROJECT 80-100 CHARLOTTE STREET ROCHESTER, NEW YORK Drawing Title Site Location Plan	Date 07/18/2006 Drawn By CPS Scale 1" = 100'

Ref4:
Ref5:
Ref6:

Ref1:
Ref2:
Ref3:

HAAGS ALLEY

Lot No. 45.1

Concrete Sidewalk

MW-2 (0.5') 45.2ppm
B-14 (0.5') 340ppm
B-13 0.0ppm
B-9 0.0ppm
TB-7 0.0ppm
TB-9 0.0ppm
B-5 0.0ppm
MW-3 (2.0') 278ppm
TB-10 0.0ppm
B-6 (0.5') 3.7ppm
TB-17 (2.5') 462ppm
TB-4 (5') 748ppm
TB-18 (3.5')
TB-23 (2.5') 775ppm
TB-11 0.0ppm
TB-26 0.0ppm
B-7 (0.5') 404ppm
B-4 (3.0') 754ppm
TB-6 (3.5') 622ppm
B-3 (0.5') 4.9ppm
TB-16 0.0ppm
B-12 0.0ppm
MW-1 (1') 1336ppm
TB-12 0.0ppm
TB-1 11.7ppm
MW-4 (4') 1387ppm
B-2 0.0ppm
TB-27 (0.5') 139ppm
TB-25 4.4ppm
TB-2 (2') 387ppm
B-8 0.0ppm
B-10 0.0ppm
TB-15 0.0ppm
B-11 0.0ppm
TB-13 0.0ppm
TB-5 3.0ppm
B-16 (0.3') 67.1ppm
TB-28 0.0ppm
TB-5A 0.0ppm
B-1 (0.2') 65.8ppm
B-15 0.0ppm
TB-22 0.0ppm
TB-21 0.0ppm
B-17 0.0ppm
TB-19 0.0ppm
TB-20 0.0ppm

Former Underground Storage Tank Location

Approximate Soil Removal Area

6' High Chain Link Fence

WINTHROP ST.

CHARLOTTE STREET

PITKIN STREET

N

SITE PLAN
1" = 30'

0' 30' 60' 90'

NOTES

1. Site plan produced from a tax map of The City Of Rochester; an architectural drawing for Vanderlinde Electric Corp, drawing number B-1, Site Plan, dated 3-12-1962; and notes of site visit by representatives of Day Environmental, Inc. On 6-07-2002.

2. Locations of test borings and sample points tape-measured from existing site structures or surveyed, and are considered accurate to the degree implied by the method used.

LEGEND

MW-3 (2.0') — Previous Overburden groundwater monitoring well with thickness of petroleum impacted overburden soils in parentheses and peak PID reading in parts per million (ppm)

TB-18 (3.5') — Previous Test Boring with thickness of petroleum impacted overburden soils in parentheses and peak PID readings in parts per million (ppm)

B-1 (0.2') — Waste Characterization Test Boring with thickness of petroleum impacted overburden soils in parentheses and peak PID readings in parts per million (ppm)

DESIGNED BY	DRAWN BY	SCALE	DATE
JAD	RJM/Tww/CPS	As Noted	07-2006
			DATE DRAWN 07-2006
			DATE ISSUED 12-20-2006

day
DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10165-1617

PROJECT TITLE
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK
BROWNFIELD CLEANUP PROJECT

DRAWING TITLE
Site Plan Depicting Waste Characterization Test Borings and Previous Test Locations

PROJECT NO.
3638R-05

FIGURE 3

Time Plotted: Wed Dec 20 13:05 2006
File Name: Rocity\3638\2006 Site Work\Waste Char TB Plan-Layout Name: Layout 1
Xerox432AnsiB-2; 11 x 17

Haags Alley

B-9 (0.0 ppm)

B-3 (4.9 ppm)

B-13 (0.0 ppm)

B-14 (340.0 ppm)

B-5 (0.0 ppm)

B-2 (0.0 ppm)

B-6 (2.7 ppm)

B-7 (404.0 ppm)

B-4 (754.0 ppm)

B-16 (67.1 ppm)

B-1 (65.8 ppm)

B-8 (0.0 ppm)

B-10 (0.0 ppm)

B-12 (0.0 ppm)

B-17 (0.0 ppm)

B-11 (0.0 ppm)

B-15 (0.0 ppm)

Legend

Peak PID Results ppm (parts per million)

- 0.000000
- 0.000001 - 4.900000
- 4.900001 - 67.099998
- 67.099999 - 404.000000
- 404.000001 - 754.000000

Boundary

Fencing

Sidewalk

NOTES:

Parcel and street GIS data provided by the City of Rochester, NY 2005.

Borings located using a Trimble GeoXT GPS unit with manufactured submeter accuracy. Data was differientially corrected and are considered accurate to the degree implied by the method used.

Charlotte Street

N E S W

0 10 20 40 Feet

S:\GPS 2005\CharlotteStreetReal\Rocity3638R-05\Rocity3638R-05-Figure 4. mxd

Date 07/19/2006

Drawn By CPS

Scale 1" = 20'

Project Title
BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title
Waste Characterization Study Test Boring Locations with Peak PID Results

day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

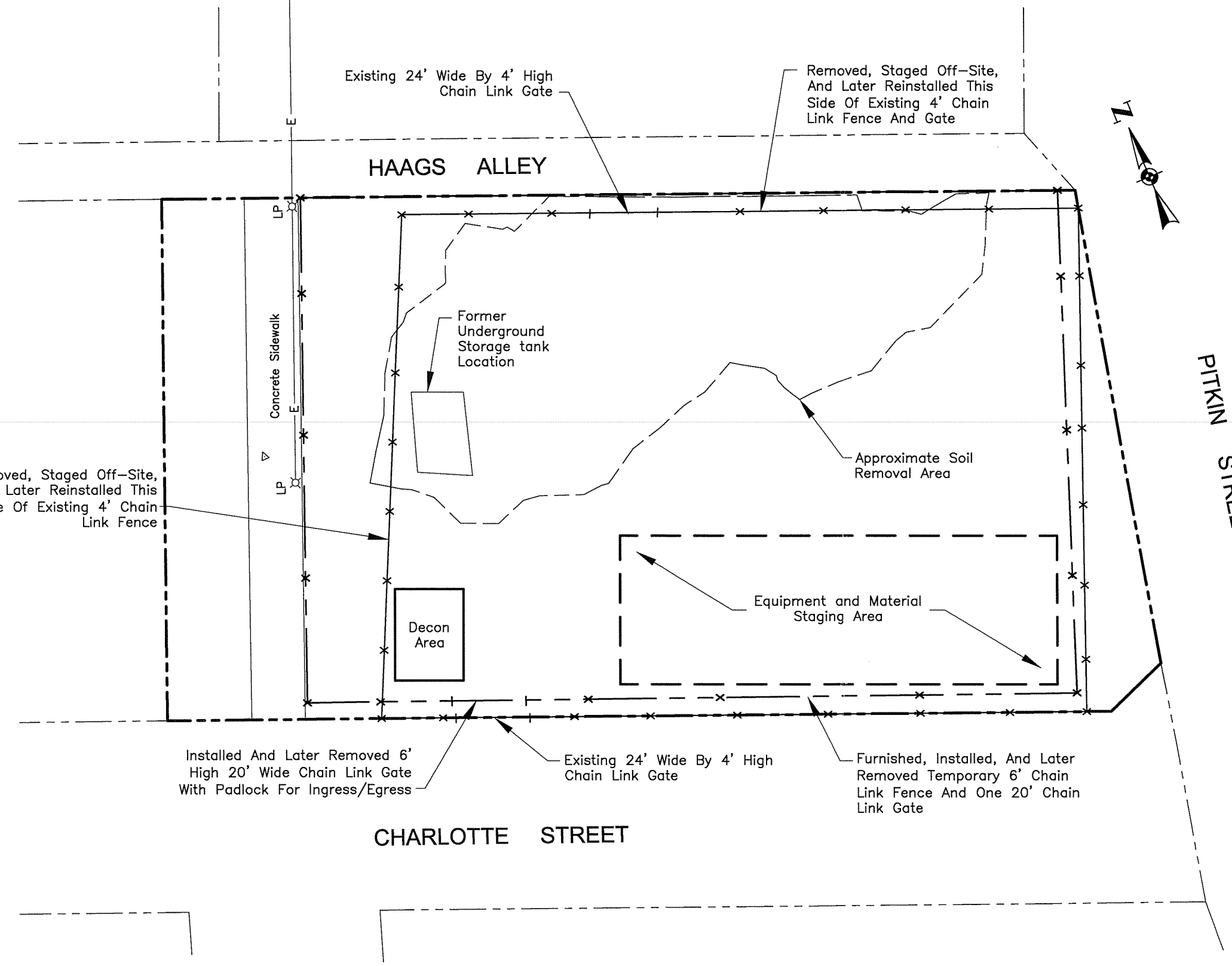
Project No.

3638R-05

FIGURE 4

Ref4:
Ref5:
Ref6:

Ref1:
Ref2:
Ref3:



SITE PLAN
1" = 30'

0' 30' 60' 90'

NOTES

1. Site plan produced from a tax map of The City Of Rochester; an architectural drawing for Vanderlinde Electric Corp, drawing number B-1, Site Plan, dated 3-12-1962; and notes of site visit by representatives of Day Environmental, Inc. On 6-07-2002.

2. Locations of existing fencing and gates are approximate, and are placed based on observations made during site visits by representatives of Day Environmental, Inc..

FIELD VERIFIED BY	JAD
DATE	12-19-2006
DRAWN BY	RJM/CPS
DATE DRAWN	12-19-2006
SCALE	As Noted
DATE ISSUED	12-20-2006

day
DAY ENVIRONMENTAL, INC.
ENVIRONMENTAL CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10165-1617

PROJECT TITLE
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

BROWNFIELD CLEANUP PROJECT

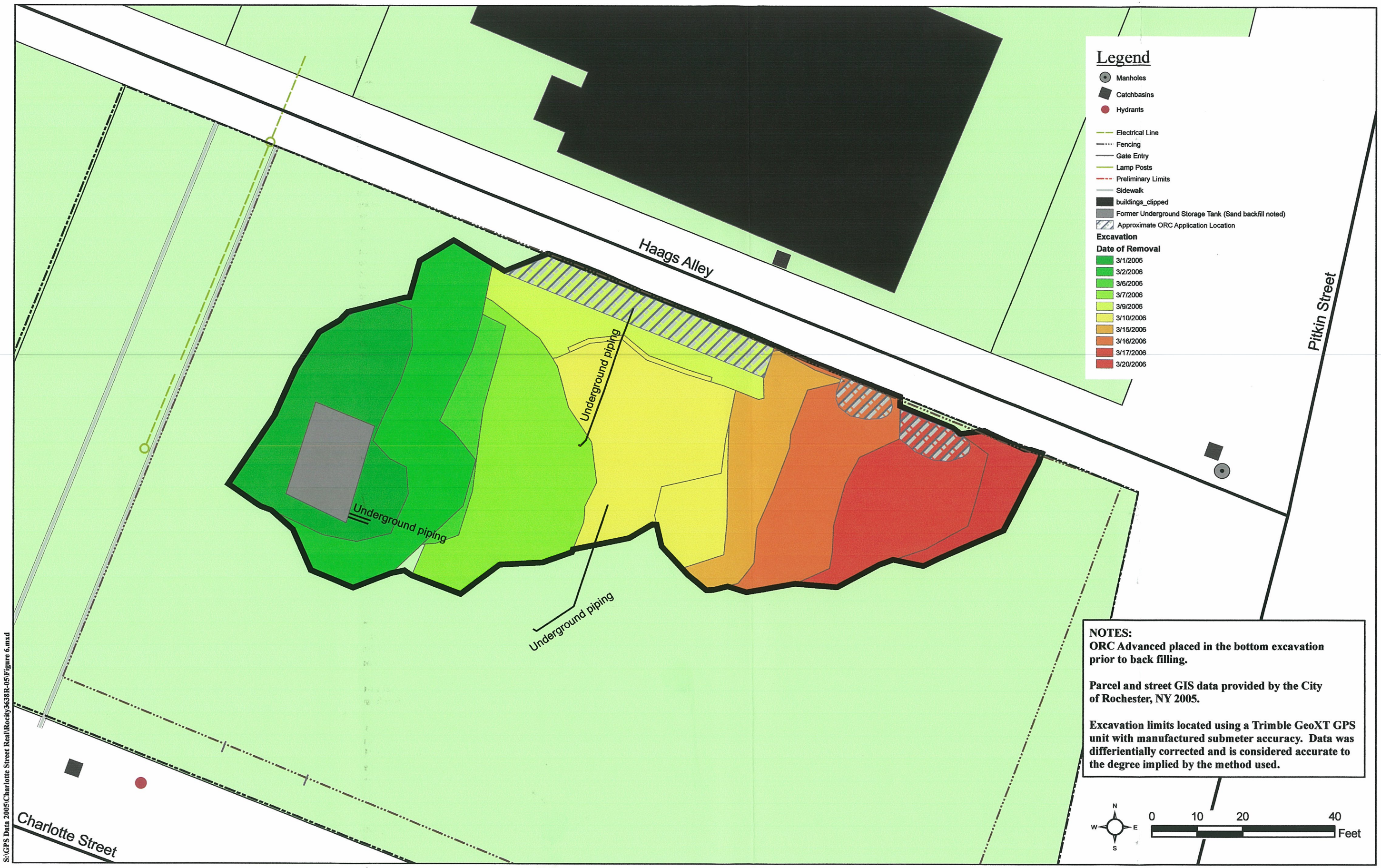
DRAWING TITLE
Site Plan Depicting Site Control Components

PROJECT NO.
3638R-05

FIGURE 5

Xerox432AnsiB-2; 11 x 17
Layout Name: Layout 1

Time Plotted: Wed Dec 20 13:05 2006
File Name: Rocity\3638\3638-6.dwg



S:\GPS Data 2005\Charlotte Street Real\Rocity3638R-05\Figure 6.mxd

Date	12-18-2006
Drawn By	CPS
Scale	1" = 20'

Project Title
BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

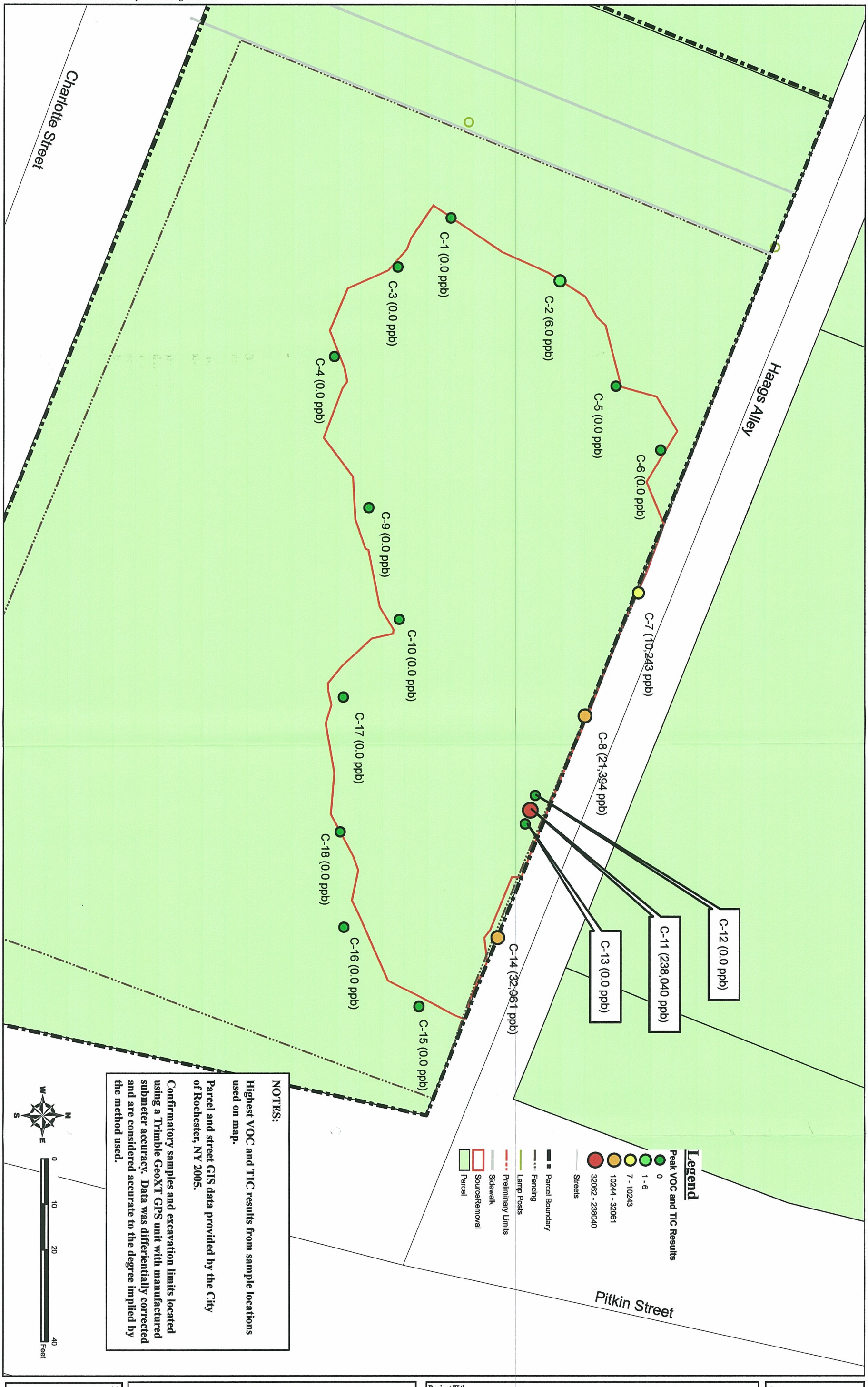
Drawing Title
Source Removal by Day and Areas of Excavation treated with ORC Advanced

day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project No.
3638R-05

FIGURE 6

S:\GPS 2005\CharlotteStreetReal\Rocity3638R-05\Figure 7.mxd



NOTES:

Highest VOC and TIC results from sample locations used on map.

Parcel and street GIS data provided by the City of Rochester, NY 2005.

Confirmatory samples and excavation limits located using a Trimble GeoXT GPS unit with manufactured submeter accuracy. Data was differientially corrected and are considered accurate to the degree implied by the method used.

day

DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project Title

BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title

Confirmatory Soil Sample Locations with Peak VOC and TICs Analytical Laboratory Test Results

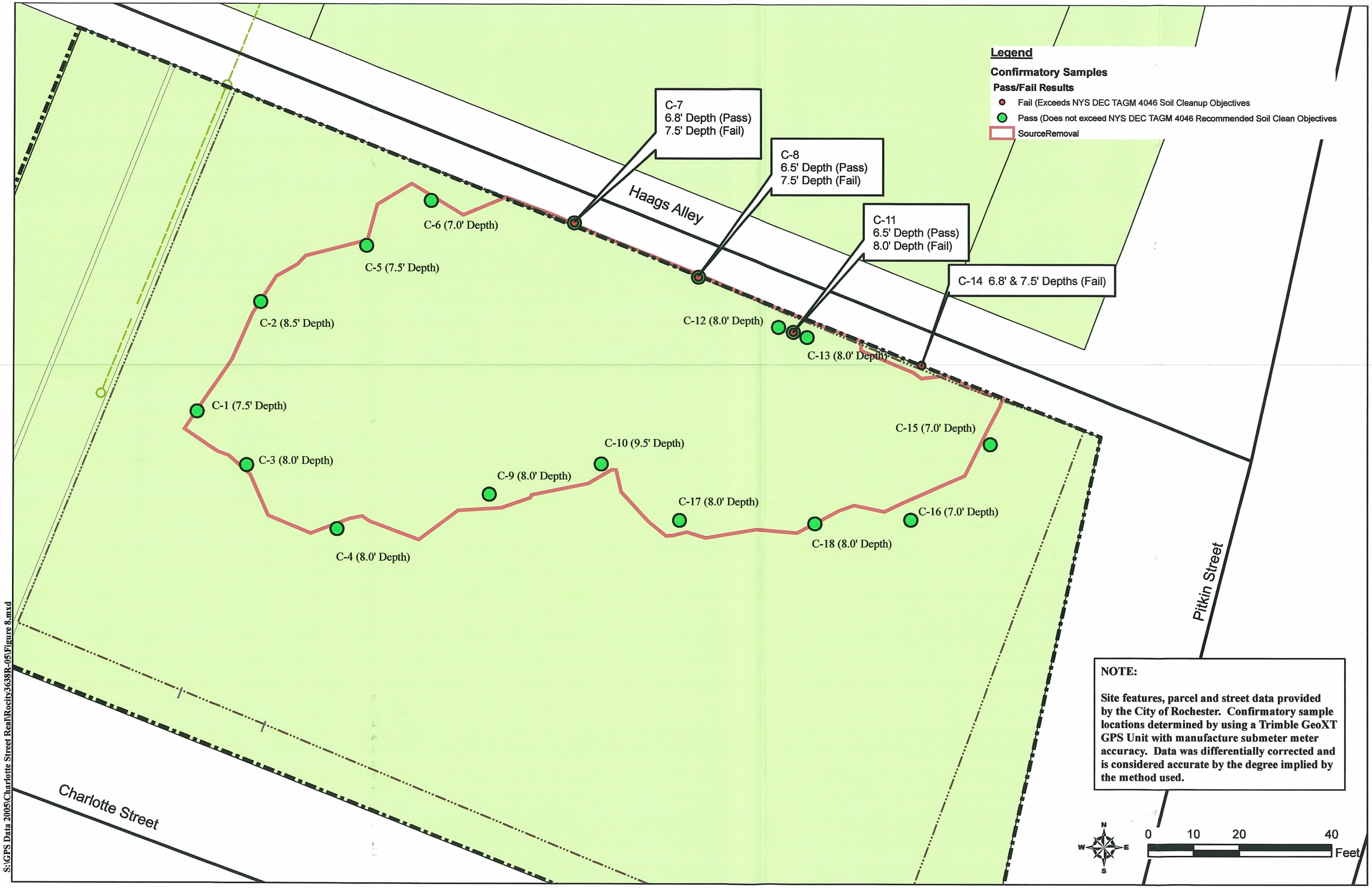
Date
08/25/2006

Drawn By
CPS

Scale
1" = 20'

Project No.
3638R-05

FIGURE 7



S:\GPS Data 2005\Charlotte Street Real\Rocity3638R-05\Figure 8.mxd

NOTE:

Site features, parcel and street data provided by the City of Rochester. Confirmatory sample locations determined by using a Trimble GeoXT GPS Unit with manufacture submeter meter accuracy. Data was differentially corrected and is considered accurate by the degree implied by the method used.

Date	Drawn By	Scale
07/18/2006	CPS	1" = 20'

Project Title
BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title
Source Removal Area Extent and Confirmatory Soil Sample Results

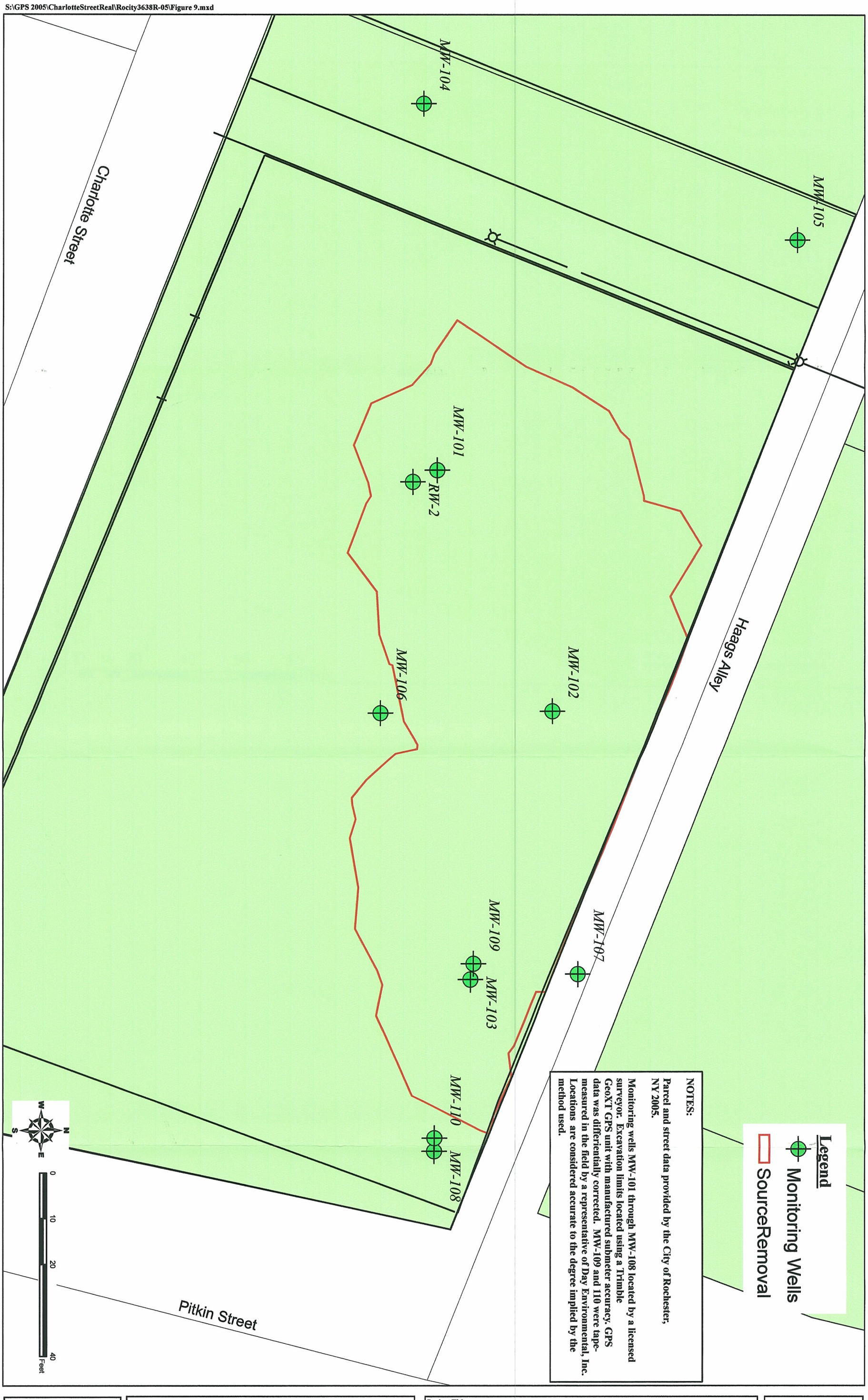
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project No.

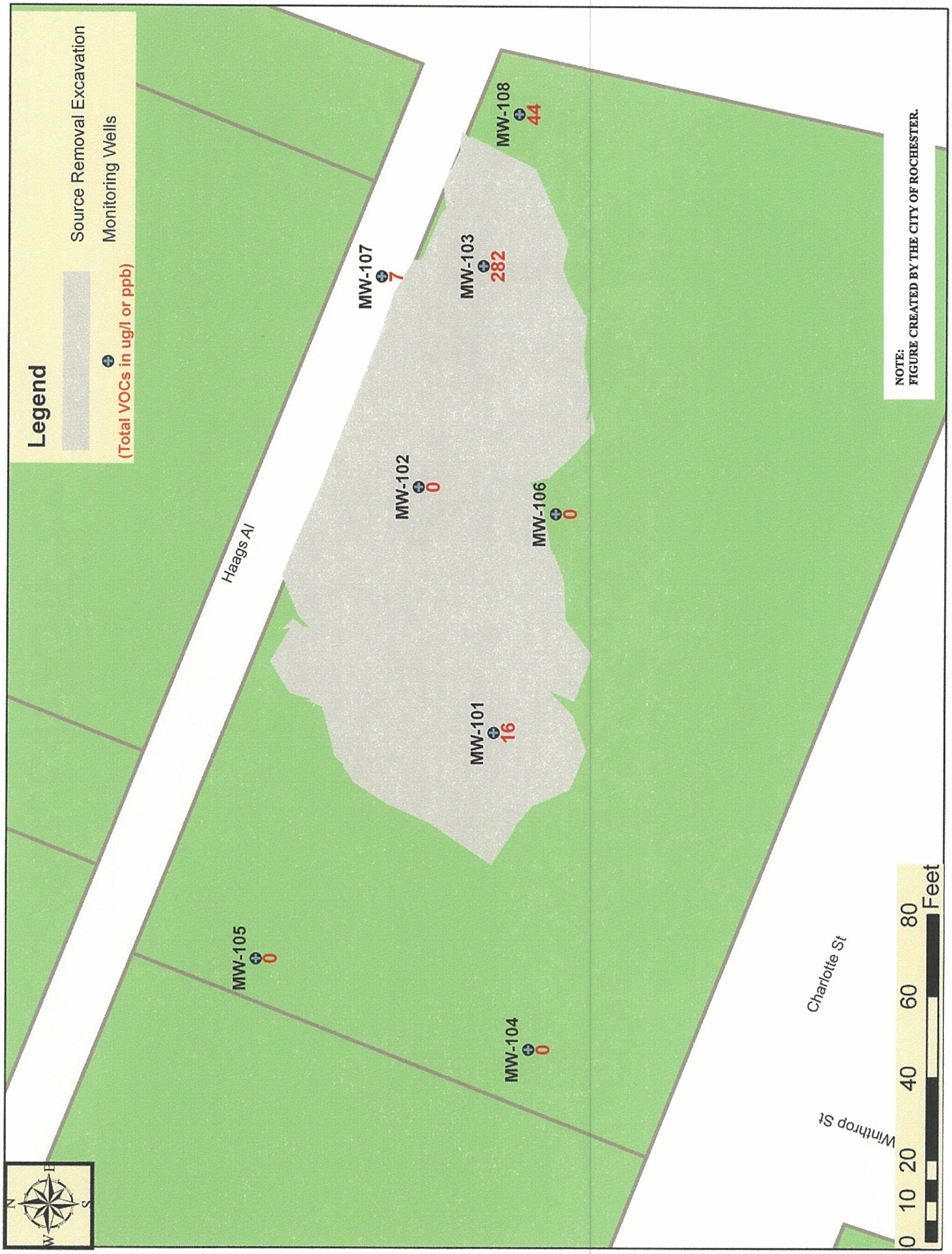
3638R-05

FIGURE 8

S:\GPS 2005\CharlotteStreetReal\Rocity3638R-05\Figure 9.mxd



Project No. 3638R-05 FIGURE 9	day DAY ENVIRONMENTAL, INC. Environmental Consultants Rochester, New York 14614-1008 New York, New York 10165-1617	Project Title: BROWNFIELD CLEANUP PROJECT 80-100 CHARLOTTE STREET ROCHESTER, NEW YORK Drawing Title: Site Plan with Monitoring Well Locations	Date: 08/17/2006 Drawn By: CPS Scale: 1" = 20'



Date 02-22-2006	DAY ENVIRONMENTAL, INC. Environmental Consultants Rochester, New York 14614-1008 New York, New York 10165-1617	Project Title BROWNFIELD CLEANUP PROGRAM 80-100 CHARLOTTE STREET ROCHESTER, NEW YORK	Project No. 3638R-05
Drawn By CPS			
Scale AS NOTED		Drawing Title TOTAL VOC's AND NAPHTHALENE IN APRIL 2006 GROUNDWATER SAMPLE	FIGURE 10

Date		Project Title	Project No.
02-22-2006	**day** DAY ENVIRONMENTAL, INC. Environmental Consultants Rochester, New York 14614-1008 New York, New York 10165-1617	BROWNFIELD CLEANUP PROGRAM 80-100 CHARLOTTE STREET ROCHESTER, NEW YORK	3638R-05
Drawn By: CPS		Drawing Title	
Scale: AS NOTED		POTENTIOMETRIC GROUNDWATER CONTOUR MAP FOR APRIL 26, 2006	FIGURE 11

S:\GPS 2005\CharlotteStreetReal\Rocity3638R-05\Figure 12.mxd

NOTES:

Parcel and street data provided by the City of Rochester, NY 2005.

Project No.	3638R-05
	FIGURE 12

day

DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14614-1008
New York, New York 10165-1617

Project Title

BROWNFIELD CLEANUP PROJECT
80-100 CHARLOTTE STREET
ROCHESTER, NEW YORK

Drawing Title

Soil Vapor Sample Locations

Date	10/03/2006
Drawn By	CPS
Scale	1" = 30'

TABLES

TABLE 1
80 – 100 CHARLOTTE STREET
ROCHESTER, NEW YORK

ANALYTICAL LABORATORY TESTING PROGRAM

Sample Number	Sample Location and Depth	Sample Matrix	Date Collected	Analytical Laboratory	Analysis
001	B-1 (10.5')	Soil	02/10/06	Paradigm	8260
002	B-2 (8.5')	Soil	02/10/06	Paradigm	8260
003	B-3 (7.5')	Soil	02/10/06	Paradigm	8260
004	B-4 (10.5')	Soil	02/10/06	Paradigm	8260, 8082, TCLP Metals, Ign.
005	B-5 (8.0')	Soil	02/10/06	Paradigm	8260
006	B-6 (8.0')	Soil	02/10/06	Paradigm	8260
007	B-7 (8.0')	Soil	02/10/06	Paradigm	8260, 8082, TCLP Metals, Ign.
008	B-8 (8.0')	Soil	02/10/06	Paradigm	8260
009	B-14 (7.5')	Soil	02/10/06	Paradigm	8260
010	B-16 (9.0')	Soil	02/10/06	Paradigm	8260
011	C-1 (7.5')	Soil	03/01/06	Mitkem	8260
012	C-2 (8.5')	Soil	03/01/06	Mitkem	8260
013	C-3 (8.0')	Soil	03/02/06	Mitkem	8260
014	C-4 (8.0')	Soil	03/02/06	Mitkem	8260
015	C-5 (7.5')	Soil	03/02/06	Mitkem	8260
016	C-6 (7.0')	Soil	03/02/06	Mitkem	8260
017	C-7 (6.8')	Soil	03/09/06	Mitkem	8260
018	C-7 (7.5')	Soil	03/09/06	Mitkem	8260
019	C-8 (6.5')	Soil	03/09/06	Mitkem	8260
020	C-8 (7.5')	Soil	03/09/06	Mitkem	8260
021	C-10 (9.5')	Soil	03/14/06	Paradigm	8260
022	C-9 (8.0')	Soil	03/14/06	Mitkem	8260
023	C-11 (6.5')	Soil	03/16/06	Mitkem	8260
024	C-11 (8.0')	Soil	03/16/06	Mitkem	8260
025	C-12 (8.0')	Soil	03/16/06	Mitkem	8260
026	C-13 (8.0')	Soil	03/16/06	Mitkem	8260
027	C-14 (6.8')	Soil	03/17/06	Mitkem	8260
028	C-14 (7.5')	Soil	03/17/06	Mitkem	8260
029	Wet Soil	Soil	03/17/06	Paradigm	8260
030	Wet Soil	Soil	03/17/06	Paradigm	8260
031	Frac Tank Contents	Groundwater	03/16/06	Paradigm	602
032	Wet Soil	Soil	03/21/06	Paradigm	PFT 9095A
033	C-15 (7.0')	Soil	03/20/06	Mitkem	8260
034	C-16 (7.0')	Soil	03/20/06	Mitkem	8260
035	C-17 (8.0')	Soil	03/21/06	Mitkem	8260
036	C-18 (8.0')	Soil	03/21/06	Mitkem	8260
037	MW-104	Groundwater	04/26/06	Mitkem	8260, TPH, BOD, COD, Sulfate, Nitrate, Iron
038	MW-105	Groundwater	04/26/06	Mitkem	8260, TPH, BOD, COD, Sulfate, Nitrate, Iron

TABLE 1
80 – 100 CHARLOTTE STREET
ROCHESTER, NEW YORK

ANALYTICAL LABORATORY TESTING PROGRAM

Sample Number	Sample Location and Depth	Sample Matrix	Date Collected	Analytical Laboratory	Analysis
039	MW-106	Groundwater	04/26/06	Mitkem	8260, TPH, BOD, COD, Sulfate, Nitrate, Iron
040	MW-108	Groundwater	04/27/06	Mitkem	8260, TPH, BOD, COD, Sulfate, Nitrate, Iron
041	MW-107	Groundwater	04/27/06	Mitkem	8260, TPH, BOD, COD, Sulfate, Nitrate, Iron
042	MW-102	Groundwater	04/27/06	Mitkem	8260, TPH, BOD, COD, Sulfate, Nitrate, Iron
043	MW-101	Groundwater	04/28/06	Mitkem	8260, TPH, BOD, COD, Sulfate, Nitrate, Iron
044	MW-103	Groundwater	04/28/06	Mitkem	8260, TPH, BOD, COD, Sulfate, Nitrate, Iron
045	Rin-1	Rinsate Water	04/28/06	Mitkem	8260, TPH, BOD, COD, Sulfate, Nitrate, Iron
046	Trip Blank	Water	04/2006	Mitkem	8260
060	SV-1	Air	09/2006	Paradigm	VOCs (Method TO-15)
061	SV-2	Air	09/2006	Paradigm	VOCs (Method TO-15)
062	SV-3	Air	09/2006	Paradigm	VOCs (Method TO-15)
063	SV-4	Air	09/2006	Paradigm	VOCs (Method TO-15)
064	SV-5	Air	09/2006	Paradigm	VOCs (Method TO-15)
065	SV-6	Air	09/2006	Paradigm	VOCs (Method TO-15)
066	BKG-1	Air	09/2006	Paradigm	VOCs (Method TO-15)

8260 = Spill Technology and Remediation Series (STARS)-list volatile organic compounds (VOCs) plus tentatively identified compounds (TICs) using United States Environmental Protection Agency (USEPA) Method 8260
8082 = Polychlorinated biphenyls (PCBs) using USEPA Method 8082
602 = Purgable aromatic VOCs using USEPA Method 602
TCLP Metals = Toxicity Characteristic Leaching Procedure Metals using USEPA Methods 1311, 6010 and 7471
Ign. = Ignitability using USEPA Method 1010,
PFT 9095A = Paint filter test using USEPA Method 9095A,
TPH = Total Petroleum Hydrocarbons using New York State Department of Health (NYSDOH) Method 310.13
BOD = Soluble biological oxygen demand using USEPA Method 405.1
COD = Soluble chemical oxygen demand using USEPA Method 5220
Sulfate = Soluble sulfate using USEPA Method 4500
Nitrate = Soluble nitrate using USEPA Method 353.2
Iron = Soluble nitrate using USEPA Method 6010
Paradigm = Paradigm Environmental Services Inc.
Mitkem = Mitkem Corporation

TABLE 2

80 – 100 CHARLOTTE STREET
ROCHESTER, NEW YORK

SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS (VOCs)
IN WASTE CHARACTERIZATION STUDY SOIL SAMPLES
COLLECTED FEBRUARY 10, 2006

RESULTS REPORTED IN UG/KG OR PARTS PER BILLION (PPB)

DETECTED COMPOUNDS	RSCOs (1)	001 B-1 (10.5')	002 B-2 (8.5')	003 B-3 (7.5')	004 B-4 (10.5')	005 B-5 (8.0')	006 B-6 (8.0')	007 B-7 (8.0')	008 B-8 (8.0')	009 B-14 (7.5')	010 B-16 (9.0')
Ethylbenzene	5,500	--	--	--	--	--	--	99.2	--	--	--
n- Butylbenzene	10,000	--	--	--	537	--	--	--	--	--	--
sec-Butylbenzene	10,000	--	--	--	109	--	--	--	--	--	64.9
n-Propylbenzene	3,700	--	--	--	330	--	--	70.1	--	--	--
1,3,5-Trimethylbenzene	3,300	--	--	--	411	--	--	177	--	--	--
1,2,4-Trimethylbenzene	10,000	--	--	--	1,580	--	13.7	680	--	--	--
Total Xylenes	1,200	--	--	--	99.2	--	10.7	434.6	--	--	--
Total TICS	NA	1,817.2	--	--	15,162	--	154.2	5,208	--	--	30,710
Total VOC's	10,000	1,817.2	--	--	**18,228.2**	--	178.6	6,668.9	--	--	**30,774.9**

(1) = Recommended soil cleanup objectives (RSCOs) as referenced in the January 1994, Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels as amended by NYSDEC Table 1 dated December, 2000.

NA = Not Available

-- = Not detected above reported analytical laboratory detection limits

Bolded and underlined denotes exceedance of the NYSDEC recommended soil cleanup objective.

Table 3 (Page 1 of 3)

80 – 100 Charlotte Street
Rochester, New York

Summary of Detected Volatile Organic Compounds (VOCs)
and Naphthalene in Confirmatory Soil Samples

Results Reported in ug/kg or Parts Per Billion (PPB)

DETECTED COMPOUNDS	RSCOs (1)	011 C-1 (7.5') 03/01/06		012 C-2 (8.5') 03/01/06		013 C-3 (8.0) 03/02/06		014 C-4 (8.0') 03/02/06		015 C-5 (7.5') 03/02/06		016 C-6 (7.0') 03/02/06		017 C-7 (6.8') 03/09/06		018 C-7 (7.5) 03/09/06	
Ethylbenzene	5,500	--		--		--		--		--		--		--		--	
n-Butylbenzene	10,000	--		--		--		--		--		--		--		92	-
sec-Butylbenzene	10,000	--		--		--		--		--		--		--		85	-
n-Propylbenzene	3,700	--		--		--		--		--		--		--		110	-
Isopropylbenzene	2,300	--		--		--		--		--		--		--		18	-
p-Isopropyltoluene	10,000	--		--		--		--		--		--		--		--	
1,3,5-Trimethylbenzene	3,300	--		--		--		--		--		--		--		--	
1,2,4-Trimethylbenzene	10,000	--		--		--		--		--		--		--		--	
Total Xylenes	1,200	--		--		--		--		--		--		--		--	
Total TICS	NA	--		6	J	--		--		--		--		--		9,938	NJ
Total VOCs	10,000	--		6	J	--		--		--		--		--		**10,243**	NJ
Naphthalene	13,000	--		--		--		--		--		--		--		5	JB

(1) = Recommended soil cleanup objectives (RSCOs) as referenced in the January 1994, Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels as amended by NYSDEC Table 1 dated December, 2000.

B = Compound also detected in associated method blank.

E = Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

J = Indicates an estimate value.

D = Identifies compounds identified in an analysis at a secondary dilution factor.

N = Indicates presumptive evidence of tentatively identified compounds.

-- = Not detected above reported laboratory detection limit value.

Bolded and underlined denotes exceedance of the NYSDEC recommended soil cleanup objective.

Table 3 (Page 2 of 3)

80 – 100 Charlotte Street
Rochester, New York

Summary of Detected Volatile Organic Compounds (VOCs)
and Naphthalene in Confirmatory Soil Samples

Results Reported in ug/kg or Parts Per Billion (PPB)

DETECTED COMPOUNDS	RSCOs (1)	019 C-8 (6.5') 03/09/06		020 C-8 (7.5') 03/09/06		021 C-10 (9.5') 03/14/06		022 C-9 (8.0') 03/14/06		023 C-11 (6.5') 03/16/06		024 C-11 (8.5') 03/16/06		025 C-12 (8.0') 03/16/06	
Ethylbenzene	5,500	--		9	-	--		--		--		1,100	-	--	
n-Butylbenzene	10,000	-		2,600	D	--		--		--		**17,000**	D	--	
sec-Butylbenzene	10,000	--		510	DJ	--		--		--		3,900	D	--	
n-Propylbenzene	3,700	--		620	E	--		--		--		**19,000**	D	--	
Isopropylbenzene	2,300	--		160	DJ	--		--		--		**4,900**	D	--	
p-Isopropyltoluene	10,000	--		110	-	--		--		--		1,400	-	--	
1,3,5-Trimethylbenzene	3,300	--		1,000	D	--		--		--		**22,000**	D	--	
1,2,4-Trimethylbenzene	10,000	--		3,800	D	--		--		--		**81,000**	D	--	
Total Xylenes	1,200	--		75	-	--		--		--		**4,400**	-	--	
Total TICS	NA	--		12,510	NJ	--		--		--		83,340	NJ	--	
Total VOCs	10,000	--		**21,394**	NDJ	--		--		--		**238,040**	NJD	--	
Naphthalene	13,000	--		720	D	--		--		--		**11,000**	D	--	

(1) = Recommended soil cleanup objectives (RSCOs) as referenced in the January 1994, Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels as amended by NYSDEC Table 1 dated December, 2000.

E = Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

J = Indicates an estimate value.

D = Identifies compounds identified in an analysis at a secondary dilution factor.

N = Indicates presumptive evidence of tentatively identified compounds.

-- = Not detected above reported laboratory detection limit value.

Bolded and underlined denotes exceedance of the NYSDEC recommended soil cleanup objective.

Table 3 (Page 3 of 3)

80 – 100 Charlotte Street
Rochester, New York

Summary of Detected Volatile Organic Compounds (VOCs)
and Naphthalene in Confirmatory Soil Samples

Results Reported in ug/kg or Parts Per Billion (PPB)

DETECTED COMPOUNDS	RSCOs (1)	026 C-13 (8.0') 03/16/06		027 C-14 (6.8') 03/17/06		028 C-14 (7.5') 03/17/06		033 C-15 (7.0') 03/20/06		034 C-16 (7.0') 03/20/06		035 C-17 (8.0') 03/21/06		036 C-18 (8.0') 03/21/06	
Ethylbenzene	5,500	--		--		59	-	--		--		--		--	
n-Butylbenzene	10,000	--		--		590	-	--		--		--		--	
sec-Butylbenzene	10,000	--		--		300	-	--		--		--		--	
n-Propylbenzene	3,700	--		--		820	-	--		--		--		--	
Isopropylbenzene	2,300	--		--		220	-	--		--		--		--	
p-Isopropyltoluene	10,000	--		--		88	-	--		--		--		--	
1,3,5-Trimethylbenzene	3,300	--		--		--		--		--		--		--	
1,2,4-Trimethylbenzene	10,000	--		--		1,300	-	--		--		--		--	
Total Xylenes	1,200	--		--		64	-	--		--		--		--	
Total TICS	NA	--		14	J	28,620	NJ	--		--		--		--	
Total VOCs	10,000	--		14	J	**32,061**	NJ	--		--		--		--	
Naphthalene	13,000	--		--		280	-	4	JB	2	JB	2	JB	2	JB

(1) = Recommended soil cleanup objectives (RSCOs) as referenced in the January 1994, Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels as amended by NYSDEC Table 1 dated December, 2000.

E = Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

J = Indicates an estimate value.

D = Identifies compounds identified in an analysis at a secondary dilution factor.

N = Indicates presumptive evidence of tentatively identified compounds.

B = Compound also detected in associated method blank.

-- = Not detected above reported laboratory detection limit value.

Bolded and underlined denotes exceedance of the NYSDEC recommended soil cleanup objective.

Table 4

Well Completion Summary

80 - 100 Charlotte Street
Rochester, New York

Well	Reference Elevation (feet)	Well Diameter (inches)	Bentonite Seal (ft. bgs)	Sandpack Interval (ft. bg)	Screened Interval (ft. bg)	Total Depth (ft. bgs)
MW-101	516.43	4.0	1.22-2.22	2.22-9.22	4.22-9.22	9.22
MW-102	515.23	4.0	1.5-3.5	3.5-10.5	5.5-10.5	10.5
MW-103	515.12	4.0	1.30-2.30	2.30-8.30	3.30-8.30	8.30
MW-104	516.14	2.0	3.0-5.0	5.0-14.0	6.0-14.0	14.0
MW-105	516.05	2.0	3.0-5.0	5.0-13.5	6.0-13.0	13.5
MW-106	516.37	2.0	3.0-5.0	5.0-14.7	6.5-12.5	14.7
MW-107	514.30	2.0	2.0-4.0	4.0-12.5	5.0-12.0	12.5
MW-108	515.29	2.0	3.0-5.0	5.0-14.5	6.0-13.0	14.5

Reference elevations measured from top of PVC well risers.
ft. bgs = feet below ground surface

Table 5

Summary of Water Quality Monitoring Data
(April 2006 Groundwater Samples)

80 - 100 Charlotte Street
Rochester, New York

Well	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Conductivity (mS/cm)	pH	Temp (C°)
MW-101	4.32	9	3.3	21.2	6.75	11.1
MW-102	6.59	287	0.0	2.69	6.88	11.6
MW-103	3.00	-21	0.0	4.31	6.94	10.8
MW-104	2.52	-136	0.0	3.10	6.69	10.9
MW-105	1.04	-72	0.4	99.9	6.69	11.2
MW-106	2.75	-149	11.2	3.12	6.81	10.5
MW-107	2.83	-102	0.0	1.90	6.86	11.1
MW-108	2.48	-10	5.4	1.99	6.79	10.4

DO = dissolved oxygen
ORP = oxidation-reduction potential
mg/L = milligram/liter
mV = millivolts
NTU = nephelometric turbidity units
MS/cm = millisiemens/centimeter
C° = celsius

Table 6
80 - 100 Charlotte Street
Rochester, New York

Summary of Detected VOCs, TICs, and Naphthalene
(April 2006 Groundwater Samples)

Results Reported in ug/l or Parts Per Billion (ppb)

Detected Constituents	Groundwater Standards and Guidance Values (1)	MW-101 043 04/28/06	MW-102 042 04/27/06	MW-103 044 04/28/06	MW-104 037 04/26/06	MW-105 038 04/26/06	MW-106 039 04/26/06	MW-107 041 04/27/06	MW-108 040 04/27/06
Ethylbenzene	5	2 J	U	**7**	U	U	U	U	U
Total Xylenes	5	4 J	U	**40**	U	U	U	1 J	**13**
Isopropylbenzene	5	U	U	**12**	U	U	U	1 J	4 J
n-Propylbenzene	5	2 J	U	**30**	U	U	U	U	2 J
1,3,5-Trimethylbenzene	5	1 J	U	**29**	U	U	U	1 J	3 J
1,2,4-Trimethylbenzene	5	**6**	U	**120**	U	U	U	4 J	**19**
sec-Butylbenzene	5	U	U	**8**	U	U	U	U	U
n- Butylbenzene	5	U	U	**22**	U	U	U	U	U
Total VOCs	N/A	15 J	U	268	U	U	U	7 J	41 J
Total TICS	N/A	U	U	825	U	6 J	U	129 NJ	72 NJ
Total VOCs and TICs	N/A	15 J	U	1093	U	6 J	U	136 NJ	113 NJ
Naphthalene	10	1 J	U	**14**	U	U	U	U	3 J

(1) = New York State Department of Environmental Conservation (NYSDEC) June 1998 Division of Water Technical Operational and Guidance Series 1.1.1 (TOGS 1.1.1) Ambient Groundwater Standards and Guidance Values as amended by April 2000 Supplemental Table.
U = Not detected at concentration above reported laboratory detection limit.
VOCs = Samples analyzed for Volatile Organic Compounds (VOCs) using USEPA Method 8260
J = Indicates an estimate value.
N = One or more tentatively identified compound (TIC) is considered to be positively identified.
Bolded and underlined denotes exceedance of the NYSDEC TOGS 1.1.1 groundwater standard or guidance value.

Table 7

80 - 100 Charlotte Street
Rochester, New York

Summary of TPH
(April 2006 Groundwater Samples)

Results Reported in mg/l or Parts Per Million (ppm)

Constituent	MW-101 043 04/28/06	MW-102 042 04/27/06	MW-103 044 04/28/06	MW-104 037 04/26/06	MW-105 038 04/28/06	MW-106 039 04/26/06	MW-107 041 04/27/06	MW-108 040 04/27/06
TPH	U	U	0.56	U	U	U	U	U

Samples analyzed using New York State Department of Health (NYSDOH) Method 310.13

TPH = Total Petroleum Hydrocarbons

U = Not Detected at concentration above reported laboratory detection limit.

Table 8

80 - 100 Charlotte Street
Rochester, New York

Summary of BOD, COD, Sulfate, Nitrate and Iron
(April 2006 Groundwater Samples)

Results Reported in mg/l or Parts Per Million (ppm)

Constituent	MW-101 043 04/28/06	MW-102 042 04/27/06	MW-103 044 04/28/06	MW-104 037 04/26/06	MW-105 038 04/26/06	MW-106 039 04/26/06	MW-107 041 04/27/06	MW-108 040 04/27/06
BOD	U	U	U	4.5	U	U	U	U
COD	U	37	U	860	U	U	U	U
Sulfate	150	1400	230	110	180	160	2900	240
Nitrate	0.17	2.7	0.80	0.44	U	1.7	U	0.34
Iron	0.252	0.054	0.325	0.305	1.55	0.274	1.68	0.248

BOD = Soluble biological oxygen demand using United States Environmental Protection Agency (USEPA) Method 405.1

COD = Soluble chemical oxygen demand using USEPA Method 5220

Sulfate = Soluble sulfate using USEPA Method 4500

Nitrate = Soluble nitrate using USEPA Method 353.2

Iron = Soluble nitrate using USEPA Method 6010

U = Not detected at concentration above reported laboratory detection limit.

Table 9

Hydraulic Conductivity and Transmissivity Test Results
Brownfield Remediation Project - May 4, 2006
80-100 Charlotte Street
Rochester, New York

Well	K feet/day	K cm/sec	Transmissivity ft^2/day	Average K feet/day	Average K cm/sec	Average Transmissivity ft2/day
MW-104 (Slug In)	130.515	4.60E-02	676.069			629.027
MW-104 (Slug Out)	112.353	3.96E-02	581.985	121.434	4.28E-02	
MW-106 (Slug In)	50.652	1.79E-02	202.100			132.956
MW-106 (Slug Out)	15.993	5.64E-03	63.811	33.322	1.20E-02	
MW-108 (Slug In)	51.790	1.83E-02	248.590			
MW-108 (Slug out)	71.148	2.51E-02	341.513	61.469	2.17E-02	295.052
			Average	**72.075**	**2.55E-02**	**352.345**

K = Hydraulic Conductivity

Table 10

Static Water Level Measurements (April 26, 2006)

80 - 100 Charlotte Street
Rochester, New York

Date	Well	Reference Elevation (ft)	Static Water Level (SWL) Measurement (ft)	Groundwater Elevation (ft)	Depth to Free Product (ft)	Free Product Thickness (ft)	Adjusted Groundwater Elevation (ft)
4/26/2006	MW-101	516.43	7.66	508.77	ND	0	
4/26/2006	MW-102	515.23	6.55	508.68	ND	0	
4/26/2006	MW-103	515.12	6.76	508.36	ND	0	
4/26/2006	MW-104	516.14	7.09	509.05	ND	0	
4/26/2006	MW-105	516.05	7.40	508.65	ND	0	
4/26/2006	MW-106	516.37	7.71	508.66	ND	0	
4/26/2006	MW-107	514.30	6.01	508.29	ND	0	
4/26/2006	MW-108	515.29	7.06	508.23	ND	0	

Reference Elevations measured from top of PVC well risers.

ND = Not Detected

Table 11

Soil Vapor Study Air Sample Results

80-100 Charlotte Street, Rochester, New York
Summary of Detected Volatile Organic Compounds Reported in ug/m^3
Air Samples Collected September 28, 2006

Detected Constituent	NYSDOH Indoor (ug/m3)[1]	NYSDOH Outdoor (ug/m3)[2]	Sample Location						
			060/SV-1	061/SV-2	062/SV-3	063/SV-4	064/SV-5	065/SV-6	066/BKG-1
Acetone	10 - 52	3.4 - 14	**157** [4]	**1,740** [4][5]	**337** [4][5]	**3,630** [4][5]	**638** [4][5]	**2,280** [4][5]	NA
Benzene	1.1 - 5.9	0.57 - 2.3	**14.4**	**20.3**	**13.6**	**18.9**	**46.3**	**21.3**	NA
2-Butanone (MEK)	1.4 - 7.3	0.76 - 2.6	ND (<5.36)	**107**	**7.39**	ND (<5.60)	**180**	ND (<5.60)	NA
Carbon Disulfide	NA	NA	15.4 [4]	29.7 [4]	12.0 [4]	17.1 [4]	25.5 [4]	13.9 [4]	NA
Chloroform	<0.25 - 0.54	<0.25 - <0.25	ND (<8.78)	**14**	ND (<9.17)	ND (<9.17)	**31.9**	**120**	NA
1,1-Dichloroethane	<0.25 - <0.25	<0.25 - <0.25	ND (<7.29)	ND (<7.29)	ND (<7.62)	ND (<7.46)	**56.5**	**24**	NA
Ethylbenzene	0.41 - 2.8	<0.25 - 0.48	ND (<7.89)	**24.1**	ND (<8.24)	**9.93**	**8.32**	**16.2**	NA
Freon 11	NA	NA	ND (<10.1)	13.2	12.5	ND (<10.6)	17.6	19.3	NA
4-Methyl-2-Pentanone	<0.25 - 0.86	<0.25 - <0.25	ND (<7.44)	ND (<7.44)	**62.2**	ND (<7.77)	ND (<7.77)	ND (<7.77)	NA
Methylene Chloride [3]	0.31 - 6.6	<0.25 - 0.73	ND (<31.2)	ND (<31.2)	ND (<32.7)	**51.9**	ND (<32.7)	ND (<32.7)	NA
Styrene	<0.25 - 0.64	<0.25 - <0.25	ND (<7.74)	ND (<7.74)	ND (<8.08)	ND (<8.08)	ND (<8.08)	**17.1**	NA
Toluene	3.5 - 24.8	0.6 - 2.4	**59.8**	**111**	**64.3**	**61**	**72.2**	**116**	NA
1,1,1-Trichloroethane	<0.25 - 1.1	<0.25 - 0.33	ND (<9.83)	**80.4** [4]	**14.4** [4]	ND (<10.3)	ND (<10.3)	ND (<10.3)	NA
m/p-Xylene	0.5 - 4.6	<0.25 - 0.48	**18.3**	**78.5**	**19.3**	**24.1**	**21.2**	**16.9**	NA
o-Xylene	0.39 - 3.1	<0.25 - 0.56	ND (<7.89)	**32.4**	ND (<8.24)	ND (<8.24)	ND (<8.24)	**59.4**	NA

ND = Not detected at concentration above analytical laboratory reporting limit noted in parentheses.

NA = Not Available.

[1] 25th to 75th percentile range of indoor levels of volatile organic compounds (VOCs) referenced in the New York State Department of Health (NYSDOH) document titled "Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003", Revised November 14, 2005 (Used to compare soil vapor sample ID: SV-1, SV-2, SV-3, SV-4, SV-5, and SV-6).

[2] 25th to 75th percentile range of outdoor levels of VOC referenced in the NYSDOH document titled "Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003", Revised November 14, 2005 (Used to compare outdoor air background sample ID: BKG-1).

[3] The NYSDOH document titled "Final - Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006 lists an air guidance value of 60 ug/m^3 for Methylene Chloride.

12 = exceeds 75th percentile of corresponding indoor or outdoor levels referenced in the NYSDOH document titled "Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003", Revised November 14, 2005.

[4] This compound was also detected in the Method Blank.

[5] This value is estimated.

APPENDIX A

Test Boring Logs and Well Construction Diagrams

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-1

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 11.5' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level: ~10.0'

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown to dark brown Sand, Silt, trace Concrete, Slag and Gravel (FILL), damp	
2	NA	S-1	0-4	100	NA	0.0	0.0		
3									
4							0.0	...moist	
5							0.0	...Ash lens	
6	NA	S-2	4-8	60	NA	0.0	0.0	...light brown	
7								...piece of Scrap Metal	
8							0.0		
9							0.0	Brown STONE and SAND, moist	
10	NA	S-3	8-11.5	50	NA	17.4		...wet	
11							65.8	...gray stained lens, petroleum odor	
							0.0		
								Refusal @ 11.5'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-1

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Project #: 3638R-05
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DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-2

Ground Elevation: NA
Datum: NA
Date Started: 2/10/2006
Date Ended: 2/10/2006
Borehole Depth: 8.5'
Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level: ~7.0'

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown to dark brown Sand, Silt, trace Gravel and Brick (FILL), damp	
2	NA	S-1	0-4	75	NA	0.4	0.0		
3									
4							0.0		
5							0.0	Brown Sandy SILT, trace Gravel, moist	
6	NA	S-2	4-8	100	NA	0.5	0.0	...red lens	
7								...wet, SAND and SILT lens	
8							0.0		
	NA	S-3	8-8.5	100	NA	NA	0.0		
								Refusal @ 8.5'	

Notes:
1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-2

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Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-3

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 7.5' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level: ~6.0'

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1	NA	S-1	0-4	40	NA	0.5	0.0	Brown to dark brown Silty Sand, trace Gravel, Glass and Concrete (FILL), damp	
2							0.0		
3									
4							0.0		
5	NA	S-2	4-8	50	NA	0.5	0.0	Brown Sandy SILT, trace Gravel, moist	
6							0.0	...wet	
7							4.9	...no odor or staining	
								Refusal @ 7.5'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-3

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Sampling Method: Direct Push

TEST BORING B-4

Page 1 of 1

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 10.5' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level: ~7.0'

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown to dark brown Sand, Silt, trace Gravel and Brick (FILL), damp	
2	NA	S-1	0-4	50	NA	0.0	0.0		
3								...black Slag lens	
4							0.0		
5							0.0		
6	NA	S-2	4-8	100	NA	6.4	6.3	Brown Sandy SILT, trace Gravel, moist	
7							37.1	...petroleum odor, wet	
8								...piece of Rock	
9	NA	S-3	8-10.5	20	NA	NA			
10							754	...black staining, petroleum odor ...piece of rock	
								Refusal @ 10.5'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

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TEST BORING B-5

Page 1 of 1

Ground Elevation: NA
Datum: NA
Date Started: 2/10/2006
Date Ended: 2/10/2006
Borehole Depth: 8.0'
Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown to dark brown Sand, Silt, trace Gravel, trace Slag (FILL), moist	
2	NA	S-1	0-4	100	NA	2.5	0.0		
3								...Silt lens	
4							0.0		
5							0.0		
6	NA	S-2	4-8	100	NA	0.0	0.0	...piece of rock	
7							0.0	Brown, Sandy SILT, trace Gravel, moist	
8								Refusal @ 8.0'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

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TEST BORING B-6

Ground Elevation: NA
Datum: NA
Date Started: 2/10/2006
Date Ended: 2/10/2006
Borehole Depth: 8.5'
Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown to dark brown Sand, Gravel (FILL), damp	
2	NA	S-1	0-4	75	NA	1.7	3.7	...gray Ash Slag lens	
3									
4							0.0		
5							0.0		
6	NA	S-2	4-8	75	NA	0.0	0.7	Brown Sandy SILT, trace Gravel, moist	
7							2.7	...black staining, petroleum odor	
8	NA	NA	8-8.5	NA	NA	NA	NA		
								Refusal @ 8.5'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-6

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Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-7

Ground Elevation: NA
Datum: NA
Date Started: 2/10/2006
Date Ended: 2/10/2006
Borehole Depth: 8.0'
Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown to dark brown Silt and Sand, trace Gravel, trace Ash, trace Slag (FILL), damp	
2	NA	S-1	0-4	75	NA	0.0	0.0		
3									
4							0.0		
5							0.0		
6	NA	S-2	4-8	75	NA	10.1	0.0		
7							404	Brown Sandy SILT, trace Gravel, moist ...black staining, petroleum odor	
8								Refusal @ 8.0'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-7

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Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-8

Ground Elevation: NA
Datum: NA
Date Started: 2/10/2006
Date Ended: 2/10/2006
Borehole Depth: 8.7'
Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Black to brown Sandy Silt, trace Gravel and Brick (FILL), damp	
2	NA	S-1	0-4	73	NA	0.0	0.0		
3									
4							0.0		
5							0.0	Brown Sandy SILT, trace Gravel, moist	
6	NA	S-2	4-8	100	NA	0.0	0.0		
7							0.0		
8	NA	NA	8-8.7	NA	NA	NA	NA		
								Refusal @ 8.7'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-8

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Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-9

Page 1 of 1

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 7.0' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Black Sandy Silt, trace Gravel, trace Ash, trace Slag, trace Brick (FILL), damp	
2	NA	S-1	0-4	75	NA	0.0	0.0	Brown Sandy SILT, trace Gravel, moist	
3									
4							0.0		
5							0.0		
6	NA	S-2	4-7	100	NA	0.0			
7								Refusal @ 7.0'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

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AN AFFILIATE OF DAY ENGINEERING, P.C

Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-10

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 8.0' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1	NA	S-1	0-4	50	NA	NA	0.0	Black to brown Sand, Gravel, trace Organics (Roots) (FILL), moist	
2							0.0		
3								Brick (FILL)	
4							0.0		
5	NA	S-2	4-8	75	NA	NA	0.0	Brown Sandy SILT, little Gravel, moist	
6								...brown/pink/white lens	
7							0.0		
8								Refusal @ 8.0'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-10

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TEST BORING B-11

Page 1 of 1

Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

Ground Elevation: NA
Datum: NA
Date Started: 2/10/2006
Date Ended: 2/10/2006
Borehole Depth: 8.0'
Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level: ~6.0'

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	...dark brown Brown Sandy Silt, trace Gravel (FILL), moist	
2	NA	S-1	0-4	100	NA	0.0	0.0		
3									
4							0.0		
5							0.0		
6	NA	S-2	4-8	100	NA	0.0	0.0	...wet	
7							0.0		
8								Refusal @ 8.0'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-11

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
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DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-12

Ground Elevation: NA
Datum: NA
Date Started: 2/10/2006
Date Ended: 2/10/2006
Borehole Depth: 6.0'
Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1	NA	S-1	0-4	100	NA	0.0	0.0	...Organics (Roots), lens Brown to black Sandy SILT, trace Gravel (FILL), moist	
2									
3								Brick (FILL)	
4							0.0	...no recovery	
5	NA	S-2	4-6	NA	NA	NA	NA		
6								Refusal @ 6.0'	

Notes:
1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-12

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
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DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-13

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 6.0' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown to dark brown Sandy Silt and Gravel, trace Ash and Slag (FILL), moist	
2	NA	S-1	0-4	100	NA	0.0	0.0		
3									
4							0.0		
5	NA	S-2	4-6	10	NA	NA	0.0		
6							0.0	...piece of Rock	
								Refusal @ 6.0'	

Notes:
1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-13

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-14

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 7.5' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1	NA	S-1	0-4	75	NA	0.0	0.0	Brown to dark brown Sandy Silt, some Gravel, trace Slag (FILL), moist	
2							0.0		
3									
4							0.0		
5	NA	S-2	4-7.5	75	NA	NA	0.0	Brown Sandy SILT, trace Gravel, moist	
6							0.0		
7							340	...black staining, petroleum odor	
								Refusal @ 7.5'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-14

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Project #: 3638R-05
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DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-15

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 8.0' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown Sandy Silt, trace Gravel and Slag (FILL), moist	
2	NA	S-1	0-4	75	NA	0.0	0.0		
3									
4							0.0		
5							0.0		
6	NA	S-2	4-8	75	NA	0.0	0.0	Brown Sandy SILT, trace Gravel, moist	
7							0.0		
8								Refusal @ 8.0"	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-15

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DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-16

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 9.0' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): ~6.0'

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown to dark brown Sand and Silt, trace Gravel, Ash and Brick (FILL), moist	
2	NA	S-1	0-4	75	NA	0.0	0.0		
3									
4							0.0		
5							0.0	Brown Sandy SILT, trace Gravel, moist	
6	NA	S-2	4-8	75	NA	0.0	0.0	...wet	
7							0.0		
8	NA	S-3	8-9	100	NA	NA	67.1	...gray staining, petroleum odor	
9								Refusal @ 9.0'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-16

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Project Address: 80-100 Charlotte Street
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DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING B-17

Ground Elevation: NA Datum: NA
Date Started: 2/10/2006 Date Ended: 2/10/2006
Borehole Depth: 6.0' Borehole Diameter: 2.25"
Completion Method: ☐ Well Installed ☐ Backfilled with Grout ■ Backfilled with Cuttings
Water Level (Date/Time): NA

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1							0.0	Brown to dark brown Sand and Silt, trace Gravel, Slag and Brick (FILL), moist	
2	NA	S-1	0-4	100	NA	0.0	0.0		
3									
4							0.0	...no recovery	
5	NA	S-2	4-6	0	NA	NA	NA		
6								Refusal @ 6.0'	

Notes:
1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING B-17

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
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DAY Representative: C. Davidson
Drilling Contractor: SJB Services
Sampling Method: 2' Split Spoon

TEST BORING MW-104

Ground Elevation: 516.42' Datum: NA
Date Started: 4/3/2006 Date Ended: 4/3/2006
Borehole Depth: 14.0' Borehole Diameter: ~8.0"
Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings
Water Level (Date): 7.09' (04/26/2006)

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
	5 6 8 5	S-1	0-2	50	14	0.0	0.0 0.0	Brown to black, Gravel and Sand, trace Brick (FILL), moist	
	8 6 8 10	S-2	2-4	50	14	0.0	0.0 0.0	...Brick lens	
	16 16 7 5	S-3	4-6	10	23	0.2	0.0	...Brick lens	
	7 4 3 7	S-4	6-8	40	7	0.0	0.0	...Sand lens	
	21 16 50/3	S-5	8-9.3	10		4.1	0.0	Auger refusal @ 9.5'	
	NA	C-1	9.3-14.0	85	73	NA	0.0 0.0 0.0	Gray weathered LOCKPORT DOLOMITE Vertical and horizontal fractures @ 10.5'	
								Complete @ 14.0'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING MW-104

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Drilling Contractor: SJB Services
Sampling Method: 2' Split Spoon

TEST BORING MW-105

Ground Elevation: 516.39' Datum: NA
Date Started: 4/4/2006 Date Ended: 4/4/2006
Borehole Depth: 13.5' Borehole Diameter: 8.0"
Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings
Water Level (Date): 7.40' (04/26/2006)

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
	6 5 3 3	S-1	0-2	60	8	0.0	0.0	Tan reworked Silt and Sand, little Gravel and Brick, moist (FILL)	
	3 2 3 5	S-2	2-4	30	5	0.0	0.0		
	2 3 3 5	S-3	4-6	90	6	0.0	0.0	Tan fine SAND, little Silt, moist	
	2 2 17 50/0	S-4	6-7.5	80	19	0.0	0.0	...wet	
	NA	S-5	NA	NA	NA	NA	NA	Auger refusal @ 8.5'	
	NA	C-1	8.5-13.5	100	67	0.0	0.0 0.0 0.0	Gray weathered LOCKPORT DOLOMITE (Vertical fractures @ 10.5', 6" VOID @ 11.5')	
								Complete @ 13.5'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING MW-105

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Drilling Contractor: SJB Services
Sampling Method: 2' Split Spoon

TEST BORING MW-106

Ground Elevation: 516.61' Datum: NA
Date Started: 4/4/2006 Date Ended: 4/4/2006
Borehole Depth: 14.7' Borehole Diameter: 8.0"
Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings
Water Level (Date): 7.71' (04/26/2006)

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
	2 2 4 1	S-1	0-2	10	6	0.0	0.0	Stone and Cinder Brown reworked Sand, Silt and Gravel (FILL), moist	
	Wh Wh Wh 2	S-2	2-4	20	0	0.0	0.0		
	3 3 2 5	S-3	4-6	20	5	0.0	0.0		
	11 11 18 26	S-4	6-8	70	29	0.0	0.0	Brown fine SAND, some Silt, trace Gravel, moist ...wet	
	NA	S-5	8-9.7	NA	NA	NA	NA	Auger refusal @ 9.8'	
	NA	C-1	9.8-14.8	100	63	NA	0.0 0.0 0.0	Gray, weatherd LOCKPORT DOLOMITE	
								Complete @ 14.7'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING MW-106

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Project #: 3638R-05
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DAY Representative: C. Davidson
Drilling Contractor: SJB Services
Sampling Method: 2' Split Spoon

TEST BORING MW-107

Ground Elevation: 514.80' Datum: NA
Date Started: 4/5/2006 Date Ended: 4/5/2006
Borehole Depth: 12.5' Borehole Diameter: 8.0"
Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings
Water Level (Date): 6.01' (04/26/2006)

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
	5							Asphalt	
	15	S-1	0-2	10	24	0.4	0.0	Gray Stone/Sand sub-base, moist	
	9								
	4						0.0		
	5							Brown Sandy Silt, little Gravel (FILL), moist	
	3	S-2	2-4	40	6	0.0	0.0		
	3							...orange intermixed	
	5						0.0		
	4								
	4	S-3	2-6	50	17	0.0	0.0		
	13								
	15						0.0		
	18							Brown to tan Sandy SILT, trace Gravel, moist	
	5	S-4	6-8	75	10	0.8	0.0	...dark brown lens, wet	
	5								
	27						0.0	Auger refusal @ 7.5'	
							0.0	Gray weathered LOCKPORT DOLOMITE	
								(Vertical fractures @ ~8.5')	
	NA	C-1	7.5-12.5	87	63	NA	0.0		
							0.0		
								Complete @ 12.5'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING MW-107

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Drilling Contractor: SJB Services
Sampling Method: 2' Split Spoon

TEST BORING MW-108

Page 1 of 1

Ground Elevation: 515.77 Datum: NA
Date Started: 4/6/2006 Date Ended: 4/6/2006
Borehole Depth: 14.5' Borehole Diameter: ~8.0"
Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings
Water Level (Date): 7.06' (04/26/2006)

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
	5 8 12 8	S-1	0-2	60	20	0.0	0.0	Stone and Asphalt millings Dark Brown Silt, trace Gravel, trace Bricks (FILL), moist	
	5 4 4 4	S-2	2-4	50	8	0.0	0.0	...little Clay (FILL)	
	8 9 11 10	S-3	4-6	60	20	0.0	0.0	Light brown SILT, little Clay, little Sand, moist	
	12 22 20 14	S-4	6-8	60	42	0.0	0.0	Light brown SAND, little Silt, little Gravel, moist ...wet	
	9 8 22 50/4	S-5	8-9.8	50	30	0.0 62.0	0.0 16.6	...black staining, slight Petroleum odor Auger refusal @ 9.8'	
	NA	C-1	9.8-14.5	80	46	0.0	0.0	Gray weathered LOCKPORT DOLOMITE	
								Complete @ 14.5'	

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

TEST BORING MW-108

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AN AFFILIATE OF DAY ENGINEERING, P.C.

Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

TEST BORING MW-109

Ground Elevation: NA
Datum: NA
Date Started: 7/26/2006
Date Ended: 7/26/2006
Borehole Depth: 8.5'
Borehole Diameter: 2.25"
Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings
Water Level (Date): 6.80' (07/31/2006)

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1	NA	S-1	0-4	80	NA	NA	2.6	Red Brown Sand, trace Gravel, Brick, Ash, moist (FILL)	
2									
3							7.2	Brown with white and gray streaks Sandy Silt, Ash (FILL)	
4									
5	NA	S-2	4-8	75	NA		5.4	Red Brown Sandy Silt, Some Ash, moist (FILL)	
6						92.2	6.6	Brown Sandy SILT, some Clay, trace Gravel, moist	
7						1183	112	Gray Tan Sandy SILT, some weathered Bedrock fragments, wet.	
8	NA	S-3	8-8.5	20	NA	NA	424 58		
9								Refusal @ 8.5'	
10									
11									
12									
13									
14									
15									
16									

Notes:
1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

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TEST BORING MW-110

Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Drilling Contractor: Trec Environmental
Sampling Method: Direct Push

Ground Elevation: NA Datum: NA
Date Started: 7/26/2006 Date Ended: 7/26/2006
Borehole Depth: 9.4' Borehole Diameter: 2.25"
Completion Method: ■ Well Installed ☐ Backfilled with Grout ☐ Backfilled with Cuttings
Water Level (Date): 7.24' (07/31/2006)

Depth (ft)	Blows per 0.5 ft.	Sample Number	Sample Depth (ft)	% Recovery	N-Value or RQD%	Headspace (ppm)	PID Reading (ppm)	Sample Description	Notes
1	NA	S-1	0-4	NA	NA	NA	46	Red Brown Sand, trace Gravel (FILL)	
2								Dark Brown Sand, trace Silt, moist (FILL)	
3								Brown mottled Silty Sand (FILL)	
4									
5	NA	S-2	4-8	NA	NA	NA	0.0	Light Brown mottled Sand and Silt, trace Clay (FILL) Gray Ash and Sand (FILL)	
6								Red Brown SAND, trace Gravel, moist	
7									
8									
9	NA	S-3	8-9.4	NA	NA	NA	0.0	Brown SAND, some Silt, trace Gravel, moist	
10								Refusal @ 9.4'	
11									
12									
13									
14									
15									
16									

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) Stratification lines represent approximate boundaries. Transitions may be gradual.
3) PID readings are referenced to a benzene standard measured in the headspace above the sample using a MiniRae 2000 equipped with a 10.6 eV lamp.
4) NA = Not Available or Not Applicable
5) Headspace PID readings may be influenced by moisture

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Contractor: Trec Environmental

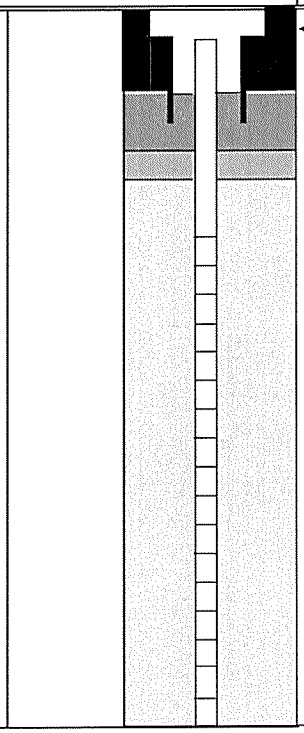
MONITORING WELL MW-101

Page 1 of 1

Ground Elevation: 516.75' Datum: NA
Date Started: 3/6/2006 Date Ended: 3/6/2006

Water Level (Date): 7.66' (04/26/2006)

Monitoring Well Installed During Excavation of Contaminated Soil



Flush Mounted Roadbox
0.35 Depth to Top of Riser Pipe (ft)
1.22 Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Concrete

1.22 Depth to Top of Bentonite Seal (ft)
2.22 Depth to Bottom of Bentonite Seal (ft)

4.22 Depth to Top of Well Screen (ft)

8.0 Diameter of Temporary Installation Casing (in)

Backfill Type Sand

4.0 Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 10

9.22 Depth to Bottom of Well Screen (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.

MONITORING WELL MW-101

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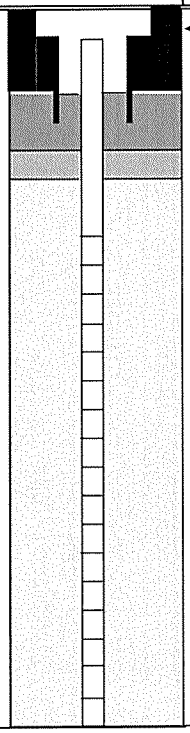
Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, New York
DAY Representative: C. Davidson
Contractor: Trec Environmental

MONITORING WELL MW-102

Page 1 of 1

Ground Elevation: 515.48' Datum: NA
Date Started: 3/14/2006 Date Ended: 3/14/2006

Water Level (Date): 6.55' (04/26/2006)



Monitoring Well Installed During Excavation of Contaminated Soil

Flush Mounted Roadbox
0.25 Depth to Top of Riser Pipe (ft)
1.50 Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Concrete

1.50 Depth to Top of Bentonite Seal (ft)
3.50 Depth to Bottom of Bentonite Seal (ft)

5.50 Depth to Top of Well Screen (ft)

8.0 Diameter of Temporary Installation Casing (in)

Backfill Type Sand

4.0 Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 10

10.50 Depth to Bottom of Well Screen (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.

MONITORING WELL MW-102

MKD1019

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Contractor: Trec Environmental

MONITORING WELL MW-103

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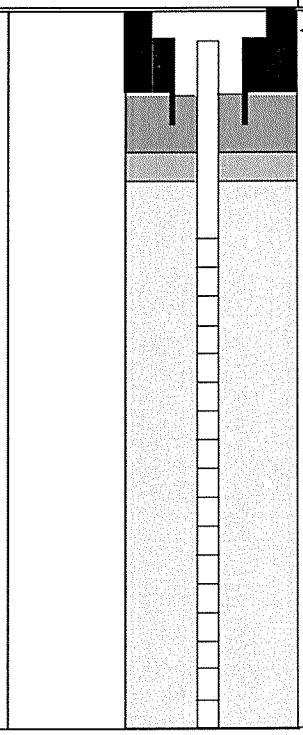
Ground Elevation: 515.54' Datum: NA
Date Started: 3/20/2006 Date Ended: 3/20/2006

Water Level (Date): 6.76' (04/26/2006)



←Flush Mounted Roadbox
0.42 Depth to Top of Riser Pipe (ft)
1.30 Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Concrete

1.30 Depth to Top of Bentonite Seal (ft)
2.30 Depth to Bottom of Bentonite Seal (ft)

3.30 Depth to Top of Well Screen (ft)

8.0 Diameter of Temporary Installation Casing (in)

Backfill Type Sand

4.0 Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 10

8.30 Depth to Bottom of Well Screen (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.

MONITORING WELL MW-103

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DAY Representative: C. Davidson
Drilling Contractor: SJB Services

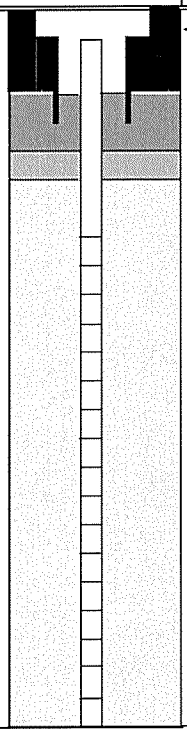
MONITORING WELL MW-104

Page 1 of 1

Ground Elevation: 516.42' Datum: NA
Date Started: 4/3/2006 Date Ended: 4/3/2006

Water Level (Date): 7.09' (4/26/2006)

Refer to Test Boring Log MW-104 for Soil Description



←Flush Mounted Roadbox
0.28 Depth to Top of Riser Pipe (ft)
1.0' Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Grout

3.0' Depth to Top of Bentonite Seal (ft)
5.0' Depth to Bottom of Bentonite Seal (ft)

6.0' Depth to Top of Well Screen (ft)

8.0" Diameter of Borehole (in)

Backfill Type Sand

2.0" Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 10

14.0' Depth to Bottom of Well Screen (ft)

~14.0' Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

MONITORING WELL MW-104

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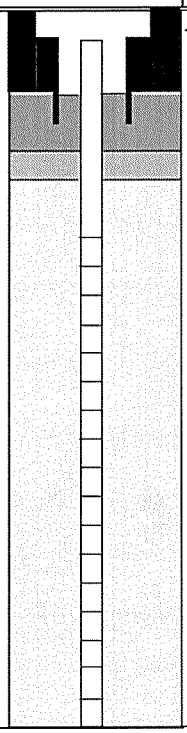
DAY Representative: D. Peck (City)
Drilling Contractor: SJB Services

MONITORING WELL MW-105

Page 1 of 1

Ground Elevation: 516.39' Datum: NA
Date Started: 4/4/2006 Date Ended: 4/4/2006
Water Level (Date): 7.40' (4/26/2006)

Refer to Test Boring Log MW-105 for Soil Description



Flush Mounted Roadbox
0.34 Depth to Top of Riser Pipe (ft)
1.0' Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Grout

3.0' Depth to Top of Bentonite Seal (ft)
5.0' Depth to Bottom of Bentonite Seal (ft)

6.0' Depth to Top of Well Screen (ft)

8.0" Diameter of Borehole (in)

Backfill Type Sand

2.0" Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 10

13.0' Depth to Bottom of Well Screen (ft)

13.5' Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

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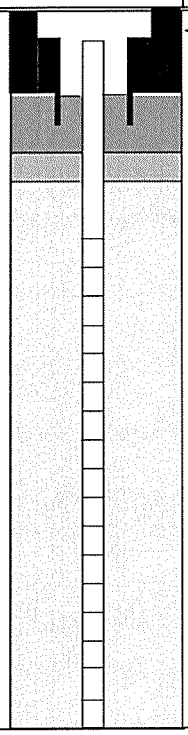
DAY Representative: D. Peck (City)
Drilling Contractor: SJB Services

MONITORING WELL MW-106

Page 1 of 1

Ground Elevation: 516.61' Datum: NA
Date Started: 4/4/2006 Date Ended: 4/4/2006
Water Level (Date): 7.71' (4/26/2006)

Refer to Test Boring Log MW-106 for Soil Description



←Flush Mounted Roadbox
0.24 Depth to Top of Riser Pipe (ft)
1.0' Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Grout

3.0' Depth to Top of Bentonite Seal (ft)
5.0' Depth to Bottom of Bentonite Seal (ft)

6.5' Depth to Top of Well Screen (ft)

8.0" Diameter of Borehole (in)

Backfill Type Sand

2.0" Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 10

12.5' Depth to Bottom of Well Screen (ft)

14.7' Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

MONITORING WELL MW-106

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DAY Representative: C. Davidson
Drilling Contractor: SJB Services

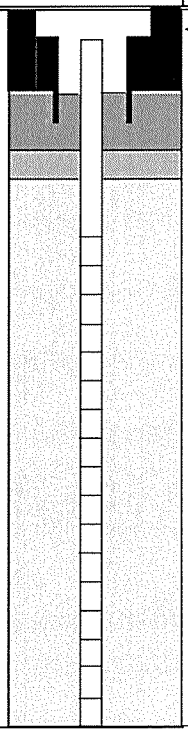
MONITORING WELL MW-107

Page 1 of 1

Ground Elevation: 514.80' Datum: NA
Date Started: 4/5/2006 Date Ended: 4/5/2006

Water Level (Date): 6.01' (4/26/2006)

Refer to Test Boring Log MW-107 for Soil Description



Flush Mounted Roadbox
0.5 Depth to Top of Riser Pipe (ft)
1.0' Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Grout

2.0' Depth to Top of Bentonite Seal (ft)
4.0' Depth to Bottom of Bentonite Seal (ft)

5.0' Depth to Top of Well Screen (ft)

8.0" Diameter of Borehole (in)

Backfill Type Sand

2.0" Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 10

12.0' Depth to Bottom of Well Screen (ft)

12.5' Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

MONITORING WELL MW-107

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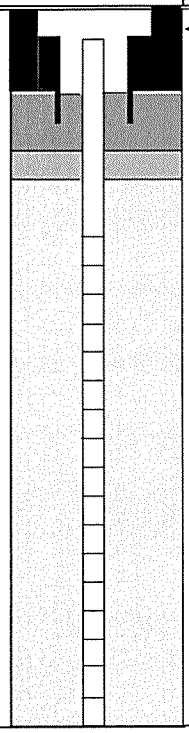
Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, NY
DAY Representative: J. Biondolillo (City)
Drilling Contractor: SJB Services

MONITORING WELL MW-108

Ground Elevation: 515.77' Datum: NA
Date Started: 4/6/2006 Date Ended: 4/6/2006

Water Level (Date): 7.06' (4/26/2006)

Refer to Test Boring Log MW-108 for Soil Description



Flush Mounted Roadbox
0.48 Depth to Top of Riser Pipe (ft)
1.0' Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Grout

3.0' Depth to Top of Bentonite Seal (ft)
5.0' Depth to Bottom of Bentonite Seal (ft)

6.0' Depth to Top of Well Screen (ft)

8.0" Diameter of Borehole (in)

Backfill Type Sand

2.0" Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 10

13.0' Depth to Bottom of Well Screen (ft)

14.5' Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

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Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, NY
DAY Representative: M. Dickinson
Drilling Contractor: TREC Env., Inc.

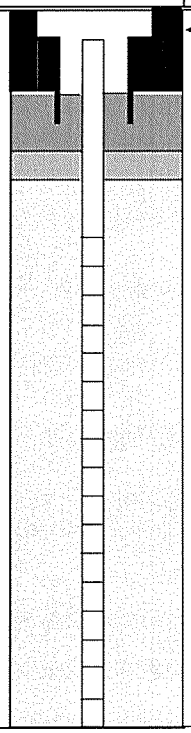
MONITORING WELL MW-109

Page 1 of 1

Ground Elevation: NA Datum: NA
Date Started: 7/26/2006 Date Ended: 7/26/2006

Water Level (Date): 6.80 (07/31/2006)

Refer to Test Boring Log MW-109 for Soil Description



Flush Mounted Roadbox
0.23 Depth to Top of Riser Pipe (ft)
0.5' Depth to Bottom of Cement Surface Patch (ft)
Backfill Type Grout

0.5' Depth to Top of Bentonite Seal (ft)
2.0' Depth to Bottom of Bentonite Seal (ft)

3.5' Depth to Top of Well Screen (ft)

2.25" Diameter of Borehole (in)

Backfill Type Sand

1.0" Inside Diameter of Well (in)

Type of Pipe PVC
Screen slot size 10

8.5' Depth to Bottom of Well Screen (ft)

8.5' Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

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MONITORING WELL INSTALLATION LOG

Project #: 3638R-05
Project Address: 80-100 Charlotte Street
Rochester, NY
DAY Representative: M. Dickinson
Drilling Contractor: TREC Env., Inc.

MONITORING WELL MW-110

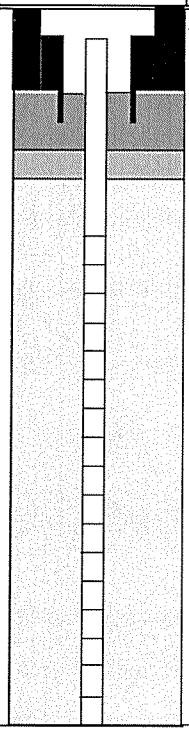
Ground Elevation: NA Datum: NA

Date Started: 7/26/2006 Date Ended: 7/26/2006

Page 1 of 1

Water Level (Date): 7.24 (07/31/2006)

Refer to Test Boring Log MW-110 for Soil Description



Flush Mounted Roadbox

0.25 Depth to Top of Riser Pipe (ft)

0.5' Depth to Bottom of Cement Surface Patch (ft)

Backfill Type Grout

0.5' Depth to Top of Bentonite Seal (ft)

2.0' Depth to Bottom of Bentonite Seal (ft)

4.1' Depth to Top of Well Screen (ft)

2.25" Diameter of Borehole (in)

Backfill Type Sand

1.0" Inside Diameter of Well (in)

Type of Pipe PVC

Screen slot size 10

9.1' Depth to Bottom of Well Screen (ft)

9.4' Depth of Borehole (ft)

Notes: 1) Water levels were made at the times and under conditions stated. Fluctuations of groundwater levels may occur due to seasonal factors and other conditions.
2) NA = Not Available or Not Applicable

MONITORING WELL MW-110

Davidson/My Documents/Monitoring Well Installation Logs for 3638R-05

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