132-20 Merrick Boulevard

Tax Block 12999, a portion of Lot 44

SPRINGFIELD GARDENS, QUEENS, NEW YORK

Site Management Plan Addendum

NYSDEC VCP Number: V00304

Prepared by:
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Prepared for:
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and
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JULY 2013
(Amendment to the September 2010 SMP)

CERTIFICATION

I, Genevieve F. Bock, P.E., certify that I am currently a NYS registered professional engineer and that this Site Management Plan Addendum was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

The Site Management Plan was initially prepared by AKRF Engineering, P.C. and was certified by Michelle Lapin, P.E. in September 2010. Following approval of termination of groundwater sampling at the Site, the New York State Department of Environmental Conservation (NYSDEC) approved the decommissioning of the groundwater monitoring well and soil vapor point networks on-Site in correspondence dated May 2, 2012. Therefore, this Site Management Plan Addendum has been prepared to reflect the termination of groundwater sampling at the Site.

NYS Professional Engineer #090811 | 7/11/2013 Date | Signature

It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

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LIST OF ACRONYMS

Acronym	Definition
ACM	Asbestos-containing material
AKRF	AKRF Engineering, P.C.
AS	Air Sparge
ASP	Analytical Services Protocol
AST	Aboveground storage tank
C&D	Construction and Demolition
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulation
CGI	Combustible Gas Indicator
CHASP	Construction Health and Safety Plan
DER	Division of Environmental Remediation (of NYSDEC)
DER-10	Technical Guidance for Site Investigation and Remediation dated December 2002 and revised in May 2010
DNAPL	Dense Non-Aqueous Phase Liquid
DSHM	Division of Solid & Hazardous Materials
DUSR	Data Usability Summary Report
EC	Engineering Control
ELAP	Environmental Laboratory Accreditation Procedure
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
FER	Final Engineering Report
GA	Class of Ambient Water Quality Standard and Guidance Values for Protection of Drinking Water under TOGS 1.1.1 dated June 1998, with January 1999 Errata, and April 2000 and June 2004 Addenda
GES	Groundwater & Environmental Services, Inc.
HASP	Health and Safety Plan
IC	Institutional Control
LNAPL	Light Non-Aqueous Phase Liquid
mg/L	milligrams per liter
mS/cm	milliSiemens per centimeter
MS/MSD	Matrix Spike/Matrix Spike Duplicate
mV	milliVolt
MW	Monitoring well
NTU	Nephelometric turbidity unit
NYCDEP	New York City Department of Environmental Protection
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	Polycyclic Aromatic Hydrocarbons
Part 375	6 NYCRR Part 375 dated December 14, 2006
PCBs	Polychlorinated biphenyls
PCE	Tetrachloroethene or Perchloroethylene
PE	Professional Engineer

LIST OF ACRONYMS (cont'd)

Acronym	Definition
PID	Photoionization detector ppb Parts per billion ppm Parts per million
QA/QC	Quality assurance / quality control
QEP	Qualified Environmental Professional
RWP	Remedial Work Plan
RMZ	Residual Management Zone
RSCO	Recommended Soil Cleanup Objective
SCO	Soil Cleanup Objective
SoMP	Soil Management Plan
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
STARS	Spill Technology and Remediation Series
SVE	Soil Vapor Extraction
SVOC	Semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TAGM 4046	NYSDEC Technical and Administrative Guidance Memorandum 4046, January 24, 1994
TAL	Target Analyte List
TOGS	Technical and Operational Guidance Series
TCL	Target Compound List
TPH	Total Petroleum Hydrocarbon
TSCA	Toxic Substance Control Act
UPS	United Parcel Service
USEPA	United States Environmental Protection Agency
UST	Underground storage tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program
VOC	Volatile organic compound

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

The Site was remediated in accordance with the Voluntary Cleanup Agreement (VCA) Index# D2-0010-99-11, Site #V00304, which was issued on December 9, 1999. FC Springfield Associates, LLC is the Volunteer under the VCA; however, Home Depot U.S.A., Inc. (Home Depot) contractually assumed FC Springfield Associates, LLC's rights and obligations under the VCA per an Assignment and Assumption Agreement. The New York State Department of Environmental Conservation (NYSDEC) was notified of the sale of the property to Home Depot and Home Depot's assumption of the responsibilities and rights to act for the Volunteer in implementation of the VCA. The VCA listed the Site as an 8.56-acre property on Block 12999 including former Lots 44 (a portion of the current Lot 44 boundaries), 54, 74, and 94. Beginning with tax year 2002, the former lots in Block 12999 were consolidated into one 9.066-acre lot, currently known as Lot 44, of which the VCA Site comprises Parcel A; an 8.56-acre portion of current Lot 44. The VCA Site is described as Parcel A of the metes and bounds in **Appendix A** and shown on the current ASTM/ALTA Site survey which is included in **Appendix B**.

On October 8, 2010, the NYSDEC approved the September 2010 Site Management Plan (SMP) prepared by AKRF, Inc. (AKRF) for 132-20 Merrick Boulevard in Springfield Gardens, Queens, New York (hereafter referred to as the "Site"). The SMP was implemented in order to manage the residual contamination at the Site and to address means for the implementation of Institutional Controls (ICs) and Engineering Controls (ECs), as required by the Deed Restriction for the Site.

A component of the ECs was the implementation of a monitoring plan as a quantitative measurement of the ECs' effectiveness. The monitoring plan included quarterly groundwater monitoring and reporting for at least one year (four monitoring events). To fulfill the requirements of the SMP, quarterly groundwater sampling and reporting was initiated in December of 2010 and was conducted through September of 2011. Based upon the September 2011 groundwater analytical results, AKRF, on behalf of Home Depot U.S.A., Inc. ("Home Depot"), recommended termination of quarterly groundwater monitoring and reporting at the Site.

On February 17, 2012, the NYSDEC approved AKRF's request to discontinue quarterly groundwater monitoring and reporting at the Site. Additionally, on May 2, 2012, the NYSDEC approved decommissioning the well network at the Site and requested a SMP Addendum. Based upon the NYSDEC's approval to decommission the monitoring wells, the SMP no longer requires quarterly groundwater monitoring and reporting to manage the residual contamination at the Site. Therefore, this SMP Addendum has been prepared to reflect the revised Site Management requirements.

1.1.1 General

The Site's current usage type is commercial and consists of a retail store and parking lot for The Home Depot. This VCA required investigation and remediation of contaminated media at the Site. The boundary of this VCP Site located in the County of Queens, Springfield Gardens, New York, is more fully described in **Appendix A** – Metes and Bounds for Parcel A, an 8.56-acre portion of current Lot 44. A map of the Site location is shown in **Figure 1**. The Site Plan, shown on a 2004 aerial photograph, is included as **Figure 2**.

Remedial work performed under the Remedial Work Plan (RWP) consisted of the construction of an air sparge (AS) and soil vapor extraction (SVE) system in May 2000. After completion of the remedial work (Remedial Action), described more fully in the RWP, some contamination [residual contamination or Residual Management Zone (RMZ)] may remain in the subsurface beneath the composite cover system (Site Cover) that has been placed over the Site. The Site Management Plan and this SMP Addendum were prepared to manage the residual contamination at the Site in perpetuity or until extinguishment of the Deed Restriction. Remedial Action work on the Site began in approximately 2000 and was completed in 2005. All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

The SMP was originally prepared by AKRF Engineering, P.C. (AKRF) in September of 2010 and was amended by Groundwater & Environmental Services, Inc. (GES) in July of 2013, on behalf of Home Depot, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated December 2002 and Revised May 2010, and the guidelines provided by NYSDEC. This SMP Addendum addresses the means for implementation of Institutional Controls (ICs) and Engineering Controls (ECs), which are required by the Deed Restriction for the Site.

1.1.2 Purpose

The Site contains residual contamination left after completion of the Remedial Action performed under the VCP. ECs and ICs have been incorporated into the Site remedy to provide proper management of residual contamination in the future to ensure protection of public health and the environment. A Site-specific Deed Restriction has been recorded with the Queens County Clerk that provides an enforceable means to ensure the continued and proper management of residual contamination and protection of public health and the environment. It requires strict adherence to all ECs and all ICs placed on this Site by NYSDEC by the grantor of the Deed Restriction and any and all successors and assigns of the grantor. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP Addendum includes all methods necessary to ensure compliance with all ECs and ICs required by the Deed Restriction for residual contamination at the Site. The SMP has been approved by the NYSDEC, and compliance with this Plan is required by the grantor of the Deed Restriction and grantor's successors and assigns. This plan is subject to change by the NYSDEC.

Site management is the last phase of the remedial process and is triggered by the approval of the Final Engineering Report (FER) and issuance of the Assignable Release and Covenant Not to Sue (Covenant Not to Sue) by the NYSDEC. This SMP Addendum continues in perpetuity or until extinguished in accordance with NYCRR Part 375. It is the responsibility of the Deed Restriction grantor and its successors and assigns to ensure that all responsibilities in this SMP Addendum are performed.

The SMP and this SMP Addendum provide a detailed description of all procedures required to manage residual contamination at the Site following the completion of the Remedial Action in accordance with the NYS VCA with the NYSDEC. This includes: (1) implementation and management of all Engineering and Institutional Controls; (2) implementation of a monitoring plan; (3) operation and maintenance of the Site Cover (including, where appropriate, preparation of a Maintenance Manual); and (4) submittal of management reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to the NYSDEC.

To address these needs, this SMP Addendum includes four plans: (1) Section 2.0 is an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) Section 3.0 is a Monitoring

Plan for implementation of Site Monitoring; (3) Section 4.0 is a Maintenance Plan, designed to assure the continued effectiveness of the Site Cover; and (4) Section 5.0 is a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC.

Site Management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually.

Important notes regarding this SMP Addendum are as follows:

- This SMP defines Site-specific implementation procedures as required by the Deed Restriction. The penalty for failure to implement the SMP is revocation of the Covenant Not to Sue.

- The Voluntary Cleanup Agreement (Index #D2-0010-99-11, Site #V00304) for the Site requires conformance with this SMP Addendum and, therefore, serves as a contractual binding authority under which this SMP Addendum is to be implemented. The need for an SMP (formerly known as an Operation, Maintenance and Monitoring Plan) at a VCP site is dependent upon site-specific issues, but is required in cases where the protectiveness of the remedy is dependent upon continued operation, monitoring, and maintenance and includes cases where the remedy depends upon the use of engineering or institutional controls.

- At the time this report was prepared, all Site documents related to the Site investigation and Remedial Action were maintained at the NYSDEC Region 2 offices in Long Island City.

1.2 SITE BACKGROUND

Details regarding the investigation activities that were conducted at the Site are provided in the following reports:

- *Environmental Audit of Toxic and Hazardous Waste Management and Disposal at Knomark, Inc.*, Roux Associates Inc., March 1988.
- *Environmental Investigation of Subsurface Conditions at the Knomark Site, Jamaica, New York,* TRC Environmental Consultants, July 1988.
- *Results of Building Decontamination,* Roux Associates Inc., March 1989.
- *Evaluation of Soil and Ground-Water Quality,* Roux Associates, Inc., May 1989.
- *Removal of Underground Fuel Oil Tanks,* Roux Associates, Inc., revised May 1990.
- *Results of the April 1990 Ground-Water Sampling,* Roux Associates, Inc., June 1990.
- *Phase I Environmental Site Assessment Report,* EMCON, March 1997.
- *Phase II Study: Analytical Results Only,* Malcolm Pirnie, Inc., 1998.
- *Phase I Environmental Site Assessment Report,* Eder Associates, July 1998.
- *Underground Storage Tank Closure,* Leggette, Brashears & Graham, Inc., July 1998.
- *Phase II Environmental Assessment,* AKRF, Inc., revised March 1999.
- *Supplemental Soil/Groundwater Sampling,* AKRF, Inc., September 1999 included in *Remedial Work Plan, 132-20 Merrick Boulevard, Springfield Gardens, Queens, New York,* AKRF, Inc., Revised October 1999.
- *Supplemental Indoor Air Quality Study,* AKRF, Inc., September 1999 included in *Remedial Work Plan, 132-20 Merrick Boulevard, Springfield Gardens, Queens, New York*, AKRF, Inc., Revised October 1999.

- *Remedial Work Plan, 132-20 Merrick Boulevard, Springfield Gardens, Queens, New York*, AKRF, Inc., Revised October 1999.
- *Pilot Test Report 132-20 Merrick Boulevard, Springfield Gardens, New York*, AKRF, Inc., January 2000.
- *Technical Specifications for the Construction of a Groundwater Remediation System, 132-20 Merrick Boulevard, Queens, NY*, AKRF, Inc., March 2000.
- Progress Reports dated February 2000, March 2000, May 2000, September 2000, November 2000, July 2001, September 2001, March 2002, May 2002, August 2002, March 2003, October 2003, January 2004, June 2004, February 2006, July 2007, September 2007, and January 2008.
- *Final Engineering Report*, AKRF, Inc., August 2011.
- *Well Abandonment Report*, GES, September 2012.

1.2.1 Site Location and Description

The VCA listed the Site as an 8.56-acre property on Block 12999 in Springfield Gardens, Country of Queens, New York and includes former Lots 44 (a portion of the current Lot 44 boundaries), 54, 74, and 94. Beginning with tax year 2002, the former lots in Block 12999 were consolidated into one 9.066-acre lot, currently known as Lot 44, of which the VCA Site comprises Parcel A; an 8.56-acre portion of current Lot 44. The VCA Site is described as Parcel A of the metes and bounds, documented on the current ASTM/ALTA Site survey which is included in **Appendix B**. The VCA listed the Site as a parcel bounded by Merrick Boulevard to the north, 137th Avenue to the south, Belknap Street to the west, and Long Island Railroad tracks to the east. The Site Plan shown on a 2004 aerial photograph is included as **Figure 2**. The boundary of this VCP Site is more fully described in **Appendix A** – Metes and Bounds for Parcel A, an 8.56-acre portion of current Lot 44.

1.2.2 Site History

This summary of the Site history is based on two (2) Phase I Environmental Site Assessment (ESA) Reports (Eder Associates, July 1998 and EMCON, March 1997). A detailed description of manufacturing processes of the previous Site occupant, Knomark, Inc. (Knomark), is included in the Roux Associates, Inc. (Roux) report, titled "Environmental Audit", dated March 1988.

Prior to 1957

Historical Sanborn maps for 1926 and 1949 showed no industrial use at the Site for this period. According to the 1926 map, only a private residence occupied the northwestern corner of the Site, with the remainder of the Site being undeveloped. By 1949, the Site was labeled "Sherwood Oval" and appeared to be playing fields.

1957-1988

Knomark constructed a building on the Site in 1957. This firm manufactured various products, including fabric softeners, toilet bowl cleaners, fabric dyes and shoe polish from 1957 to 1988. In the 1960s, Arden-Esquire Realty Company purchased the property from Knomark, which continued to occupy the Site until 1988 as a tenant.

Knomark's manufacturing process used the solvent tetrachloroethene (PCE) and mineral spirits. The company stored these chemicals in two 5,000-gallon underground storage tanks (USTs) on the Site. Other

chemicals used by Knomark included 1,1,1trichloroethene, methylene chloride, and methyl ethyl ketone. The key manufacturing process involved the use of batch mixing tanks (for mixing of volatile chemicals) and kettles (for nonvolatile chemicals). Sludge from Knomark's manufacturing process settled out into an above ground catch basin and the remaining sludge was disposed of off-Site by a private waste contractor. After the sludge had settled out into the catch basin, the wastewater from the facility was discharged into New York City's sewer system. One 20,000-gallon and one 10,000-gallon USTs were located on-Site, on the northern side of the former building.

1988-1999

After Knomark vacated the Site, United Parcel Service (UPS) leased the property between 1988 and 1998 as a processing and distribution center for shipped packages and used four 4,000-gallon gasoline USTs for fueling vehicles. UPS vacated the Site in 1995; the tanks were removed, and the Site remained unoccupied from 1995 to 1999.

Forest City Ratner purchased the property in 1999 and demolished the Site buildings in 2000. The property was purchased by Home Depot U.S.A, Inc. in 2000 and later transferred to HD Development of Maryland, Inc. Construction of the current retail building commenced in mid-2000 and the Site has been operated as a Home Depot retail store since August 2001.

1.2.3 Geological Conditions

The hydrogeologic units in Queens County, New York consist of unconsolidated sediments underlain by crystalline bedrock. The aquifer system underlying the Site is designated by the U.S. Environmental Protection Agency (USEPA) as a "sole source aquifer" for drinking water supply.

The principal hydrological units on the Site are upper Pleistocene glacial deposits (shallow upper glacial unit), the Gardiners Clay (deep upper glacial unit), and the Magothy Formation-Matawan Group (Magothy aquifer). Boring logs and geophysical logs of three Magothy Formation wells formerly on the Site (MW-9M, MW-14M, and MW-17M) showed a six to eight-foot clay layer at approximately 55 to 60 feet below ground surface that is continuous throughout the Site. This unit is referred to as the Gardiners Clay Unit and restricts the flow of water between the upper glacial unit to the underlying Magothy aquifer (Roux, 1989). Near the monitoring well cluster MW-17, in addition to the Gardiners Clay Unit, an eight-foot thick layer of black clay with pyrite nodules and lignite was encountered from 130 to 140 feet below ground surface. The black clay layer was estimated to be limited in extent and not a significant barrier to groundwater flow (Roux, 1989). Well design drawings indicated that the wells in the Magothy Formation were properly installed to avoid cross-contamination between the upper glacial units and the Magothy Formation. The Magothy Formation wells were screened 60 feet below the Gardiners Clay Unit with a 5-foot bentonite seal above the well screen. Thus, the Gardiners Clay Unit continues to restrict flow between the upper Pleistocene glacial deposits and the underlying Magothy Formation.

On-Site monitoring wells revealed an approximate depth to groundwater of 17 feet in the shallow upper Pleistocene glacial deposits. Based upon surveyed groundwater elevations, the direction of current groundwater flow is to the southeast for the upper glacial aquifer units.

Water wells belonging to the New York City Department of Environmental Protection (NYCDEP), formerly of the Jamaica Water Company, are situated approximately 3,000 feet to the northeast, at 90-42 Springfield Boulevard, and 4,000 feet to the east, at 222nd Street and 134th Road. Prior to 1986, the

regional groundwater flow in the area had been to the north, towards the former Jamaica Water Company well field. A pump test performed by Roux on December 15, 1988, showed the groundwater flow rate of the upper Pleistocene glacial deposits to be one foot per day.

Geologic cross sections (Roux, 1989) are included in **Appendix C**. A groundwater flow map based on data collected in 2008 is included as **Figure 3A**. Historical groundwater flow conditions for the shallow upper glacial unit, deep upper glacial unit, and Magothy aquifer are shown in **Figures 3B, 3C**, and **3D**, respectively.

1.3 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

This SMP Addendum and all Site documents, including the Remedial Work Plan, are maintained by the NYSDEC (or successor agency). At the time of publication of this SMP Addendum, these reports and those listed in Section 1.2 could be found at the Region 2 NYSDEC offices in Long Island City, New York.

1.3.1 Summary of Remedial Investigations

Below is a summary of Remedial Investigation findings:

General Site Cleanup performed by Knomark, Inc.

In 1988, Knomark retained H2M Group (H2M) who hired Marine Pollution Control to conduct Site activities relating to the closure of its Site operations, including overseeing the cleaning of stained building surfaces, removal of the two chemical USTs (one 3,000gallon and one 5,000-gallon tank) and two fuel oil USTs (one 10,000-gallon and one 20,000-gallon tank), and removal of two drywells (and subsequent installation of two new wells) and associated contaminated soil.

H2M's field screening measurements indicated that no contaminated soil remained in the area of the former chemical underground storage tanks. These results were forwarded to NYSDEC along with head-space results indicating no remaining contamination after the chemical underground storage tank removal.

The building owner retained Roux to complete the surficial cleaning of the building and removal of the fuel oil USTs (Roux, March 1989 and Roux, May 1989).

Environmental Audit of Toxic and Hazardous Waste Management and Disposal at Knomark, Inc., Roux Associates Inc., 1988

Roux conducted an environmental audit during the time the facility was occupied by Knomark. The purpose of Roux's audit was to evaluate existing environmental conditions to determine Knomark's responsibility for cleanup at the termination of its lease.

Roux's audit indicated the following:

- Knomark used volatile chemicals, including PCE, 1,1,1-trichloroethane, methylene chloride, and methyl ethyl ketone, in its manufacturing process. The manufacturing of dyes account for most of these chemicals used at the facility.
- All wastewater from the building led to an indoor, aboveground catch basin (for settling and sludge collection), which subsequently discharged into the municipal sewer. Knomark generated

approximately 6,000 kilograms of sludge per month, which was pumped regularly from the aboveground catch basin and disposed of off-Site by Liberty Ash of Elmont, New York. Air emissions by Knomark complied with permits from NYCDEP.

- The Knomark facility had small motor capacitors and step-up transformers built into process equipment inside the building that potentially contained polychlorinated biphenyls (PCBs). Knomark had no records of PCB-containing equipment on file or a PCB inventory or management program, which would be required by Toxic Substances Control Act (TSCA) regulations.
- Several potential sources of groundwater contamination were identified, including: the chemical drum storage area outside the building at the northern end of the Site, which lacked appropriate containment; chemical USTs and petroleum USTs; and visible spills and leaks onto the ground, which could migrate into on-Site drywells in the parking areas.
- Soil samples collected from a drywell near the chemical drum storage area and in the back of the building had elevated levels of solvents.

Environmental Investigation of Subsurface Conditions, TRC, 1988

TRC Environmental Consultants (TRC) was retained by UPS to assess potential groundwater contamination at the Site prior to UPS's lease. To meet this objective, TRC installed one monitoring well in the expected upgradient groundwater flow direction and six monitoring wells in the expected downgradient groundwater flow direction to assess potential environmental concerns including the fuel oil underground storage tanks, the former chemical underground storage tanks, and the drywell closest to the building. In addition, TRC sampled blue-stained soil from excavated areas formerly occupied by drywells and the northeastern corner of the former Site building. Groundwater samples were analyzed for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), and metals (arsenic, cadmium, chromium, hexavalent chromium, cobalt, copper, mercury, silver and zinc). Soil samples were analyzed for VOCs and metals.

TRC's report indicated the following:

- No VOCs were detected in the blue-stained soil from areas near the drywells.
- Solvents were detected in all but one of the monitoring wells. TRC attributed the groundwater contamination to past usage of the property. However, the highest levels of VOCs were detected in a well at the upgradient end of the Site (MW-14s), and subsequent testing indicated a potential off-Site source of solvent contamination (Roux, 1990).
- All drywells and solvent-contaminated soil identified by TRC were excavated from the Site.

Results of Building Decontamination, Roux Associates, 1989

Roux was retained by Shea and Gould to perform an independent evaluation of the H2M closure implementation during March 1988. Roux determined that the building was not sufficiently decontaminated, based on cleanup criterion developed by H2M (10 percent of the Toxicity Characteristic Leaching Procedure (TCLP) standards) and that further decontamination was required. Roux oversaw further building decontamination performed by O.H. Materials and documented this cleanup in a report dated March 21, 1989. Twenty-five concrete chip samples from the first floor and 15 concrete chip samples from the second floor were collected and analyzed for metals.

Roux's findings included:

- Building decontamination resulted in the accumulation of 60 cubic yards of spent solvents listed as hazardous waste, which were to be incinerated off-Site.

- All chip samples met H2M's cleanup criteria established for RCRA metals.

Evaluation of Soil and Ground-Water Quality, Roux Associates, 1989

Roux performed a comprehensive soil and groundwater sampling program based on TRC's assessment that on-site groundwater was contaminated. The study included the installation of 18 monitoring wells and 20 soil borings. Groundwater samples were collected from both the upper glacial unit and the Magothy Formation. The separate aquifers were screened at four depth intervals: shallow upper glacial unit at 18-28 feet below grade; deep upper glacial unit at 50-60 feet below grade; Magothy at 90-100 feet below grade; and deep Magothy at 130-140 feet below grade.

Roux's 1989 report indicated:

- No soil contamination was detected at levels exceeding Technical and Administrative Guidance Memorandum (TAGM) #4046 Recommended Soil Cleanup Objectives (RSCOs) in soil above the water table; however, soil results were only commented on generally and not compared to any guidance values at the time of the 1989 report.
- Groundwater flow in the shallow and intermediate aquifers was to the southeast. Groundwater flow in the deep aquifer was to the southwest.
- Prior Site usage had caused a limited impact to groundwater conditions on the property, and was mainly attributed to releases that had occurred in the former chemical drum storage area outside the building.

Removal of Underground Fuel Oil Tanks, Roux Associates, 1990

Roux oversaw the removal of two fuel oil USTs (one 10,000-gallon No. 2 fuel oil tank and one 20,000-gallon No. 4 fuel oil tank) as part of the heating system conversion to natural gas.

Roux's 1990 report indicated:

- After repairs to the feed line of the 10,000-gallon UST, both tanks passed a tightness test prior to removal.
- Two soil borings were advanced adjacent to the USTs and fuel line, one of which (SB-2) detected a TPH concentration of 2,100 parts per million (ppm) at approximately 8 to 10 feet below ground surface, in the vicinity of the repaired feed line, which was removed as part of the tank removal process.
- A NYSDEC representative was present during the removal of the tanks and directed the removal of 10 cubic yards of petroleum-contaminated soil for disposal off-Site.

Results of the April 1990 Ground-Water Sampling, Roux Associates, 1990

Roux resampled all groundwater monitoring wells in response to a meeting between Arden-Esquire Realty Company (property owner) and NYSDEC. New monitoring wells were installed to replace damaged wells. A total of 22 on-Site monitoring wells were sampled.

Roux's 1990 groundwater study indicated:

- Groundwater contamination on the Site was attributed to an unknown off-Site source. The highest levels of VOCs, primarily solvents, were detected in the groundwater wells at the upgradient (northern) end of the property.
- Roux concluded that no further action was warranted for the Site, since an off-Site source was

responsible for the groundwater contamination.

Phase I Environmental Site Assessment, EMCON, 1997

In October 1996, United States Postal Service (USPS) was planning to lease the building for the John F. Kennedy Air Mail Center Support Annex and retained EMCON to perform a Phase I ESA. The following conclusions and recommendations were made:

- USPS should obtain full disclosure and review of data related to the removal of the fuel oil tanks, UST integrity test records and leak detection records, and the groundwater monitoring wells at the Site.
- All fluids, floor stains, drums, dye stains, remaining fluids in oil/water separators, and tanks should be removed.
- USPS should rectify boilers being operated without a current Operating Permit from the NYSDEC.
- A lead-based paint survey should be conducted in areas where employee exposure would occur.
- PCB-filled light ballasts and mercury-containing light tubes should be removed during regular building maintenance or re-lamping.
- A drinking water evaluation should be performed due to the age of the building.
- In a Site Condition Report prepared by Berger/Hill in September 1995, potential asbestos-containing spray-on fireproofing was observed on structural steel. The Site Condition Report noted that documentation from Warren Panzer Engineers indicated that no exposed asbestos-containing materials (ACMs) were found within the building on a confirmatory walk-through survey, supporting the assertion that all exposed ACMs had been removed in 1988.

Phase II Study: Analytical Results Only, Malcolm Pirnie, Inc., 1998

Malcolm Pirnie performed soil and groundwater sampling on behalf of a prospective buyer. The sampling consisted of collecting and analyzing 5 soil samples (for VOCs and TPH) and sampling groundwater from 14 existing wells.

Malcolm Pirnie's investigation found:

- No VOCs or TPH-DRO were detected in any of the soil samples.
- No pesticides, semivolatile organic compounds (SVOCs) or PCBs were detected in the groundwater samples.
- Low levels of solvents were detected in the groundwater samples. The solvent concentrations were similar to the levels reported by Roux during the 1990 groundwater sampling, *Results of the April 1990 Ground-Water Sampling,* Roux Associates, 1990.

Although no report was available for review, Malcolm Pirnie and Eder Associates (Eder) also reportedly sampled the sediment from inside the on-Site drywells. Analytical results identified no VOCs in the samples and Eder subsequently excavated and disposed of the drywell sediment as a petroleum-contaminated waste.

Underground Storage Tank Closure, Leggette, Brashears & Graham, Inc., 1998

Leggette, Brashears & Graham, Inc. (LBG) conducted environmental monitoring during the removal of UPS's petroleum USTs and aboveground storage tanks (ASTs). The closure activities included the

removal of four 4,000-gallon gasoline USTs, two dispenser islands and associated piping, and removal of two anti-freeze and used oil 275-gallon ASTs.

LBG's report reported:

- Based on visual inspection of the four 4,000-gallon gasoline USTs, LBG noted that the tanks were in excellent condition. Post-excavation sampling results from the gasoline UST areas, dispenser island, and associated piping indicated no impact to surrounding soil conditions.
- A visual inspection of the two 275-gallon ASTs showed the tanks to be in excellent condition.

Phase I Environmental Site Assessment, Eder Associates, 1998

Proskauer Rose LLP retained the Eder Division of Gannett Fleming, Inc. (Eder) on behalf of its client, Mendik Realty, in May 1998 to conduct a Phase I ESA of the Site. The assessment revealed evidence of the following environmental conditions:

- Groundwater sampling of on-Site monitoring wells detected VOCs that were attributable to an upgradient source(s).
- UPS indicated that four gasoline USTs were removed in accordance with NYSDEC guidelines. Subsequent post-excavation soil sampling indicated that no additional sampling or remediation of this area was warranted.
- All exposed ACMs were removed as part of the 1989 building renovation.
- Eder recommended cleaning and inspecting the oil/water separator and sampling groundwater from downgradient monitoring wells MW-6 and MW-7.

Phase II Environmental Assessment, AKRF, Inc., 1999

Forest City Ratner Companies, a prospective purchaser, retained AKRF to implement a soil and groundwater investigation and sample building materials for asbestos. The overall objectives of the study were as follows:

1. Confirm the current direction of groundwater flow and groundwater quality.
2. Sample soil and groundwater underneath the building, since no previous testing had evaluated subsurface conditions at this location.
3. Sample soil and groundwater in the areas of the former chemical USTs and dry wells to verify that these areas of environmental concern had been remediated.
4. Perform an asbestos survey to identify, locate, and quantify asbestos-containing building materials.

AKRF sampled all 18 existing monitoring wells, collected 8 soil samples and 6 groundwater samples under the building, and 8 soil samples from the former locations of chemical USTs and drywells for laboratory analysis.

Significant findings of AKRF's Phase II Environmental Assessment were:

- Laboratory analysis showed only trace amounts of VOCs in the soil. The levels detected were well below NYSDEC TAGM RSCOs and STARS Memorandum #1 guidance values. Thus, past remedial actions, as documented in prior studies, were effective in removing solvent and petroleum contamination from the vadose zone.
- Solvent levels, in particular PCE, exceeded NYSDEC Class GA standards at most groundwater sampling locations in the shallow upper glacial aquifer. The highest PCE levels were found downgradient or within the immediate vicinity of the former chemical drum storage area, former

drywells, and chemical USTs. This finding suggests that prior Site usage contributed to the Site's groundwater quality. The presence of PCE in upgradient wells suggested that an off-Site source was also present (also see Roux 1990).

- Solvent levels in the deep upper glacial aquifer did not exceed NYSDEC Class GA standards. Historic levels of PCE showed a noticeable decrease in all wells installed in the deep upper glacial aquifer. AKRF reported that the higher levels of solvents detected in the Magothy wells likely reflected a regional groundwater problem. The former Jamaica Water Supply Company operated wells in the Magothy Aquifer throughout southeastern Queens. As of 1990, groundwater quality data showed that nearly half of their Magothy wells had solvent levels greater than the GA standard of 5 parts per billion (ppb). The NYCDEP, the owner of the Jamaica Water Supply Company wells, reported similar widespread contamination of the Magothy Aquifer in the area at that time. Furthermore, groundwater sampling on the Site showed the presence of PCE in the upgradient Magothy well MW-14 (located at the northern end of the Site). This finding lent further support that the PCE detected in the Magothy wells was indicative of regional groundwater quality.

Supplemental Soil/Groundwater Sampling, AKRF, Inc., 1999

The results of this investigation were presented in AKRF's Revised Remedial Work Plan (RWP). AKRF installed an additional monitoring well and collected groundwater samples for laboratory analysis. At the time of AKRF's Phase II Investigation, AKRF was unable to locate monitoring well MW-12 installed by Roux Associates at the northwestern corner of the Site. Consequently, AKRF installed a replacement well in the shallow upper glacial aquifer at this location. During the installation of the replacement well, Roux's monitoring well MW-12 was found. The replacement well, MW-18S, was then offset to the south to optimize Site coverage.

Based upon field observations, soil samples exhibiting evidence of contamination [elevated photoionization detector (PID) readings, odor, staining, and/or sheen] were submitted to a state certified laboratory and analyzed for Target Compound List (TCL) VOCs. Sampling and analytical methodology complied with NYSDEC and New York State Department of Health (NYSDOH) protocol applicable at the time of the investigation.

Significant findings of AKRF's supplemental testing were:

- Soil sampling found no PCE in the soil above the groundwater table at MW-18S.
- Groundwater from MW-12 and MW-18S were not sampled, but were proposed to be sampled during the remedial action in the NYSDEC-approved RWP; therefore, no groundwater results were reported.

Indoor Air Quality Study, AKRF Inc., September, 1999

The results of this investigation were presented in AKRF's Revised RWP. AKRF performed an indoor air monitoring survey in the existing on-Site building. The purpose of this air sampling was to determine whether nearby PCE groundwater contamination had affected the ambient atmosphere within the on-Site building. All sampling and analyses were conducted in accordance with New York State Department of Health protocol applicable at the time of the investigation.

Significant findings of AKRF's supplemental indoor air quality study were:

- All indoor PCE air levels were less than 1 ppb.
- Levels of airborne volatile organic compounds inside the building were comparable to background levels measured outside the building and to levels measured at the NYSDEC monitoring station in Brooklyn, which is considered typical of urban background levels.

1.3.2 Contamination Conditions

Extensive sampling performed on the project Site between 1988 and 1999, prior to the remedial action under the RWP, indicated no soil contamination at levels exceeding TAGM #4046 RSCOs in soil above the groundwater table. Prior to the NYSDEC-approved remedy, outlined in Section 1.4, Site contamination was identified in soil vapor and groundwater. Contamination conditions and locations at the Site are summarized on the following figures:

- Areas of concern are shown on **Figure 4**.
- **Figure 5A** shows all soil sampling locations, except the 1998 samples by Malcolm Pirnie (report unavailable for review), and by Leggette, Brashears & Graham, Inc., which corresponded only to the former petroleum tank area and reported no impacts.
- **Figure 5B** shows all groundwater sampling locations with extent of PCE contamination prior to remedial action.
- **Figure 6** shows historical PCE concentrations in groundwater.
- **Figure 7** is a spider map showing post-remedial action soil vapor sampling locations and concentrations.

1.3.2.1 On-Site and Off-Site Groundwater

Based on the Site investigations conducted by AKRF and other consultants between 1988 and 1999, groundwater has been contaminated by PCE in some areas of the Site. As shown on **Figure 6**, the shallow upper glacial unit had PCE levels exceeding Class GA standards in the northeastern and eastern areas of the Site building. These areas correspond approximately to the locations of the former chemical USTs and chemical drum storage area. The groundwater data indicated that low levels of solvent contamination in the deeper Magothy Formation were attributable to off-Site sources.

Groundwater exceedances of Class GA standards prior to the remedy are shown in **Table 1**. A spider map that indicates the locations and summarizes exceedances of the Class GA standards for groundwater prior to, during, and post-remediation is shown on **Figure 6**.

Groundwater sampling continued at the Site through September 2011. On February 17, 2012, the NYSDEC approved AKRF's request to discontinue quarterly groundwater monitoring and reporting at the Site. Additionally, the NYSDEC approved decommissioning of the well network on May 2, 2012 and the groundwater monitoring wells and soil vapor points on-Site were subsequently abandoned in July 2012.

1.3.2.2 On-Site and Off-Site Soil Vapor

Subsurface investigations by Roux (1989) and AKRF (1999) evaluated VOC levels in the soil vapor. The method used to measure VOC levels in the soil vapor consisted of collecting soil samples, then taking head-space readings with field instrumentation (organic vapor meter). Headspace readings showed VOC levels in the soil vapor ranging from undetected to 10 ppm; however, elevated VOC levels were also

found within the immediate vicinity of a former fuel oil tank. As documented by Roux (1990), the petroleum-contaminated soil was removed from the Site as part of the tank removal activities.
Total VOC concentrations in soil headspace coincided with the soil sampling results of previous investigations, as discussed in Section 1.3.1, which showed VOC levels in the soil to be well below NYSDEC TAGM #4046 RSCOs and documentation associated with the removal of contaminated soil above the groundwater table.

Soil vapor data collected subsequent to the remedial action is shown in **Table 2**. A spider map indicating the locations and summarizing soil vapor data subsequent to the remedial action is shown in **Figure 7**.

1.4 DESCRIPTION OF REMEDIAL ACTIONS

Remedial activities at the Site were conducted in accordance with the NYSDEC-approved Revised RWP for 132-20 Merrick Boulevard dated October 1999. The approved Revised RWP is included in **Appendix D**. The RWP presented the conceptual plan for remediation of the Site. The goal of the remediation was to remove solvent-contaminated groundwater from the shallow upper glacial aquifer.

The following proposed Remedial Action was required by the NYSDEC-approved RWP.

- Construction of an air sparging (AS) system working in conjunction with a soil vapor extraction (SVE) system to remove PCE and other VOCs from the saturated zone.

In addition to the requirement of the October 1999 RWP, the following elements were considered part of the Site remedy to maintain consistency with current NYSDEC policy:

1. Construction and maintenance of a composite cover consisting of asphalt covered roads, concrete covered sidewalks, and concrete building slabs (also referred to as the "Site Cover") to prevent human exposure to residual contaminated soil and groundwater remaining under the Site.
2. Recording of a Deed Restriction, including Institutional Controls, to prevent future exposure to any residual contamination remaining at the Site.
3. Publication of an SMP for long term management of residual contamination as required by the Deed Restriction, including plans for: (1) Institutional and Engineering Controls; (2) monitoring; (3) maintenance; and (4) reporting.
4. Address all responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, in accordance with all applicable Federal, State and local rules and regulations.

1.4.1 Removal of Contaminated Materials from the Site

Removal of contaminated material from the Site occurred prior to preparation of the RWP during previous Site investigations and associated removal actions, as described in Section 1.3.1.

1.4.2 Air Sparge/Soil Vapor Extraction System

The Site investigations conducted by AKRF and other consultants between 1988 and 1999 identified groundwater contaminated by PCE in some on-Site areas. As shown in **Figure 5B**, the shallow upper glacial unit had PCE levels exceeding Class GA standards in the northeastern and eastern areas of the former Site building. These areas correspond approximately to the locations of the former chemical USTs and chemical drum storage area. The remediation consisted of an air sparging (AS) system working in conjunction with a soil vapor extraction (SVE) system to remove PCE from the saturated zone. In this

system, air was injected into the saturated zone through a series of 33 AS wells. PCE was volatilized and transported into the vadose zone, and vapors were collected using a series of eight SVE wells for treatment.

The air injection wells were constructed of two-inch (outer diameter) PVC casing with a two-foot long screen. The screens were located at variable depths as contamination had a potential to be present at 28 to 30 feet below grade, but up to 55 feet below grade; therefore, wells were placed at a depth based on the contaminant concentration at either 30 feet below grade or to provide a maximum dispersion of air in the contaminated area. To prevent injected air from "short circuiting" up the well casing, the area above the filter pack was sealed with approximately four feet of bentonite and then grouted up to the ground surface. Based on the results of a pilot test, a spacing of 30 feet between AS wells was used.

The SVE wells were constructed of two-inch (outer diameter) PVC casing with a five-foot long screen. The bottom of the screen was placed approximately five feet above the groundwater table to accommodate possible variations in the groundwater level, including the possible rise in the groundwater level resulting from reducing the pressure in the vadose zone. To prevent atmospheric air from leaking into the well, the area above the filter pack was sealed with approximately four feet of bentonite, and then grouted up to the ground surface. SVE wells were spaced approximately 30 feet apart. The plan of AS and SVE well locations is shown on **Figure 8A** and cross-sectional views of typical AS and SVE wells are shown on **Figure 8B**.

AKRF oversaw the installation, start-up, and operation of the remediation system, which was completed in May 2000. Conformance to specifications and performance criteria were confirmed by AKRF. After installation was complete, the system was leak tested. During start-up, the equipment vendor and contractor performed tests and trained personnel on the operation and maintenance of the system. Drawings of the AS wells, SVE wells, and piping layout are included as **Figures 8A** and **8B**.

1.4.3 Residual Contamination

Table 3 and **Figure 6** (spider map) summarize results of historical concentrations of PCE in groundwater at the Site.

As discussed in Section 1.3.2, PCE at the Site was partially attributed to unidentified off-Site sources. For that reason, the RWP specified that the remediation on-Site could be concluded when PCE levels at the downgradient property boundary approximated those in the upgradient monitoring well. PCE levels in the original source area (near MW-3 and to a lesser extent, MW-14S) declined considerably since the beginning of remedial activities and the December 2008 sampling event indicated PCE concentrations less than five percent (5%) of pre-remediation levels.

Since residual contaminated soil and groundwater exists beneath the Site after completion of the Remedial Action, Engineering and Institutional Controls (EC/ICs) are required to protect human health and the environment. Long-term management of these EC/ICs and residual contamination will be performed under this SMP Addendum.

1.4.4 Engineering and Institutional Controls

Since residual contamination is present at this Site, EC/ICs were implemented as part of the redevelopment to protect public health and the environment in the future. The EC for the Site consist of a composite cover system comprising asphalt paved roads and parking areas, concrete sidewalks, and concrete building slabs (also referred to as the "Site Cover"). A survey of the Site is included as **Appendix B** and shows the location of each cover type built at the Site.

The Deed Restriction is the primary IC that has been established for the Site to ensure the ECs are implemented, maintained, and monitored in accordance with this SMP Addendum and to ensure adherence to Site restrictions. The elements of the Deed Restriction are described in Section 2.3.1.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Remedial activities completed at the Site were conducted in accordance with the NYSDEC-approved Revised RWP dated October 1999. The RWP presented the conceptual plan for remediation of the Site. The goal of the remediation was to address solvent-contaminated groundwater in the shallow upper glacial aquifer.

A summary of the remedial strategies and EC/ICs implemented at the Site are as follows:

- Engineering Controls: Maintenance of an engineered composite cover consisting of asphalt-paved roads, concrete sidewalks, and concrete building slabs to prevent human exposure to residual contaminated soil and groundwater; and
- Institutional Controls: Registration of a Deed Restriction at the Site, to prevent future exposure to any contamination remaining at the Site.

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

2.1.2 Purpose

The purpose of this EC/IC Plan is to provide:

- A description of all EC/ICs on the Site;
- The basic operation and intended role of each implemented EC/IC;
- A description of the key components of the ICs created as stated in the Deed Restriction;
- A description of the features that should be evaluated during each annual inspection and compliance certification period;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Soil Management Plan (SoMP) for the safe handling of residual contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROL COMPONENTS

2.2.1 Composite Cover System

Exposure to residual contaminated soil/fill is prevented by an engineered composite cover system built on-Site. This composite cover system is comprised of asphalt-covered roads, concrete-covered sidewalks, and concrete building slabs. **Appendix B** shows the Site survey, including each cover type used. The SoMP included in Section 2.3.2 outlines the procedures required in the event the composite cover system and underlying residual soil are disturbed. Issues related to maintenance of this cover are provided in the Monitoring Plan included in Section 3 of this SMP Addendum.

2.2.2 Criteria for Completion of Remediation/Termination of Composite Cover Systems

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

2.3 INSTITUTIONAL CONTROLS COMPONENTS

2.3.1 Institutional Controls

A series of Institutional Controls are required under the RWP to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to residual contamination by controlling disturbances of the subsurface contamination; and, (3) restrict the use of the Site to commercial uses only. Adherence to these Institutional Controls on the Site (Controlled Property) is required under the Deed Restriction and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Deed Restriction by the Grantee and the Grantee's successors and adherence of all elements of the SMP and SMP Addendum;
- All Engineering Controls must be operated and maintained as specified in this SMP Addendum;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in this SMP Addendum;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in this SMP Addendum;
- The Controlled Property (Site) may be used for commercial use only, provided the long-term Engineering and Institutional Controls included in this SMP Addendum are employed;
- The Controlled Property may not be used for a higher level of use, such as residential use without an amendment or extinguishment of the Deed Restriction;
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for the intended purpose;
- If a newly constructed building or any substantial reconstruction or replacement of the building on the existing slab is constructed, a vapor barrier will be installed between the underlying soil and the lowest level floor or slab. In addition, an indoor air monitoring plan will be developed as part of any new building;
- Engineering Controls may not be discontinued without an amendment of extinguishment of the Deed Restriction;
- Vegetable gardens and farming on the Controlled Property are prohibited;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in this SMP Addendum; and,
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP and SMP Addendum. NYSDEC retains the right to access such Controlled Property at any time to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable.

2.3.2 Soil Management Plan

The Site has been fully remediated for commercial use. Any future intrusive work that will disturb the residual contamination and modifications or repairs to the existing composite cover system will be performed in compliance with this SoMP. Intrusive construction work must also be conducted in accordance with the procedures defined in a Construction Health and Safety Plan (CHASP) and Community Air Monitoring Plan (CAMP) prepared for the Site. The CHASP and CAMP are presented in **Appendix E** of this SMP Addendum. Health and safety are the responsibility of the property owner and will be implemented in compliance with DER-10 Technical Guidance for Site Investigation and Remediation, 29 Code of Federal Regulation (CFR) 1910 and 1926, and all other applicable Federal, State and local regulations. Any intrusive construction work must be certified as compliant with the SMP Addendum and included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

2.3.2.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by a Qualified Environmental Professionals (QEP), or person under their supervision during all remedial and development excavations into known or potentially contaminated material [Residual Management Zone (RMZ)]. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after VCP Site closeout.

2.3.2.2 Stockpile Methods

Soil will be stockpiled based on the known type and/or level of contamination (based on PID readings, odor, staining, etc.) to prevent mixing with potentially uncontaminated excavated material. Stockpiles intended for off-Site disposal may be mixed with other compatible stockpiles on-Site (compatibility will be determined by applicable regulatory and the receiving disposal facility requirements). The location and classification of stockpiles will be tracked in field notes and updated, if necessary, at the end of each workday. Suspect contaminated soil will be placed on a base consisting of rugged polyethylene tarps. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Soil stockpiles will have side slope not to exceed a two to one ratio. Soil stockpiles will be continuously encircled with silt fences or other appropriate erosion control and managed to minimize dust generation, run-off, and erosion using water and/or plastic covers, as necessary. Hay bales or other appropriate erosion control will be used as needed near catch basins, surface waters and other discharge points. Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

A dedicated water truck or other similar wetting/misting device will be available on-Site for dust control, as appropriate, depending on the size and location of the soil disturbance area.

2.3.2.3 Materials Excavation and Load Out

A QEP or person under their supervision will oversee all invasive work that will disturb the RMZ and the excavation and, if needed, load-out of all excavated material. During excavation and stockpiling, the on-Site field personnel will continuously monitor the excavated soil for evidence of contamination and conduct periodic screening for VOCs using a PID. Any soil excavated from the Site will be considered suspect contaminated and disposed of off-Site where any of the following conditions exist: chemical or petroleum odors; visual chemical or petroleum staining; or elevated PID readings. Soil excavated from the Site that has chemical or petroleum odors, visual chemical or petroleum staining, or elevated PID readings will not be reused on-Site, but will be characterized for off-Site disposal. Excavated material that does not exhibit evidence of contamination may be reused on-Site as subsurface fill beneath the restored cover without additional sampling.

All excavations will be considered open excavations and will be managed according to applicable Federal, State, and local regulations. The owner of the Controlled Property and its contractors are solely responsible for safe execution of all invasive and other work performed under the SMP and this SMP Addendum.

The presence of utilities and easements on the Site will be investigated by the QEP or person under their supervision. It will be determined whether a risk or impediment to the planned work under this SMP Addendum is posed by utilities or easements on the Site.

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

A truck wash will be operated on-Site if appropriate to the size of the excavation area. Prior to leaving the excavation area, all contaminated material containers and transport vehicles will be inspected for evidence of exterior contamination (including inside of wheels and undercarriage), and washed. The QEP or person under their supervision will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until soil disturbance is complete.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site sediment tracking. The QEP or person under their supervision will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

The Applicant and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).

The QEP or person under their supervision will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities implemented under the Remedial Work Plan.

If buried tanks, drums, or other containers are encountered during excavation, NYSDEC will be notified and the contingency plan in Section 2.3.2.11 should be implemented. The tank or container and any

associated piping will be removed and endpoint sampling completed before excavations related to Site development commence proximal to the structure.

Mechanical processing of historical fill and contaminated soil on-Site is prohibited.

All primary contaminant sources (including but not limited to tanks and contaminated soil) identified during excavation will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be reported in the Annual Site Management Report.

2.3.2.4 Materials Transport Off-Site

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

All trucks loaded with Site materials will exit the vicinity of the Site using designated truck routes. Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development. Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

Proposed in-bound and out-bound truck routes to the Site are shown in **Figure 9**. In the event of future soil disturbance, a truck route specific to the construction plan will be prepared and provided to the local community board for comment. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

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

2.3.2.5 Materials Disposal Off-Site

Soil excavated from the Site that has chemical or petroleum odors, visual chemical or petroleum staining, or elevated PID readings will not be reused on-Site but will be segregated and sampled prior to off-Site disposal. Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and Quality Assurance and Quality Control (QA/QC) will be reported in the Annual Site Management Report. All data available for soil/material to be disposed of at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt. The disposal locations will be identified and reported to NYSDEC in the Annual Site Management Report.

For large projects, the total quantity of material expected to be disposed of off-Site will be reported to NYSDEC prior to performance of the work. This will include quantity, breakdown by class of disposal facility, if appropriate, i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction and demolition (C&D) recycling facility, etc.

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed of in accordance with all local, State (including NYCRR Part 360) and Federal regulations. Material that does not meet Track 1 unrestricted Soil Cleanup Objectives (SCOs) is prohibited from being taken to a New York State recycling facility (NYCRR Part 360-16 Registration Facility). If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval. Non-hazardous historic fill and contaminated soil taken off-Site will be handled, at minimum, as a Municipal Solid Waste per NYCRR Part 360-1.2. Historical fill and contaminated soil from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities). Hazardous wastes derived from on-Site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

Soil that is contaminated but non-hazardous and is being removed from the Site is considered by the Division of Solid & Hazardous Materials (DSHM) in NYSDEC to be C&D materials with contamination not typical of virgin soil. This soil may be sent to a permitted Part 360 landfill. It may be sent to a permitted C&D processing facility without permit modifications only upon prior notification of NYSDEC Region 2 DSHM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DSHM, special procedures will include, at a minimum, a letter to the C&D facility that provides a detailed explanation that the material is derived from a Department of Environmental Remediation (DER) remediation site, that the soil material is contaminated and that it must not be redirected to on-site or off-site Soil Recycling Facilities.

The following documentation will be obtained and reported by the designated remedial engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the designated remedial engineer or VCP Applicant to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed of is contaminated material generated at an environmental remediation site in New York State. The letter will provide the project identity and the name and phone number of the designated remedial engineer. The letter will include, as an attachment, a summary of all chemical data for the material being transported; and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material.

A bill of lading system or equivalent will be used for off-site movement of nonhazardous wastes and contaminated soil. This information will be reported in the Annual Site Management Report. Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, State and Federal regulations.

The Annual Site Management Report will include an accounting of the destination of all material removed from the Site during work performed under this plan, including excavated soil, contaminated soil, historic fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the Annual Site Management Report.

2.3.2.6 Materials Reuse On-Site

Excavated material that does not exhibit evidence of contamination may be reused on-Site as subsurface fill beneath the restored cover without additional sampling.

Acceptable demolition material proposed for reuse on-Site, if any, will be sampled for asbestos.

Concrete crushing or processing on-Site is prohibited. The NYSDEC will consider the use of specially designed devices that are self-contained and capable of providing misting for dust control. NYSDEC approval must be obtained. If dust-free operations are not achieved with such devices, this exception will be revoked.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on-Site.

Contaminated on-Site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

2.3.2.7 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed of in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP. Discharge of water generated during remedial construction to surface waters (i.e., a local pond, stream or river) is prohibited without a NYSDEC State Pollutant Discharge Elimination System (SPDES) permit. Dewatered fluids will not be recharged back to the land surface or subsurface of the Site. Dewatering fluids will be managed off-Site.

2.3.2.8 Demarcation

After the completion of soil removal and any other invasive remedial activities and prior to backfilling, as necessary, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soil. A physical demarcation layer, consisting of orange snow fencing or equivalent material will be placed on this surface to provide a visual reference. This demarcation layer will constitute the top of the RMZ, the zone that requires adherence to special conditions for disturbance of contaminated residual soil defined in this SMP Addendum. The survey will measure the grade covered by the demarcation layer before the placement of cover soil, pavement and sub-soil, structures, or other materials. This survey and the demarcation layer placed on this grade surface will constitute a modification of the physical and written record of the upper surface of the RMZ in the Site Management Plan. A map showing the survey results will be included in the Annual Site Management Report and updates to this SMP Addendum.

2.3.2.9 Backfill from Off-site Sources

All materials proposed for import onto the Site will be approved by the QEP or person under their supervision and will be in compliance with provisions in this SMP Addendum prior to receipt at the Site. Any imported off-Site backfill material will be clean and free of debris, cinders, combustibles, wood,

roots, and any staining or odors. Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site. Solid waste will not be imported onto the Site.
Imported material will be tested and compared to the criteria in the NYSDEC-approved work plan developed for the proposed work at the Site. In general, unless a specific testing plan is approved in writing by NYSDEC, imported material will be tested via collection of one composite sample per 1,000 cubic yards of material from each source. Samples will be analyzed for TCL VOCs using EPA Method 8260, TCL SVOCs using EPA Method 8270, PCBs using EPA Method 8082, pesticides using EPA Method 8081, and TAL metals using EPA Method 6000/7000 series.

Imported soil will be considered appropriate for use as on-Site backfill if contaminant concentrations are less than the combined Part 375 SCOs, calculated as the lower of the SCOs for Commercial Use or Protection of Groundwater, or if specific approval is given by NYSDEC.

Native material from a virgin quarry source need not be sampled prior to use as imported backfill, provided that detailed information regarding site history and chemical composition of the quarry material is available. If this detailed information is not available, a sample will be collected for laboratory analysis as specified above.

Non-compliant soil will not be imported onto the Site without prior approval by NYSDEC. Soil that meet 'exempt' fill requirements under NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved SMP and SMP Addendum or its approval by NYSDEC should be construed as an approval for this purpose.

Trucks entering the Site with imported soil will be securely covered with tight fitting covers. Backfill material brought on-Site will be stockpiled in an area separate from the excavated material stockpiles. The location and classification of stockpiles will be tracked on the Site drawings and updated, if necessary, at the end of each workday.

2.3.2.10 Stormwater Pollution Prevention

Smaller-scale soil disturbances for future utility maintenance and landscaping conducted after the completion of Site redevelopment are not anticipated to require coverage under the general SPDES Permit or preparation of a Storm Water Pollution Prevention Plan (SWPPP). However, best management practices will be implemented during small-scale soil disturbances including the placement of barriers, such as silt fencing and hay bales, at the perimeter of soil stockpiles. If the barrier is to be maintained on-Site overnight or longer, it will be inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

For activities involving disturbance of the RMZ, work will be performed in compliance with all applicable requirements relating to stormwater pollution prevention including NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-08-001.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to

weathering.

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

Silt fencing, hay bales, or equivalent barriers will be installed around the entire perimeter of the excavation and stockpile area(s). Nearby sewer inlets will be protected with hay bales, silt geofabrics, "silt sack" inserts, or equivalent barriers. Any alterations to the above plan must be approved by NYSDEC.

2.3.2.11 Contingency Plan

All excavation will be monitored for the presence of buried tanks, drums or other containers, sludges, or soil which shows evidence of obvious contamination, such as heavy staining, sheen, or strong odors. Affected areas will be cordoned off and no further work will be performed at that location until the appropriate contingency response action is implemented. Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will be also included in the Annual Site Management Report.

If underground tanks or other previously unidentified contaminant sources are found, sampling will be performed on product, sediment and surrounding soil, etc. Chemical analytical work will be for full scan parameters (including Target Analyte List (TAL) metals, TCL VOCs and SVOCs, TCL pesticides, and PCBs) unless a different set of parameters is approved by NYSDEC.

Buried tanks, drums or similar containers will be removed in accordance with applicable Federal, State and local requirements. Spill reporting to the NYSDEC Spill Hotline (800-457-7362) and/or other agencies will be conducted as required. Copies of all testing results, correspondence with disposal facilities concerning classification of materials, and permits/approvals will be maintained by the designated remedial engineer and will be submitted to the NYSDEC in the Annual Site Management Report and in any Tank Closure Report or Spill Closure Report.

2.3.2.12 Community Air Monitoring Plan

The Community Air Monitoring Plan CAMP is intended to protect the health of people using the Site and community residents who have the potential to be exposed to on-Site contaminants as a result of fugitive discharge of dusts, vapors, and/or nuisance odors. The CAMP detailed in the CHASP provided in **Appendix E** will be implemented during all ground intrusive activities that extend beneath the Site Cover into the RMZ.

2.3.2.13 Odor, Dust and Nuisance Control Plan

2.3.2.13.1 Odor Control Plan

If the work zone or community air monitoring reveal persistent elevated VOC levels, or if nuisance odors are present, the odor control plan will be implemented to control emissions of nuisance odors off-Site and on-Site in accordance with the CHASP (**Appendix E**). If nuisance odors are identified, work will be

halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Controlled Property owner's designated remedial engineer, who is responsible for certifying the Annual Site Management Report.

All appropriate means will be employed to prevent on- and off-Site nuisances. Odors will be controlled by minimizing, to the extent practicable, the exposure of contaminated soil to the atmosphere. Specific measures that will be implemented are: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) hauling soil only in covered trucks.

If odors develop and cannot be otherwise controlled, additional means to eliminate odors will include: (a) direct loading of soil to trucks for off-Site disposal to the extent feasible; (b) using water or foams to cover exposed odorous soil; and (c) use of chemical odorants in spray or misting systems.

2.3.2.13.2 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-Site work that disturbs the Site Cover, will include, at a minimum, the following:

- The excavation size and/or number of excavations will be minimized as practicable.
- Excavated areas and stockpiled material will be covered with polyethylene sheeting after activity ceases.
- Dust suppression will be achieved through the use of a dedicated on-Site water truck or appropriate wetting/misting device to reach the full extent of the area of the soil disturbance, stockpiles, and on-Site haul roads. If excavation activities are generating dust, the work area, including equipment and excavation faces, will be wetted.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soil vulnerable to dust production.
- Gravel will be used on unpaved roadways to provide a clean and dust-free road surface.
- Unpaved on-Site roads will be limited in total area to minimize the area required for wetting.
- Vehicle speeds will be restricted to minimize dust production.
- Dust suppression techniques will be implemented in accordance with the CHASP (**Appendix E**).

2.3.2.13.3 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during any Site clearing and grubbing in accordance with local regulatory requirements.

All future soil disturbance work will conform, at a minimum, to applicable noise control standards. If necessary, based on the work to be performed, a written noise control plan will be prepared.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all systems installed on-Site will be conducted at the frequency specified in SMP Addendum Monitoring Plan schedule outlined in Section 3.1.2. A comprehensive Site-wide inspection will be conducted annually. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP Addendum and the Deed Restriction;
- Sampling and analysis of appropriate media during monitoring events;
- If Site records are complete and up to date; and
- Changes, or needed changes, to the monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP Addendum (Section 3). The reporting requirements are outlined in the Site Management Reporting Plan (Section 5).

If an emergency occurs, such as a natural disaster or an unforeseen failure of any of the ECs, an inspection of the Site will be conducted to verify the effectiveness of the EC/ICs implemented at the Site by a Qualified Environmental Professional as determined by NYSDEC.

2.4.2 Notifications

2.4.2.1 NYSDEC-acceptable Electronic Database

The information identified below will be submitted to NYSDEC in the Annual Site Monitoring Report and will be: 1) modified as conditions change; and (2) revised in **Appendix F** of this document, as necessary:

- A Site summary;
- The name of the current Site owner and/or the remedial party implementing the SMP Addendum for the Site;
- The location of the Site;
- A contact name and phone number of a person knowledgeable about the Deed Restriction's requirements, in order for NYSDEC to obtain additional information, as necessary;
- Should the Deed Restriction be modified or terminated, the copy of the revised Deed Restriction will also be updated in this manner.

2.4.2.2 Non-routine Notifications

Non-routine notifications are to be submitted by the Site owner(s) to the NYSDEC on an as-needed basis for the following reasons:

- 60-day advance notice of any proposed changes in Site use.
- 10-day advance notice of any proposed ground-intrusive activities that would disturb soil within the RMZ, except those required to address urgent or emergency situations.
- Notice within 48 hours (measured from the time the Site owner(s) have actual knowledge) of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action taken to mitigate the damage

or defect.

- Notice within 48 hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the Site, including a summary of action taken and the impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

3.0 MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the ECs at the Site. This Monitoring Plan is subject to revision by NYSDEC.

3.1.2 Purpose

This Monitoring Plan describes the methods to be used for:

- Evaluating Site information periodically to confirm that the remedy continues to be effective as per the design;
- Preparing the necessary reports for the various monitoring activities; and
- Assessing achievement of the remedial performance criteria.

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

- A description of the EC components that will be evaluated during each annual inspection and compliance certification period;
- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Reporting requirements;
- QA/QC requirements; and,
- Annual inspection and certification.

Monitoring programs are summarized below in **Table 4** (Monitoring/Inspection Deliverables and Schedule) and detailed in Section 3.2.

Table 4: Monitoring/Inspection Deliverables and Schedule

Monitoring Program	Frequency*	Reporting Requirement	Analysis
Site Cover Inspection	Annual, or after flooding or major storm event**	In Annual Site Management Periodic Review Report	Visual inspection
Site-Wide Inspection	Annual, or after flooding or major storm event**	In Annual Site Management Periodic Review Report	Visual and paperwork inspection

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

** A major storm event is defined as a 5-year storm event (greater than 4.5 inches of rain within a 24-hour period).

3.2 ENGINEERING CONTROL SYSTEM MONITORING

The Site has one primary Engineering Control System – a composite cover system (Site Cover) consisting of asphalt-covered roads and parking areas, concrete-covered sidewalks, and concrete building slabs (described in Section 1.4.4). The Site survey included in **Appendix B** shows the locations of the cover on the Site.

3.2.1 Composite Cover Monitoring (Site Cover) Inspection

A visual inspection of the entire Site Cover will be performed on an annual basis in accordance with Section 4.2 and as summarized above in **Table 4**. An example of the Site Cover Inspection Form is presented in **Appendix F**. Cracking, erosion or other signs of wear will be repaired as per the Maintenance Plan in Section 4.

Unscheduled inspections and/or sampling will take place when a suspected failure of the Site Cover has been reported, a major storm event occurs or another emergency takes place that is deemed likely to affect the Site Cover. Monitoring deliverables are specified in Section 3.6.

Inspection logs and records of any repairs made to the Site Cover will be included in the Annual Site Management Report.

3.3 INSPECTIONS

Comprehensive Site-wide inspection will be conducted on an annual basis. Site-wide inspections should also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (**Appendix F**). The inspection will address, as necessary, the following:

- An evaluation of the condition and continued effectiveness of ECs;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP Addendum and the Deed Restriction;
- Compliance with all ICs, including Site usage;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Maintenance Plan; and,
- If Site records are complete and up to date.

If an emergency, such as a natural disaster or an unforeseen failure of either of the ECs occurs, an inspection of the Site will be conducted to verify the effectiveness of the EC/ICs implemented at the Site. The reporting requirements are outlined in the Site Management Reporting Plan (Section 5).

3.4 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

The procedures in this QA/QC plan will be implemented to ensure the precision, accuracy, completeness, comparability, and representativeness of the data generated during activities under this SMP Addendum.

3.4.1 Quality Control and Laboratory Procedures

No soil or groundwater analyses are anticipated. Other analyses that may be required, such as by a disposal facility, will be in accordance with the appropriate EPA methods using the parameter-specific sample containers, preservation and holding times.

3.4.2 Field Screening

On-Site field screening or analyses using portable instruments such as a PID, Combustible Gas Indicator (CGI), and dust monitors will be used to monitor Site conditions for health and safety during sampling and other investigative activities. These instruments generate immediate results that are not compound specific, but provide information relating to the Site and sampling conditions and adequacy of health and safety procedures.

All instruments will be calibrated in general conformance with manufacturers' specifications. In general, field equipment will be calibrated within 24 hours of the day in which they are to be used in the field.

All equipment calibration and repair will be recorded in the maintenance logbook specific to the instrument. Logbook information will include: personnel name, date, identification of calibration standard, results of calibration, and any corrective actions necessary to repair an instrument which cannot be properly calibrated.

During field use of an instrument, any abnormal functioning will be noted. If the instrument is malfunctioning in any way, it will no longer be used and subsequently replaced.

3.4.3 Sample Collection

Samples will be collected using dedicated/disposable equipment to minimize the risk of cross-contamination. Soil samples (e.g., for waste disposal purposes) will be collected directly from the bucket of machinery utilized or from a stockpile.

In meeting the data quality objectives, the following field practices will be observed during sample collection:

- Field equipment rinsate blanks will not be necessary, since all such sampling will be completed utilizing dedicated/disposable sampling equipment and containers.
- Duplicate samples will be collected at a rate of 10%.
- Trip blanks (EPA Method 8260) will be used at a rate of one per shipment when volatile organic compounds are targeted.
- All samples requiring chemical preservatives will have those preservatives added to the empty sample containers by the laboratory before delivery to the field.

3.4.4 Decontamination of Equipment

All sampling equipment will be either dedicated or decontaminated between sampling locations. The decontamination procedure for sampling equipment will be as follows:

- Scrub using tap water/Simple Green™ mixture and bristle brush;
- Rinse with tap water;
- Scrub again with tap water/ Simple Green™ and bristle brush;
- Rinse with tap water;
- Rinse with distilled water; and
- Air-dry the equipment, if possible.

3.4.5 Sample Handling

This section provides protocols for sample identification, sample labeling and shipping, and sample custody. Sampling procedures, sample identification and characterization, and sample observations (evidence of contamination, PID readings, and soil classification) will be recorded in the field log book.

3.4.5.1 Sample Identification

All samples will be consistently identified in all field documentation and log book, chain-of-custody documents and laboratory reports using an alpha-numeric code. For stockpiled soil, the alpha prefix will be "SP" and the numbers following the alpha prefix will correspond to excavated stockpiles, beginning with "1, 2, 3…etc." For example, the first sample collected from the first stockpile will be labeled "SP-1-1" and the first sample collected from the second stockpile will be labeled "SP-2-1."

Waste characterization samples collected from 55-gallon drums will be identified by the drum number (e.g., DRUM 1 or DRUM 2) followed by a sample type designation (LQ for liquid and SD for solid).

The designation "MS/MSD" will be added at the end of the designation for matrix spike/matrix spike duplicate samples. The field duplicate samples will be labeled with a dummy sample location to ensure that they are submitted as blind samples to the laboratory. The dummy identification will consist of the sample type followed by a letter. For duplicate soil boring samples, the sample depth will be the actual sample depth interval. Trip blanks and field blanks will be identified with "TB" and "FB", respectively.

3.4.5.2 Sample Labeling and Shipping

Samples to be analyzed in the laboratory will be placed in the required laboratory-supplied sample containers. All sample containers will be provided with labels containing the following information:

- Project identification;
- Sample identification;
- Date and time of collection;
- Analyses to be performed; and
- Sampler's initials.

Once the samples are collected and labeled, they will be placed in chilled coolers and stored in a cool area away from direct sunlight to await shipment to the laboratory. At the start and end of each workday, field personnel will add ice to the coolers as needed.

The samples will be prepared for shipment by placing each sample in a plastic bag, then wrapping each container in bubble wrap to prevent breakage, adding freezer packs and/or fresh ice in sealable plastic bags and the chain-of-custody form. Samples will be shipped overnight (e.g., via Federal Express) or transported by a laboratory courier. All coolers shipped to the laboratory will be sealed with mailing tape and a custody seal to ensure that the coolers remain sealed during delivery.

3.4.5.3 Sample Custody

Sample custody is an integral part of any laboratory or field operation. Sample custody procedures are designed to provide documentation of the preparation, handling, storage, delivery, and receipt of samples.

The chain-of-custody forms will be completed prior to sample shipment and contain the following information: project name; names of sampling personnel; sample number; date and time of collection and matrix; signatures of individuals involved in sample transfer; and the dates and times of transfers. Stringent chain-of-custody procedures will be adhered to at all times. All sample identifications and chain of custody entries will be crosschecked and verified before samples are either received or relinquished by any party.

Field personnel will be responsible for maintaining the sample coolers in a secured location until they are picked up and/or sent to the laboratory. The record of possession of samples from the time they are obtained in the field to the time they are delivered to the laboratory or shipped off-Site will be documented on chain-of-custody forms. The laboratory will document the receipt of the shipping containers by signing the chain of custody and recording the date and time of receipt, and assess the condition of the custody tape, shipping containers and any other potential discrepancies. The sample custodian will bring any discrepancies to the attention of the designated laboratory program administrator for reconciliation with the project Owner's environmental consultant.

3.4.6 Quality Control Sampling

In addition to the laboratory analysis of the soil samples, additional analysis will be included for quality control measures, as required by the Category B or Category A sampling techniques. These samples may include equipment blanks, trip blanks, matrix spike/matrix spike duplicates (MS/MSD) and blind duplicate samples. Equipment blank, MS/MSD and duplicate samples will be analyzed for the same parameter set for which the samples will be analyzed. If the requested parameters include VOCs, a trip blank will be analyzed for volatile organic compounds only. Quality control sampling in accordance with the disposal facility requirements will be performed when collecting samples for disposal characterization.

3.4.7 Data Review

As part of the laboratory deliverables, data validation will be performed by the laboratory in accordance with the USEPA Analytical Services Protocol (ASP) Category B guidelines. Since ASP Category B deliverables will be provided by the laboratory, a Data Usability Summary Report (DUSR) for data validation will not be prepared.

3.5 MONITORING REPORT REQUIREMENTS

All monitoring results will be incorporated into the Annual Site Management Report. Inspection and reporting requirements are described in Section 3.1.2.

All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Annual Site Management Report, as specified in the Reporting Plan of the SMP Addendum. The monitoring information provided in the Annual Site Management Report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (also to be submitted electronically in the NYSDEC-identified format);
- A copy of the laboratory certification;
- Any observations, conclusions, or recommendations; and,
- Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized in **Table 4** in Section 3.1.2.

3.6 CERTIFICATIONS

Site inspections and sampling activities will take place as outlined above. Frequency of inspection is subject to change by NYSDEC. Inspection certification for all ICs and ECs will be submitted to NYSDEC on a calendar year basis and must be submitted by April 30 of the following year. A Qualified Environmental Professional, as determined by NYSDEC, or their designated representative, will perform inspection and certification. Further information on the certification requirements are outlined in the Reporting Plan of this SMP Addendum.

4.0 MAINTENANCE PLAN

4.1 INTRODUCTION

The Maintenance Plan describes the measures necessary to maintain the composite cover system. This Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Site to maintain the composite cover system;
- Includes an maintenance contingency plan; and
- Will be updated periodically to reflect changes in Site conditions or the manner in which the composite cover system is maintained.

Information on non-mechanical Engineering Controls (i.e., composite cover) can be found in Section 3 - Engineering and Institutional Control Plan. This Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP Addendum. The Maintenance Plan is subject to NYSDEC revision.

4.2 ENGINEERING CONTROL (COMPOSITE COVER) SYSTEM MAINTENANCE

A visual inspection of the composite cover system will be performed by a QEP or person under their supervision on an annual basis as outlined in Section 3.6 to ensure that it continues to effectively prevent direct exposure to residual contamination below the cover.

If minor cracking or damage is observed to the composite cover system over less than 25 percent of the paved areas, cracks and/or holes will be patched or repaired as required. If cracking and/or other damage is observed over greater than 25 percent of the paved areas, the area will be repaved with asphalt or concrete to restore its original intended thickness.

An example Site Cover Inspection Form is included in **Appendix F**. Inspection logs and records of any repairs made to the Site Cover will be included in the Site Management Report.

4.3 MAINTENANCE REPORTING REQUIREMENTS

All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Annual Site Management Report, as specified in the Section 5 of this SMP Addendum.

No routine maintenance of the Site Cover is anticipated. If damage requiring repair is identified during the inspections or anytime between inspections, the repair will be documented in a logbook. Records of any repairs made to the Site cover will be included in the Annual Site Management Report.

4.3.1 Routine Maintenance Reports

Checklists or forms (see **Appendix F**) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

4.3.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, as necessary, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

4.4 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

4.4.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to the designated remedial engineer. These emergency contact lists must be maintained in an easily accessible location at the Site.

Table 5: Emergency Contact Numbers*

Medical, Fire, and Police	911
One Call Center	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center	(800) 222-1222
Pollution Toxic Chemical Oil Spills	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
NYCDEP Hotline	(718) DEP-HELP (337-4357)

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

Table 6: Contact Numbers*

Heather Cloud, Site Operations Manager – GES	(800) 360-9405
Genevieve Bock, P.E., Project Engineer (Qualified Environmental Professional) – GES	(800) 360-9405
Jennifer M. Evans- Home Depot U.S.A., Inc. (Owner's Representative)	(770) 384-3024

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

4.4.2 Map and Directions to Nearest Health Facility

Site Location: 132-20 Merrick Boulevard, Queens NY 11434
Nearest Hospital Name: Queens Hospital Center
Hospital Location: 82-68 164th Street, Queens, NY 11433
Hospital Telephone: (718) 883-3000

Directions to the Hospital:

1. From the parking lot of The Home Depot at 132-20 Merrick Boulevard, head **west** (or **left**) out of the parking lot at the signaled intersection onto Merrick Boulevard for 2.4 miles.
2. **Continue** on 168th Street for 1.1 miles.
3. Turn **left** at Grand Central Pkwy/Grand Central Pkwy S Road for 0.2 miles.
4. Turn **right** at 164th Place for 0.1 miles.
5. Turn **left** at 82nd Road for 404 feet.
6. Turn **left** at 164th Street for 194 feet and the destination will be on the right. Total Distance: 4.0 miles. Total Estimated Time: approximately 12 minutes. A map showing the route from the Site to the Hospital is shown on **Figure 10**.

4.4.3 Response Procedures

4.4.3.1 Emergency Contacts/Notification System

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan in Section 4.4.1. The list is also posted prominently at the Site and made readily available to all personnel at all times.

5.0 SITE MANAGEMENT REPORTING PLAN

5.1 INTRODUCTION

An Annual Site Management (SM) Periodic Review Report (PRR) will be submitted to NYSDEC following the calendar year reporting period, by April 30. The Site Management Report will be prepared in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation requirements dated December 2002 and revised in May 2010. This Site Management Reporting Plan and its requirements are subject to revision by NYSDEC.

This report will include the following:

- Identification of all required EC/ICs required by the Remedial Work Plan for the Site;
- An evaluation of the Engineering and Institutional Control Plan and the Monitoring Plan for adequacy in meeting remedial goals;
- Assessment of the continued effectiveness of all Institutional and Engineering Controls for the Site;
- Certification of the EC/ICs;
- Results of the required periodic Site Inspections; and
- All deliverables generated during the reporting period, as specified in Section 2 EC/IC Plan, Section 3 Monitoring Plan and Section 4 Maintenance Plan.

The Site Management Reporting Plan is subject to NYSDEC revision.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

Information of EC/ICs can be found in the Engineering and Institutional Control Plan portion of the SMP Addendum (Section 2.0). Inspection of the EC/ICs will occur at a frequency described in Section 3.0 Monitoring Plan and Section 4.0 Maintenance Plan. A PE or QEP is the individual responsible for all necessary certifications relating to this SMP Addendum. A PE is an individual or firm licensed or otherwise authorized under article 145 of the education law of the State of New York to practice engineering [also see 6 NYCRR375-1.2(aj)]. A QEP is a person, including a firm headed by such person, who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding the presence of releases or threatened releases to the surface or subsurface of a Site or off-Site areas, sufficient to meet the objectives and performance factors for the areas of practice identified by DER-10 and also meets the licenses and/or certifications set for in DER-10 Section 1.5(b). A person who does not meet the definition of a PE or QEP may assist in the conduct of all appropriate investigation or remediation activities in accordance with DER-10, if such person is under the supervision or responsible charge or a person meeting the definition provided above. After the last inspection of the reporting period, a PE or QEP will sign and certify the document. The document will certify that:

- On-Site ECs/ICs are unchanged from the previous certification;
- They remain in-place and effective;
- The systems are performing as designed;
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any operation and

maintenance plan for such controls;
- Access is available to the Site by NYSDEC and NYSDOH to evaluate continued maintenance of such controls; and
- Site usage is compliant with the deed restriction.

The signed certification will be included in the Annual Site Management Report (see Section 5.3). A copy of a blank certification form is included in **Appendix F**.

5.3 SITE INSPECTIONS

5.3.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Maintenance Plan of this SMP Addendum. At a minimum, a Site-wide inspection will be conducted:
- Annually; and
- Whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.3.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms. Additionally, a general Site-wide inspection form will be completed during the Site-wide inspection (see **Appendix F**). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records generated for the Site during the calendar year will be included in the Annual Site Management Report.

5.3.3 Evaluation of Records and Reporting

The results of the inspection and Site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:
- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Maintenance activities are being conducted properly; and, based on the above items,
- The Site remedy continues to be protective of public health and the environment and is performing as designed in the RWP and FER.

5.4 SITE MANAGEMENT PERIODIC REVIEW REPORT

The Site Management Periodic Review Report will be submitted annually and will be submitted by April 30 of the calendar year following the reporting period. Other activities conducted during the reporting period will be incorporated into the Annual SM PRR. The report will include:

- EC/IC certification;
- All applicable inspection forms and other records generated for the Site during the reporting period;

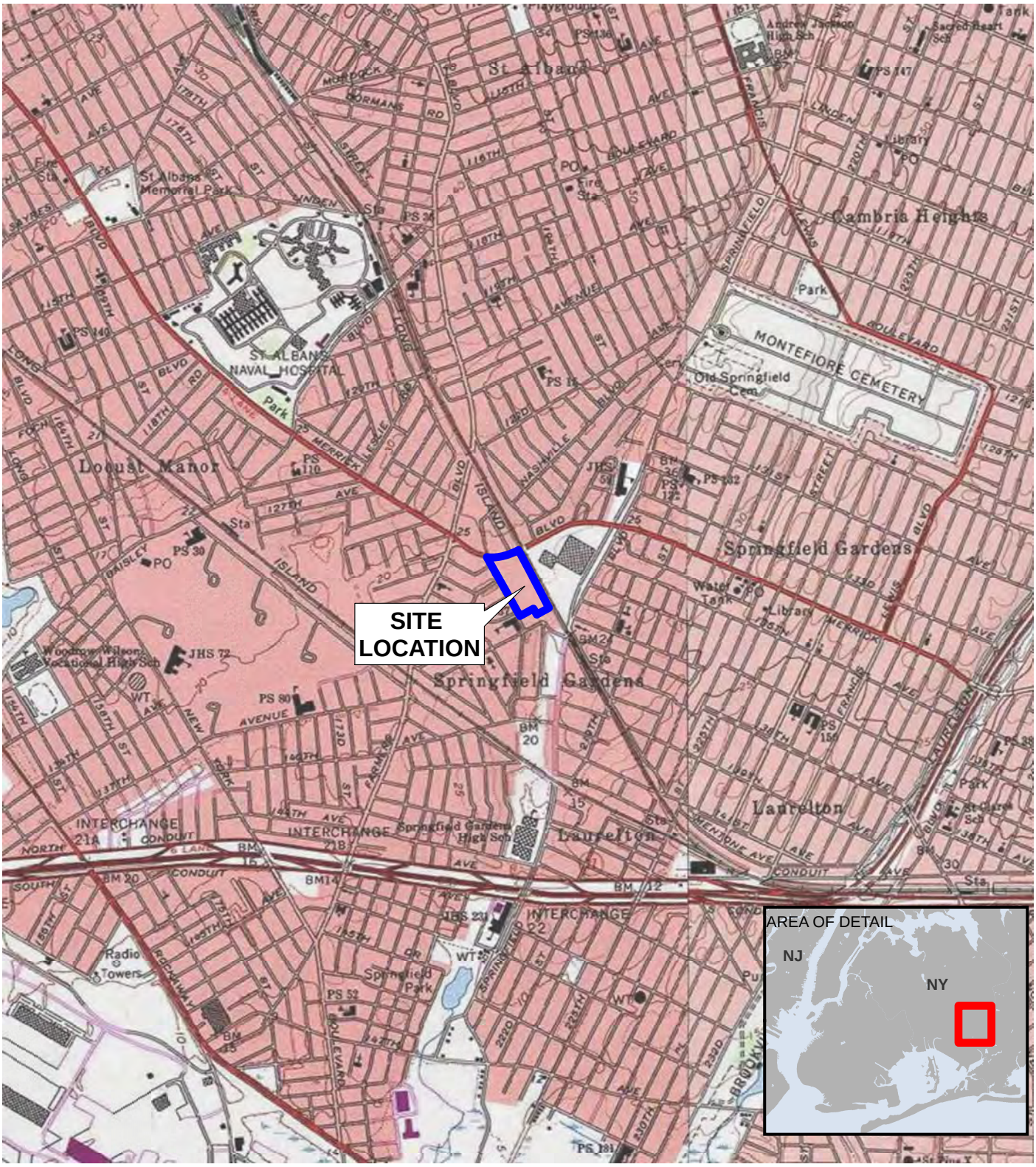
- A summary of any monitoring data and/or information generated during the reporting period with comments and conclusions;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables required for all points sampled during the calendar year (also to be submitted electronically in the NYSDEC-specified format);
- A figure showing sampling locations, and significant analytical values at sampling locations; and,
- Comments, conclusions, and recommendations, based on an evaluation of the information included in the report, regarding EC/ICs at the Site.

The SM PRR will be submitted, in hard-copy format, to the Region 2 NYSDEC offices, located at 41-40 21st Street, Long Island City, New York, and in electronic format to NYSDEC and NYSDOH.

5.5 CORRECTIVE MEASURES PLAN

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

FIGURES



SOURCE
USGS 7.5 Minute Topographic Map
Jamaica Quad 1995

0 2,000 4,000 Feet

132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK

PROJECT SITE LOCATION

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE
09.28.10

PROJECT No.
80022

FIGURE
1

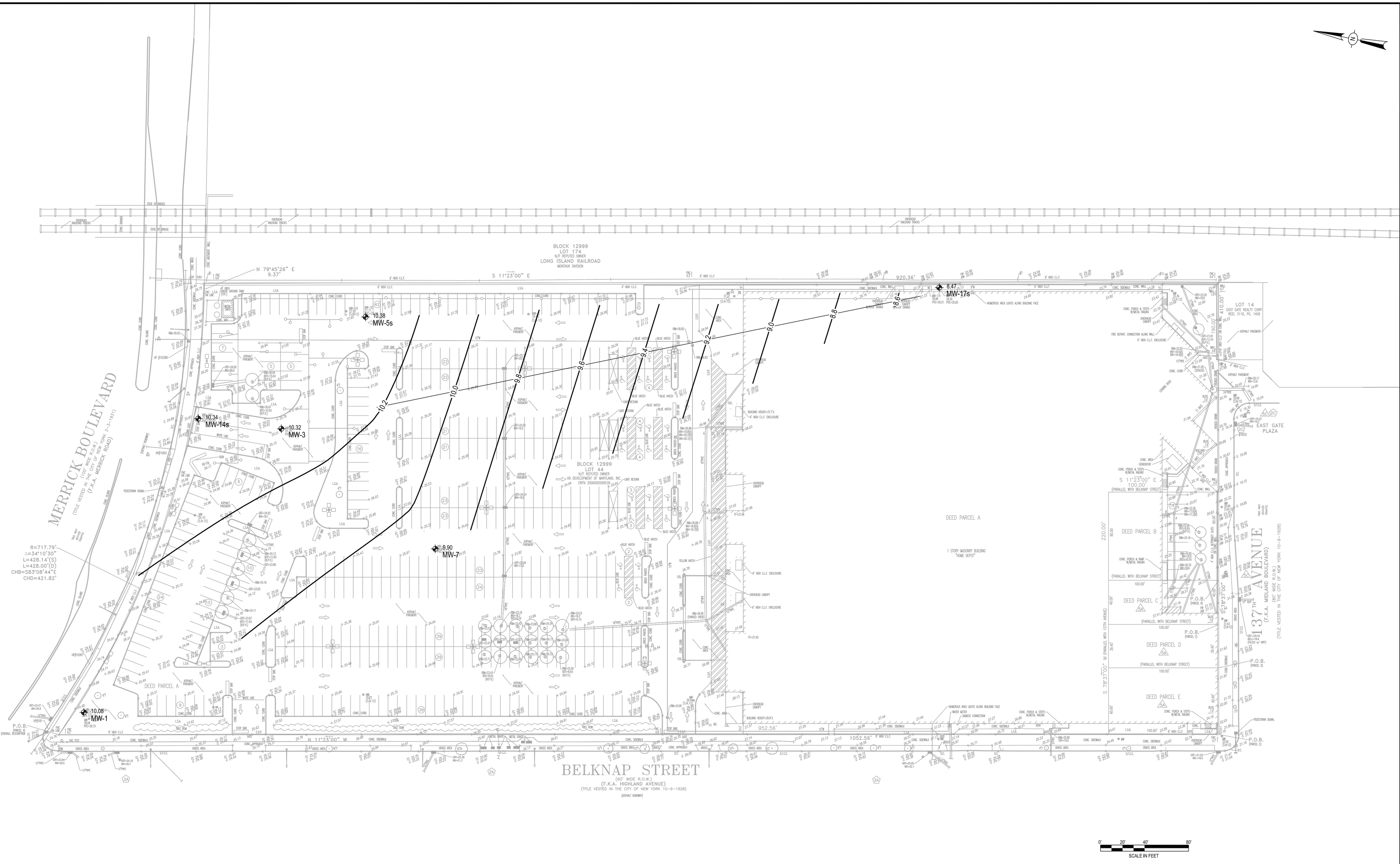
Aerial Source: 2004 U.S. Geological Survey Orthographic photo taken for CUNY & NY (DoITT).

Legend

Project Site Location

0 75 150 300
Feet

132-20 MERRICK BLVD SPRINGFIELD GARDENS, NEW YORK	AKRF	DATE 9.28.10
SITE PLAN	Environmental Consultants 440 Park Avenue South, New York, N.Y. 10016	PROJECT No. 80022 FIGURE 2



SOURCE:
Based on Figure, *ALTA / ACSM LAND TITLE SURVEY, HOME DEPOT U.S.A., INC.*
Provided by CONTROL POINT ASSOCIATES, Inc
35 Technology drive Warren, New Jersey
Dec 2008

ELEVATIONS ARE BASED UPON BOROUGH OF QUEENS DATUM, REPUTED TO BE 2.725 FEET ABOVE USC&G DATUM, REF. BENCHMARK 24Q3, ELEV.=25.929.
DEPTH TO GROUNDWATER MEASUREMENTS MADE BY AKRF ON DECEMBER 11, 2008.

LEGEND:

8.0 — CONTOR LINES WITH ELEVATION IN FEET

8.47 MW-17s — MONITORING WELL LOCATIONS WITH ELEVATION IN FEET

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440 Park Avenue South, New York, N.Y. 10016

132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK

GROUNDWATER CONTOUR MAP (12/08)

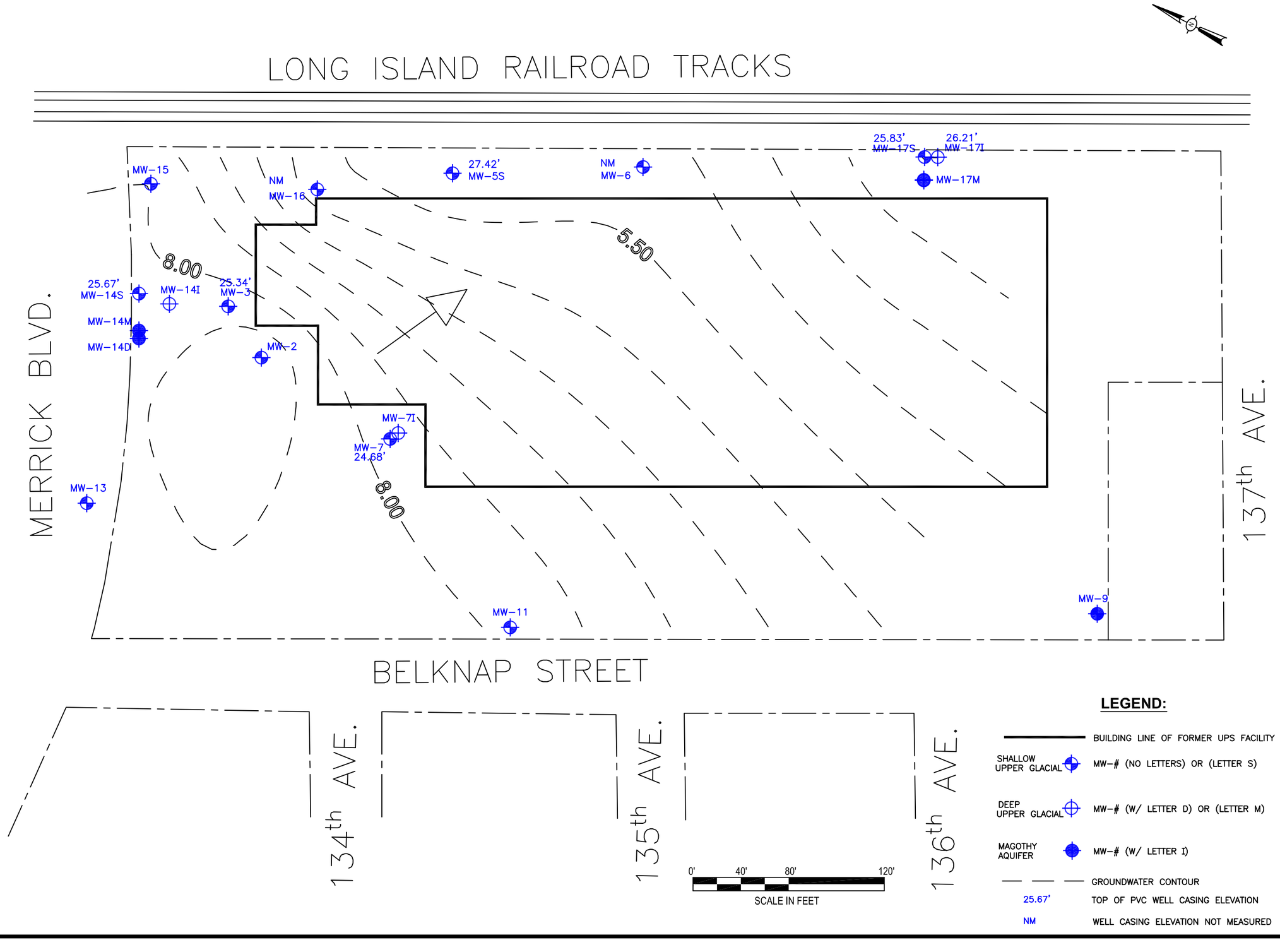
DATE
6.05.09

SCALE
as shown

PROJECT No.
80022

FIGURE
3A

M:\AKRF Project Files\80022 - Home Depot 132-20 Merrick Blvd\GIS\Figures\Fig 3A GW elevations map.dwg
24x36



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132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK

HISTORICAL GROUNDWATER CONTOUR MAP SHALLOW UPPER GLACIAL UNIT (02/22/99)

DATE
6.05.09

PROJECT NO.
80022

SCALE
as shown

FIGURE
3B

LONG ISLAND RAILROAD TRACKS

MERRICK BLVD.

137th AVE.

134th AVE.

135th AVE.

136th AVE.

BELKNAP STREET

MW-15
MW-16
MW-5S
MW-6
MW-17S
MW-17I
MW-17M
MW-14S
MW-14I
MW-3
MW-14M
MW-14D
MW-2
MW-7I
MW-7
MW-13
MW-11
MW-9

7.50

5.00

0' 40' 80' 120'
SCALE IN FEET

LEGEND:

- BUILDING LINE OF FORMER UPS FACILITY
- SHALLOW UPPER GLACIAL — MW-# (NO LETTERS) OR (LETTER S)
- DEEP UPPER GLACIAL — MW-# (W/ LETTER D) OR (LETTER M)
- MAGOTHY AQUIFER — MW-# (W/ LETTER I)
- GROUNDWATER CONTOURS

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132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK

HISTORICAL GROUNDWATER CONTOUR MAP
DEEP UPPER GLACIAL UNIT (02/22/99)

DATE
6.05.09

PROJECT NO.
80022

SCALE
as shown

FIGURE
3C

LONG ISLAND RAILROAD TRACKS

MERRICK BLVD.

137th AVE.

BELKNAP STREET

134th AVE.

135th AVE.

136th AVE.

MW-15
MW-16
MW-5S
MW-6
MW-17S
MW-17I
MW-17M
MW-14S
MW-14I
MW-3
MW-14M
MW-14D
MW-2
MW-7I
MW-7
MW-13
MW-11
MW-9

6.80
5.80
4.80

0' 40' 80' 120'
SCALE IN FEET

LEGEND:

- BUILDING LINE OF FORMER UPS FACILITY
- SHALLOW UPPER GLACIAL — MW-# (NO LETTERS) OR (LETTER S)
- DEEP UPPER GLACIAL — MW-# (W/ LETTER D) OR (LETTER M)
- MAGOTHY AQUIFER — MW-# (W/ LETTER I)
- GROUNDWATER CONTOUR

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440 Park Avenue South, New York, NY 10016

132-20 MERRICK BLVD
SPRINGFIELD GARDENS,, NEW YORK

GROUNDWATER CONTOUR MAP
MAGOTHY AQUIFER (02/22/99)

DATE
6.05.09

PROJECT NO.
80022

SCALE
as shown

FIGURE
3D

LONG ISLAND RAILROAD TRACKS

MERRICK BLVD.

137th AVE.

2 DISPENSER ISLANDS AND
ASSOCIATED PIPING
[REMOVED BY LBG ON APRIL 21, 1998]

1- 3,000-GALLON UST
1- 5,000-GALLON UST
MINERAL SPIRITS AND
TETRACHLOROETHENE
[REMOVED BY H2M CIRCA 1988]

REMOVED BY H2M CIRCA JUNE 1988

ESTIMATED TO BE REMOVED DURING
BUILDING CONSTRUCTION

4 - 4,000-GALLON GASOLINE USTs
[REMOVED BY LBG ON APRIL 21, 1998]

1- 10,000-GALLON No. 2 FUEL OIL UST
1- 20,000-GALLON No. 4 FUEL OIL UST
[REMOVED BY ROUX ON MAY 26, 1989]

2 - 275-GALLON ASTs
OIL/WATER SEPARATOR
CONTAINED ANTIFREZE AND USED OIL
[REMOVED BY LBG ON APRIL 21, 1998]

+ REMOVED BY H2M CIRCA JUNE 1988

BELKNAP STREET

134th AVE.

135th AVE.

136th AVE.

0' 40' 80' 120'
SCALE IN FEET

LEGEND:

- BUILDING LINE OF FORMER UPS FACILITY
- APPROXIMATE LOCATION OF FORMER CATCH BASIN
- \+ LOCATION OF FORMER DRYWELLS USED BY KNOMARK MARINE POLLUTION CONTROL OVERSEEN BY H2M
- FORMER PETROLEUM UNDERGROUND STORAGE TANK
- FORMER CHEMICAL UNDERGROUND STORAGE TANK
- SUSPECTED APPROXIMATE LOCATION OF FORMER DRUM STORAGE AREA
- LBG LEGETTE, BRASHEARS & GRAHAM, INC.

AKRF
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440 Park Avenue South, New York, NY 10016

132-20 MERRICK BLVD.
SPRINGFIELD GARDENS, NEW YORK
AREAS OF CONCERN

DATE
6.05.09

PROJECT NO.
80022

SCALE
as shown

FIGURE
4

LONG ISLAND RAILROAD TRACKS

MERRICK BLVD.

137th AVE.

BELKNAP STREET

134th AVE.

135th AVE.

136th AVE.

GP-1 GP-2 GP-3 GP-4 GP-5 GP-6 GP-7 GP-8 GP-9 GP-10 GP-11 GP-12 GP-13 GP-14 GP-15 GP-16 GP-17

SB-1 SB-2 SB-3 SB-4 SB-5 SB-6 SB-7 SB-8 SB-9 SB-10 SB-11 SB-12 SB-13 SB-14 SB-15 SB-16 SB-18 SB-19 SB-20

0' 40' 80' 120'

SCALE IN FEET

LEGEND:

- BUILDING LINE OF FORMER UPS FACILITY
- GEOPROBE SOIL SAMPLING BY AKRF
- SOIL SAMPLING BY ROUX ASSOCIATES
- SOIL SAMPLING BY TRC
- APPROXIMATE LOCATION OF FORMER CATCH BASIN
- LOCATION OF FORMER DRYWELLS USED BY KNOMARK
- FORMER PETROLEUM UNDERGROUND STORAGE TANK
- FORMER CHEMICAL UNDERGROUND STORAGE TANK
- SUSPECTED APPROXIMATE LOCATION OF FORMER DRUM STORAGE AREA

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440 Park Avenue South, New York, NY 10016

132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK

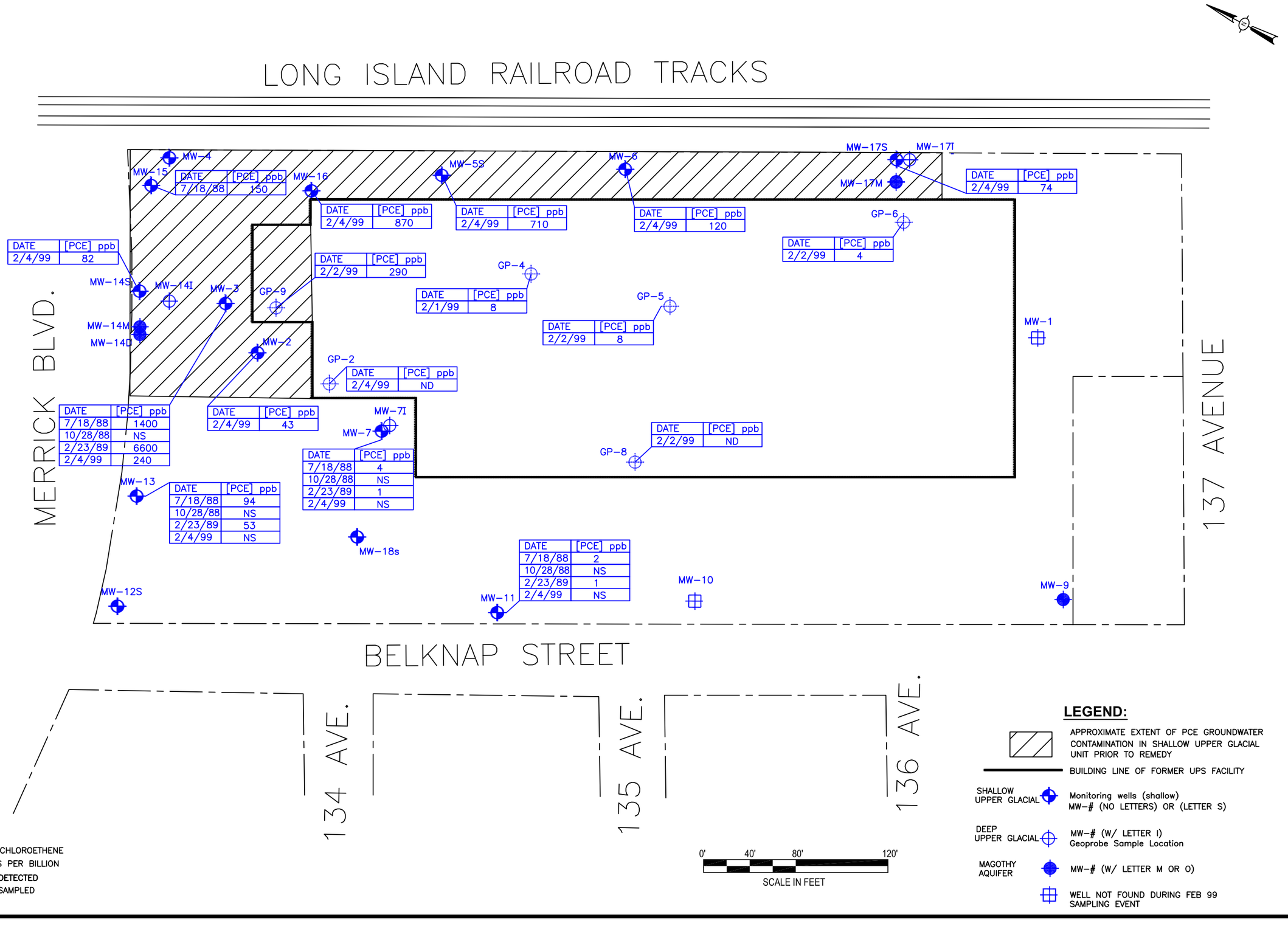
SOIL SAMPLING LOCATIONS PRIOR TO REMEDY

DATE
6.05.08

PROJECT NO.
80022

SCALE
as shown

FIGURE
5A



NOTES:

PCE: TETRACHLOROETHENE
PPB: PARTS PER BILLION
ND: NOT DETECTED
NS: NOT SAMPLED

LEGEND:

- APPROXIMATE EXTENT OF PCE GROUNDWATER CONTAMINATION IN SHALLOW UPPER GLACIAL UNIT PRIOR TO REMEDY
- BUILDING LINE OF FORMER UPS FACILITY
- SHALLOW UPPER GLACIAL — Monitoring wells (shallow) MW-# (NO LETTERS) OR (LETTER S)
- DEEP UPPER GLACIAL — MW-# (W/ LETTER I) Geoprobe Sample Location
- MAGOTHY AQUIFER — MW-# (W/ LETTER M OR O)
- WELL NOT FOUND DURING FEB 99 SAMPLING EVENT

AKRF Environmental Consultants
440 Park Avenue South, New York, NY 10016

132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK
GROUNDWATER SAMPLING LOCATIONS PRIOR TO REMEDY WITH EXTENT OF SHALLOW PCE CONTAMINATION

DATE 6.05.09
PROJECT NO. 80022
SCALE as shown
FIGURE 5B

M:\AKRF Project Files\80022 - Home Depot 132-20 Merrick Blvd\SMP\Figures\Fig 6 Historical Groundwater concentrations of PCE.dwg

24x36

MW-1	
Date	PCE
7/18/88	NS
10/28/88	NS
2/23/89	ND
4/16/90	NS
7/28/00	NS
8/10/01	15
12/18/01	6
4/17/02	24
8/2/02	120
11/6/02	53
2/5/03	71
5/9/03	410
8/22/03	130
12/26/03	160
5/19/04	81
10/8/04	98
6/22/05	41
11/21/05	10
6/22/07	7.7
12/11/08	3.2J

MW-3	
Date	PCE
7/18/88	1,400
10/28/88	NS
2/23/89	6,600
4/16/90	120
2/4/99	240
7/28/00	230
8/10/01	15
12/18/01	6
4/17/02	24
8/2/02	120
11/6/02	53
2/5/03	71
5/9/03	410
8/22/03	130
12/26/03	160
5/19/04	81
10/8/04	98
6/22/05	41
11/21/05	10
6/22/07	7.7
12/11/08	3.2J

MW-14s	
Date	PCE
7/18/88	7,500
10/28/88	NS
2/23/89	290
4/16/90	37
2/4/99	82
7/28/00	39
8/10/01	100
12/18/01	90
4/17/02	510
8/2/02	230
11/6/02	NS
2/5/03	33
5/9/03	71
8/22/03	230
12/26/03	350
5/19/04	400
10/8/04	86
6/22/05	66
11/21/05	6.8
6/22/07	44
12/11/08	5.4

MW-15	
Date	PCE
7/18/88	150
10/28/88	NS
2/23/89	NS
4/16/90	83
2/4/99	440
7/28/00	NS
8/10/01	NS
12/18/01	NS
4/17/02	NS
8/2/02	NS
11/6/02	NS
2/5/03	NS
5/9/03	NS
8/22/03	NS
12/26/03	NS
5/19/04	NS
10/8/04	NS
6/22/05	NS
11/21/05	NS
6/22/07	NS
12/11/08	NS

MW-4	
Date	PCE
7/18/88	105
10/28/88	NS
2/23/89	NS
4/16/90	NS
2/4/99	NS
7/28/00	NS
8/10/01	NS
12/18/01	NS
4/17/02	NS
8/2/02	NS
11/6/02	NS
2/5/03	NS
5/9/03	NS
8/22/03	NS
12/26/03	NS
5/19/04	NS
10/8/04	NS
6/22/05	NS
11/21/05	NS
6/22/07	NS
12/11/08	NS

MW-16	
Date	PCE
7/18/88	8
10/28/88	NS
2/23/89	4
4/16/90	54
2/4/99	870
7/28/00	7.5
8/10/01	130
12/18/01	29
4/17/02	19
8/2/02	310
11/6/02	120
2/5/03	89
5/9/03	32
8/22/03	88
12/26/03	160
5/19/04	29
10/8/04	16
6/22/05	3.9
11/21/05	3.6
6/22/07	1
12/11/08	0.8U

MW-5s	
Date	PCE
7/18/88	2
10/28/88	NS
2/23/89	5
4/16/90	ND
2/4/99	710
7/28/00	NS
8/10/01	0.4
12/18/01	ND
4/17/02	7
8/2/02	ND
11/6/02	2
2/5/03	ND
5/9/03	1
8/22/03	5
12/26/03	34
5/19/04	10
10/8/04	1.1
6/22/05	5.6
11/21/05	3.2
6/22/07	1.4
12/11/08	2.1J

MW-6	
Date	PCE
7/18/88	NS
10/28/88	NS
2/23/89	23
4/16/90	14
2/4/99	120
7/28/00	NS
8/10/01	18
12/18/01	63
4/17/02	130
8/2/02	95
11/6/02	35
2/5/03	82
5/9/03	32
8/22/03	28
12/26/03	60
5/19/04	120
10/8/04	170
6/22/05	26
11/21/05	14
6/22/07	5
12/11/08	5.6

MW-12S	
Date	PCE
7/18/88	7
10/28/88	NS
2/23/89	140
4/16/90	5,900
2/4/99	NS
7/28/00	NS
8/10/01	NS
12/18/01	NS
4/17/02	NS
8/2/02	NS
11/6/02	NS
2/5/03	NS
5/9/03	NS
8/22/03	NS
12/26/03	NS
5/19/04	NS
10/8/04	NS
6/22/05	NS
11/21/05	NS
6/22/07	NS
12/11/08	NS

MW-13	
Date	PCE
7/18/88	94
10/28/88	NS
2/23/89	53
4/16/90	1,100
2/4/99	5
7/28/00	NS
8/10/01	NS
12/18/01	NS
4/17/02	NS
8/2/02	NS
11/6/02	NS
2/5/03	NS
5/9/03	NS
8/22/03	NS
12/26/03	NS
5/19/04	NS
10/8/04	NS
6/22/05	NS
11/21/05	NS
6/22/07	NS
12/11/08	NS

MW-2	
Date	PCE
7/18/88	NS
10/28/88	NS
2/23/89	6
4/16/90	160
2/4/99	43
7/28/00	NS
8/10/01	NS
12/18/01	NS
4/17/02	NS
8/2/02	NS
11/6/02	NS
2/5/03	NS
5/9/03	NS
8/22/03	NS
12/26/03	NS
5/19/04	NS
10/8/04	NS
6/22/05	NS
11/21/05	NS
6/22/07	NS
12/11/08	NS

MW-11	
Date	PCE
7/18/88	2
10/28/88	NS
2/23/89	1
4/16/90	2
2/4/99	NS
7/28/00	NS
8/10/01	NS
12/18/01	NS
4/17/02	NS
8/2/02	NS
11/6/02	NS
2/5/03	NS
5/9/03	NS
8/22/03	NS
12/26/03	NS
5/19/04	NS
10/8/04	NS
6/22/05	NS
11/21/05	NS
6/22/07	NS
12/11/08	NS

MW-10	
Date	PCE
7/18/88	ND
10/28/88	NS
2/23/89	ND
4/16/90	ND
2/4/99	NS
7/28/00	NS
8/10/01	NS
12/18/01	NS
4/17/02	NS
8/2/02	NS
11/6/02	NS
2/5/03	NS
5/9/03	NS
8/22/03	NS
12/26/03	NS
5/19/04	NS
10/8/04	NS
6/22/05	NS
11/21/05	NS
6/22/07	NS
12/11/08	NS

MW-7	
Date	PCE
7/18/88	4
10/28/88	NS
2/23/89	1
4/16/90	ND
2/4/99	ND
7/28/00	ND
8/10/01	1
12/18/01	0.8
4/17/02	ND
8/2/02	ND
11/6/02	ND
2/5/03	ND
5/9/03	0.4
8/22/03	1J
12/26/03	ND
5/19/04	ND
10/8/04	4.2J
6/22/05	1.7J
11/21/05	1.1J
6/22/07	ND
12/11/08	ND

MW-9	
Date	PCE
7/18/88	2
10/28/88	NS
2/23/89	ND
4/16/90	ND
2/4/99	NS
7/28/00	NS
8/10/01	NS
12/18/01	NS
4/17/02	NS
8/2/02	NS
11/6/02	NS
2/5/03	NS
5/9/03	NS
8/22/03	NS
12/26/03	NS
5/19/04	NS
10/8/04	NS
6/22/05	NS
11/21/05	NS
6/22/07	NS
12/11/08	NS

MW-17s	
Date	PCE
7/18/88	1
10/28/88	NS
2/23/89	1
4/16/90	4
2/4/99	74
7/28/00	ND
8/10/01	7
12/18/01	13
4/17/02	23
8/2/02	17
11/6/02	6
2/5/03	18
5/9/03	6
8/22/03	2
12/26/03	7
5/19/04	31
10/8/04	44
6/22/05	5.9
11/21/05	3.8
6/22/07	0.4
12/11/08	0.8U

MERRICK BOULEVARD
(100' WIDE R.O.W.)
(TITLE VESTED IN THE CITY OF NEW YORK 2-3-1931)
(F.K.A. MERRICK ROAD)

137TH AVENUE
(F.K.A. MIDLAND BOULEVARD)
(80' WIDE R.O.W.)
(TITLE VESTED IN THE CITY OF NEW YORK 10-9-1928)

MAP SOURCE: (60' WIDE R.O.W.) F.K.A. HIGHLAND A IN THE CITY OF NEW (ASPHALT ROADWAY)

DEED PARCEL A

1 STORY MASONRY BUILDING "HOME DEPOT"

BLOCK 12999 LOT 1 N/F DEVELOPMENT OF MARYLAND, INC

BLOCK 12999 LOT 172 N/F REPUTED OWNER ISLAND RAILROAD MONTAUK DIVISION

DEED PARCEL B

DEED PARCEL C

DEED PARCEL D

DEED PARCEL E

LOT 1.4 EAST GATE PLAZA LLC (FORMERLY) REEL 3716, PG. 1409

MW-1 MW-12S MW-13 MW-2 MW-11 MW-10 MW-7 MW-9 MW-17s MW-6 MW-5s MW-16 MW-4 MW-15 MW-14s MW-3

SOURCE:
Based on Figure, *ALTA / ACSM LAND TITLE SURVEY, HOME DEPOT U.S.A., INC.*
Provided by CONTROL POINT ASSOCIATES, Inc
35 Technology drive Warren, New Jersey
Dec 2008

ELEVATIONS ARE BASED UPON BOROUGH OF QUEENS DATUM. REPUTED TO BE 2.726 FEET ABOVE USC&G DATUM. REF: BENCHMARK 2423, ELEV=25.929.

NOTE:
DATA ONLY INCLUDED FOR MONITORING WELLS SAMPLED BETWEEN OCTOBER 2004 AND DECEMBER 2008 AS NO DIGITAL FORM OF THE RESULTS PRIOR TO OCTOBER 2004 ARE AVAILABLE. SEE APPENDIX E FOR LABORATORY ANALYTICAL REPORTS AND SUMMARY TABLES AVAILABLE FOR THE ENTIRE PROJECT RECORD. SEE TABLE 3 FOR HISTORICAL TETRACHLOROETHENE (PCE) SUMMARY.

LEGEND:

- MW-17s — MONITORING WELL LOCATION
- NS — NOT SAMPLED
- ND — NOT DETECTED
- PCE — TETRACHLOROETHENE (PCE) CONCENTRATION IN MICROGRAMS PER LITER (µg/L)

0' 20' 40' 80' SCALE IN FEET

N

DATE	6.18.09
SCALE	as shown
PROJECT No.	80022
FIGURE	6

132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK

HISTORICAL PCE GROUNDWATER CONCENTRATIONS

AKRF
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440 Park Avenue South, New York, N.Y. 10016

ANALYTE	SN-3
DICHLORODIFLUOROMETHANE	15.82
TETRACHLOROETHENE	21.70
TETRAHYDROFURAN	1.89
TRICHLOROETHENE	3.87
TRICHLOROFLUOROMETHANE	30.35

ANALYTE	SE-1	SE-1DL	ANALYTE	SE-1	SE-1DL
1,1,1 TRICHLOROETHANE	40.37	ND	DICHLORODIFLUOROMETHANE	10878.53E	11373.01
1,2,4-TRIMETHYLBENZENE	21.63	ND	HEXACHLORO-1,3-BUTADIENE	40.53	ND
1,2-DICHLOROBENZENE	13.23	ND	TETRACHLOROETHENE	94.94	ND
1,3-DICHLOROBENZENE	10.82	ND	TETRAHYDROFURAN	45.35	ND
1,4-DICHLOROBENZENE	9.62	ND	TRICHLOROETHENE	18.27	ND
2-BUTANONE	50.14	ND	TRICHLOROFLUOROMETHANE	1067.73	1404.91
cis-1,2-DICHLOROETHENE	10.31	ND			

*NOTE: 'DL' INDICATES A DILUTION FACTOR OF 200.00

ANALYTE	SE-3	SE-3DL
1,1,1-TRICHLOROETHANE	40.92	43.10
1,3-DICHLOROBENZENE	1.20	ND
DICHLORODIFLUOROMETHANE	49.45	54.39
TETRACHLOROETHENE	16.27	46.11
TETRAHYDROFURAN	6.30	5.67
TRICHLOROETHENE	27.95	27.95
TRICHLOROFLUOROMETHANE	297.84E	365.28

*NOTE: 'DL' INDICATES A DILUTION FACTOR OF 5.00

ANALYTE	SE-4	SE-4DL
1,1,1-TRICHLOROETHANE	10.91	12.00
CHLOROFORM	1.47	ND
TETRACHLOROETHENE	19.67	18.99
TETRAHYDROFURAN	4.41	5.04
TRICHLOROETHENE	13.44	13.44
TRICHLOROFLUOROMETHANE	78.67	78.67

*NOTE: 'DL' INDICATES A DILUTION FACTOR OF 4.00

LONG ISLAND RAILROAD TRACKS

ANALYTE	SN-2	SN-2DL
1,1,1 TRICHLOROETHANE	4.91	4.36
1,3-DICHLOROBENZENE	0.60	ND
1,4-DICHLOROBENZENE	1.20	1.20
2-BUTANONE	26.84	25.66
TETRACHLOROETHENE	39.33	36.62
TETRAHYDROFURAN	10.08	9.45
TRICHLOROETHENE	1.50	1.40
TRICHLOROFLUOROMETHANE	118.01E	112.39

*NOTE: 'DL' INDICATES A DILUTION FACTOR OF 2.00

ANALYTE	AA-NORTH
TRICHLOROETHENE	1.67

ANALYTE	SN-1
TETRAHYDROFURAN	4.41
TETRACHLOROETHENE	0.68
TRICHLOROETHENE	0.81
TRICHLOROFLUOROMETHANE	15.17

ANALYTE	SW-1
1,1,1 TRICHLOROETHANE	0.55
CHLOROFORM	3.42
TETRACHLOROETHENE	1.36
TETRAHYDROFURAN	11.34
TRICHLOROETHENE	0.54
TRICHLOROFLUOROMETHANE	21.92

ANALYTE	SW-2	SW-2DL	SSW-2
1,1,1 TRICHLOROETHANE	36.56	37.10	3.27
1,2 DICHLOROPROPANE	0.46	ND	ND
1,3 DICHLOROBENZENE	2.40	ND	ND
1,4 DICHLOROBENZENE	1.20	ND	ND
2-BUTANONE	29.49	32.44	ND
CHLOROFORM	1.47	ND	ND
CHLOROMETHANE	ND	4.75	ND
DICHLORODIFLUOROMETHANE	ND	34.61	ND
TETRACHLOROETHENE	20.34	20.34	3.39
TETRAHYDROFURAN	12.60	14.49	1.89
TRICHLOROETHENE	53.20	51.06	4.35
TRICHLOROFLUOROMETHANE	230.40E	241.64	26.41

*NOTE: 'DL' INDICATES A DILUTION FACTOR OF 10.00

ANALYTE	SW-3
cis-1,2 DICHLOROETHENE	0.79
TETRACHLOROETHENE	0.68
TETRAHYDROFURAN	1.89

ANALYTE	SE-2
1,1,1 TRICHLOROETHANE	37.10
1,2,4-TRICHLOROBENZENE	26.72
1,2,4-TRIMETHYLBENZENE	58.99
1,3,5-TRIMETHYLBENZENE	15.73
2-BUTANONE	29.49
CHLOROMETHANE	6.20
DICHLORODIFLUOROMETHANE	227.46
HEXACHLORO-1,3-BUTADIENE	49.07
METHYLENE CHLORIDE	25.01
TETRACHLOROETHENE	33.91
TETRAHYDROFURAN	18.90
TRICHLOROETHENE	12.90
TRICHLOROFLUOROMETHANE	1966.87

*NOTE: STANDARD DILUTION FACTOR=20.00

ANALYTE	SW-5
TETRACHLOROETHENE	1.36
TETRAHYDROFURAN	3.78

ANALYTE	SW-6
TETRACHLOROETHENE	2.71
TETRAHYDROFURAN	3.15
TRICHLOROFLUOROMETHANE	19.67

ANALYTE	SW-4
CHLOROETHANE	0.53
TETRACHLOROETHENE	1.36
TETRAHYDROFURAN	1.89
TRICHLOROFLUOROMETHANE	30.91

ANALYTE	SS-4	SS-4DL
TETRACHLOROETHENE	2.71	4.75
TETRAHYDROFURAN	3.15	3.15
TRICHLOROFLUOROMETHANE	14.05	14.05

*NOTE: 'DL' INDICATES DILUTION FACTOR OF 5.00

ANALYTE	SS-3
1,1,1-TRICHLOROETHANE	3.82
TETRACHLOROETHENE	14.92
TETRAHYDROFURAN	3.15
TRICHLOROETHENE	1.29
TRICHLOROFLUOROMETHANE	26.41

ANALYTE	SS-2
TETRACHLOROETHENE	1.36
TETRAHYDROFURAN	2.52
TRICHLOROFLUOROMETHANE	61.82

ANALYTE	SS-1
TETRACHLOROETHENE	1.36
TETRAHYDROFURAN	1.89
TRICHLOROFLUOROMETHANE	21.92

PRIVATE PROPERTY

PARKING AREA

THE HOME DEPOT

MERRICK BLVD.

137th AVE.

136th AVE.

BELKNAP STREET

MW-17S SE-4 SE-1 MW-16 MW-5S SE-2 MW-6 SE-3 SN-3 SS-4 MW-14S MW-3 SS-3 SN-2 MW-7 SS-2 AA-SOUTH AA-NORTH SN-1 SW-1 SW-2/SSW-2 DUPLICATE SW-3 SW-4 SS-1 SW-5 SW-6

LEGEND:

- BUILDING LINE
- SW-5 SOIL GAS SAMPLING LOCATION
- MW-7 MONITORING WELL LOCATION
- AA-NORTH AMBIENT AIR MONITORING LOCATION (BACKGROUND)

0' 50' 100' 150'

SCALE IN FEET

NOTES:

(1) SOIL VAPOR SAMPLES COLLECTED ON 11/30/07 FOR SN-1, SN-2, SN-3, SE-1, SE-2, SE-3, SW-1, SW-2, AND SSW-2 LOCATIONS.
(2) SOIL VAPOR SAMPLES COLLECTED ON 12/4/07 FOR SE-4, SW-3, SW-4, SW-5, SW-6, SS-1, SS-2, SS-3, SS-4, AND AA-NORTH LOCATIONS.
(3) STANDARD DILUTION FACTOR OF 1.00 IS APPLIED TO SAMPLES UNLESS OTHERWISE NOTED.
(4) ANALYTIC RESULT ARE IN UNITS OF µg/m³ (micrograms per cubic meter of air)
(5) ND NOT DETECTED
NS NOT SAMPLED
DL DILUTION FACTOR APPLIED AS INDICATED

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132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK
POST REMEDIATION SOIL GAS SAMPLING LOCATIONS AND DETECTIONS

DATE 6.18.09
PROJECT NO. 80022
SCALE as shown
FIGURE 7

LONG ISLAND RAILROAD TRACKS

SVE-A4 AS-B16 AS-B17 AS-B18 SVE-A6 AS-B21 AS-B22 AS-B24

AS-B1 AS-B5 AS-B9 AS-C7 AS-C8 SVE-A5 AS-B19 AS-B20 SVE-A7 AS-B23 SVE-A8 AS-B25

AS-C2 AS-C3 AS-C6 AS-B10

AS-C1 SVE-A1 AS-B6 AS-C4 AS-B11

AS-B2 AS-C5 AS-B12

AS-B7

AS-B3 AS-B13 SVE-A2 AS-B14

AS-B8

AS-B4 SVE-A3 AS-B15

M E R R I C K B L V D .

PARKING AREA

THE HOME DEPOT

137th AVE.

BELKNAP STREET

134th AVE.

135th AVE.

0' 50' 100' 150'

SCALE IN FEET

LEGEND:

- BUILDING LINE
- AS/SVE PVC PIPE
- SVE WELL
- DEEP AIR SPARGING WELL (HIGH PRESSURE SYSTEM)
- SHALLOW AIR SPARGING WELL (LOW PRESSURE SYSTEM)

TYPICAL TRENCH DIMENSIONS :
2'-0" ± WIDE
3'-4" BELOW EXISTING GRADE

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132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK

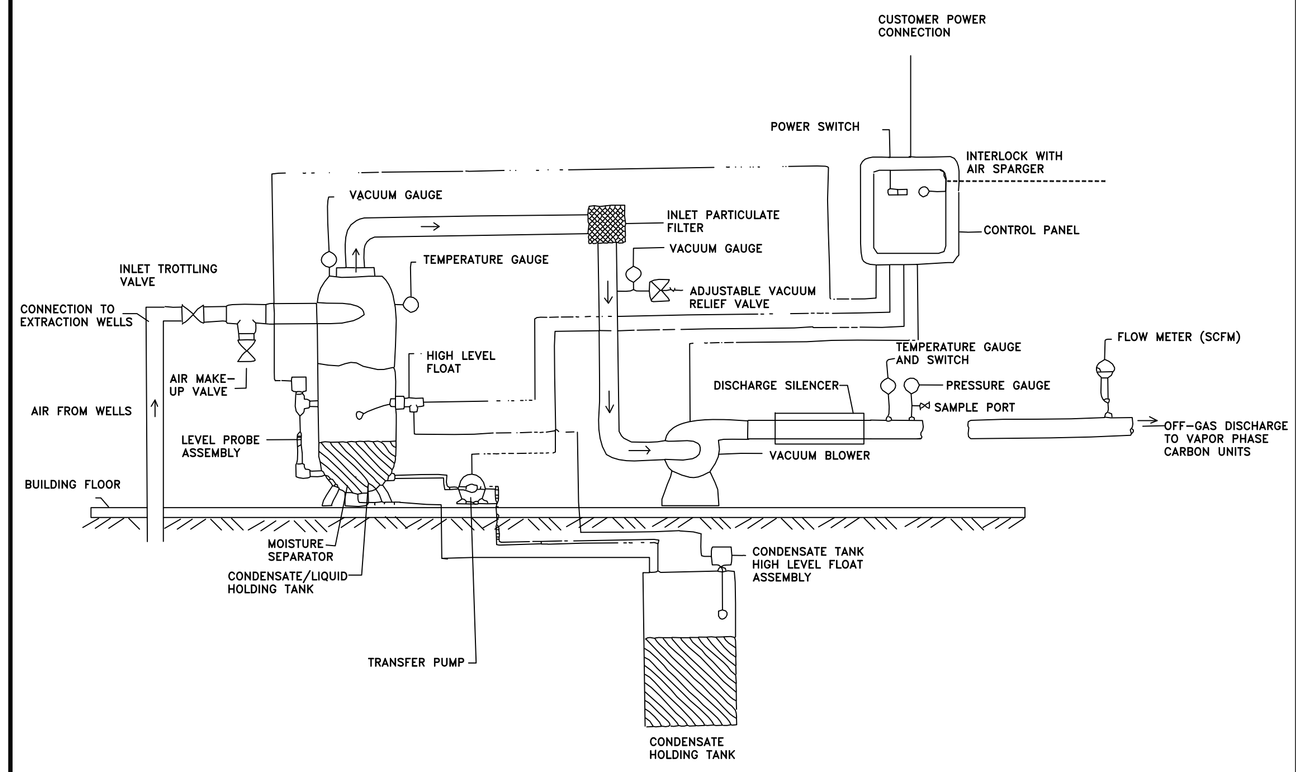
AIR SPARGING/SOIL VAPOR EXTRACTION SYSTEM PLAN

DATE
6.05.09

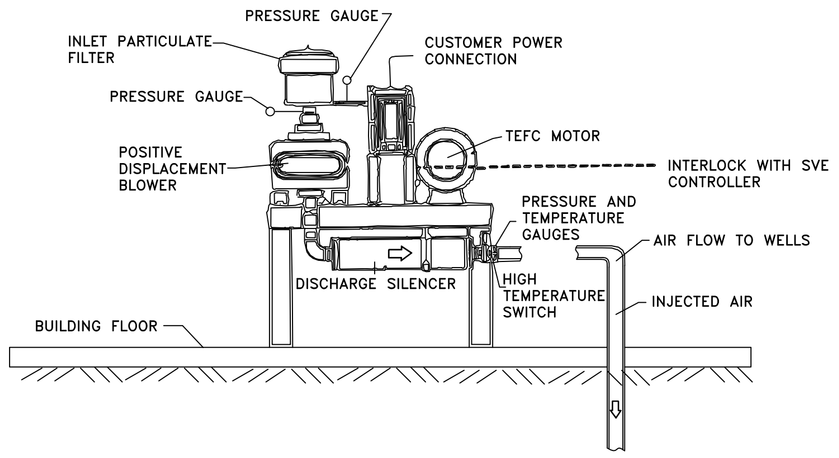
PROJECT NO.
80022

SCALE
as shown

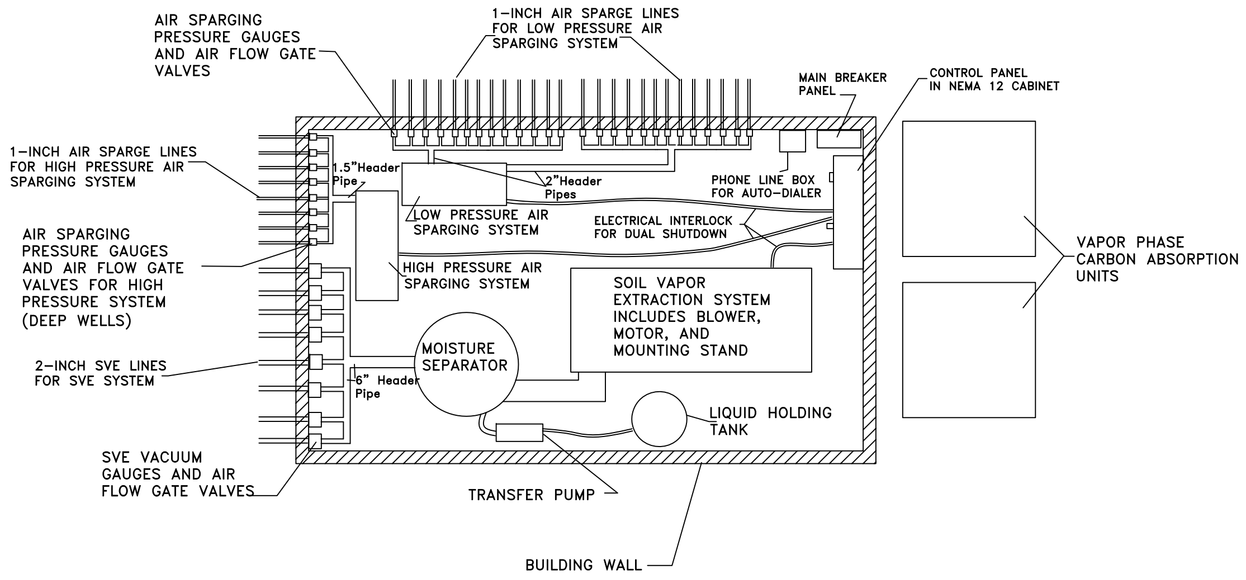
FIGURE
8A



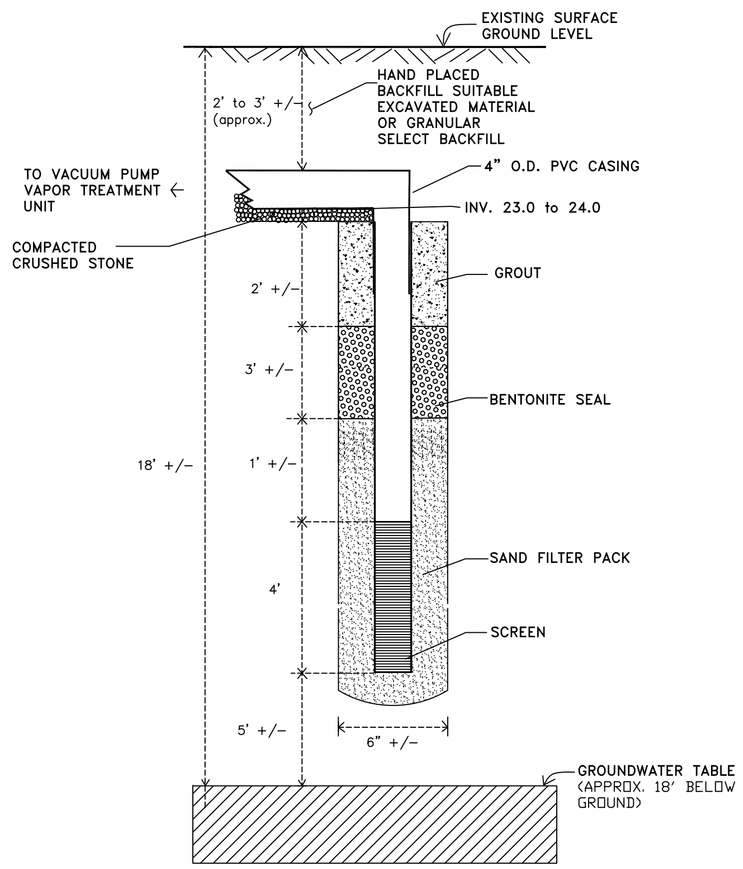
VACUUM EXTRACTION SYSTEM



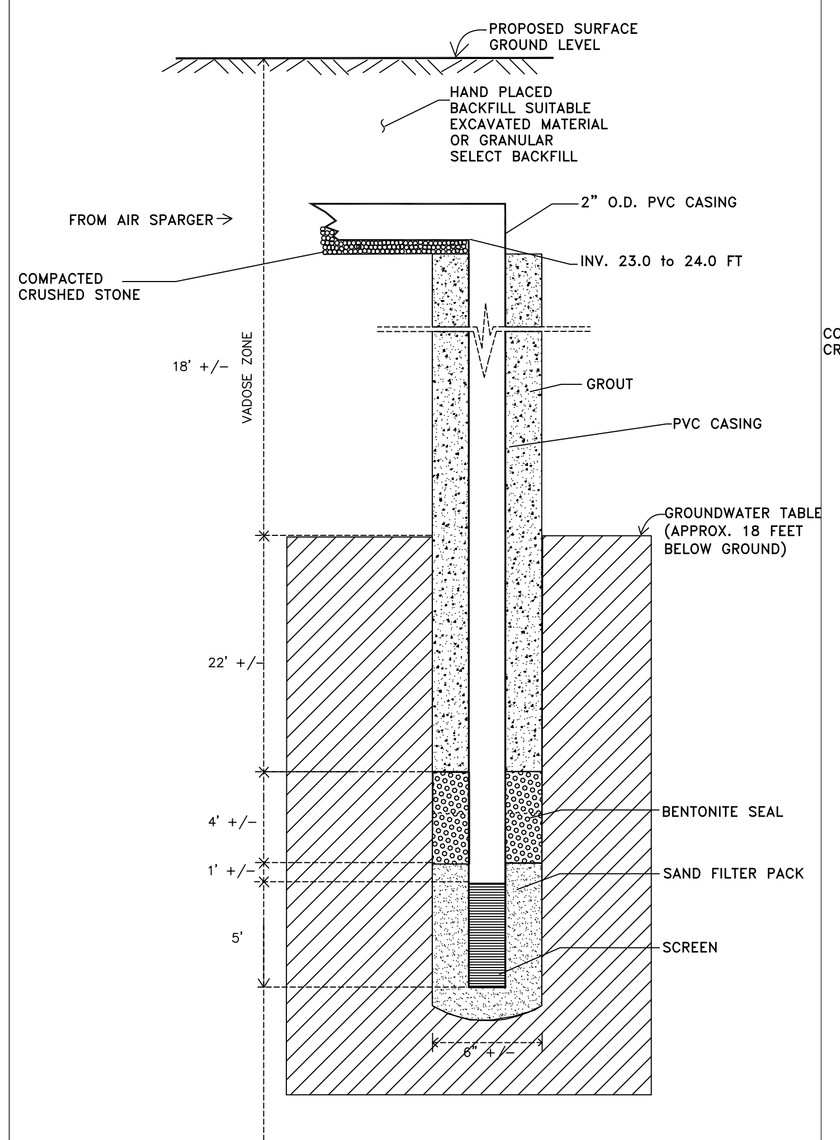
AIR SPARGING SYSTEM
(BOTH HIGH AND LOW PRESSURE SYSTEMS)



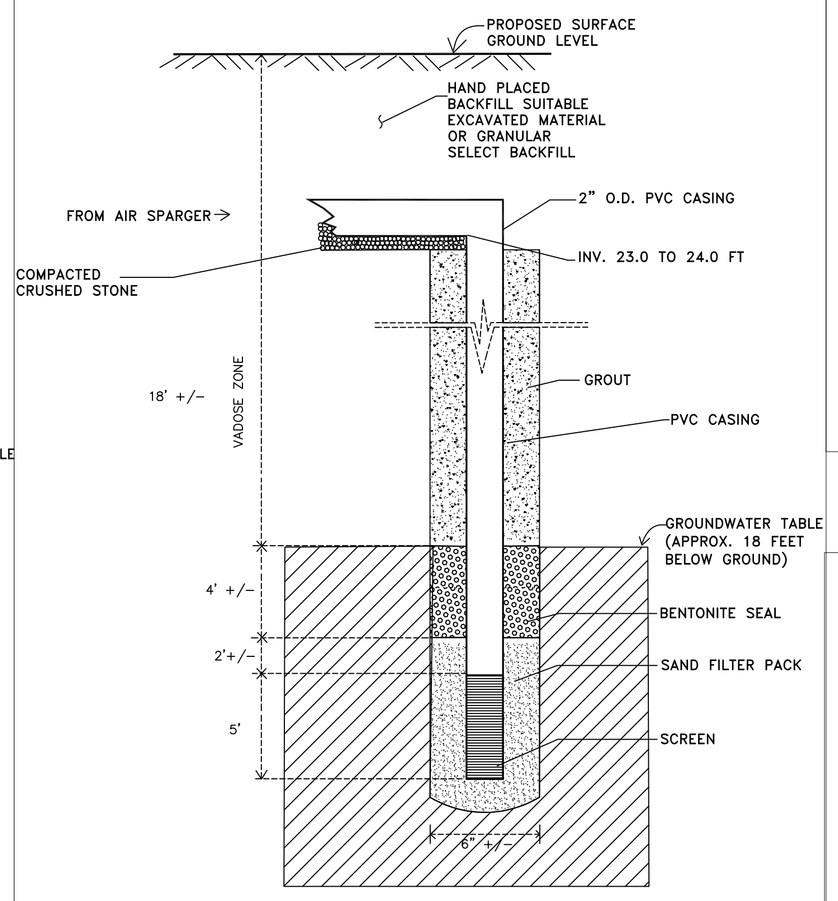
BUILDING PLAN LAYOUT



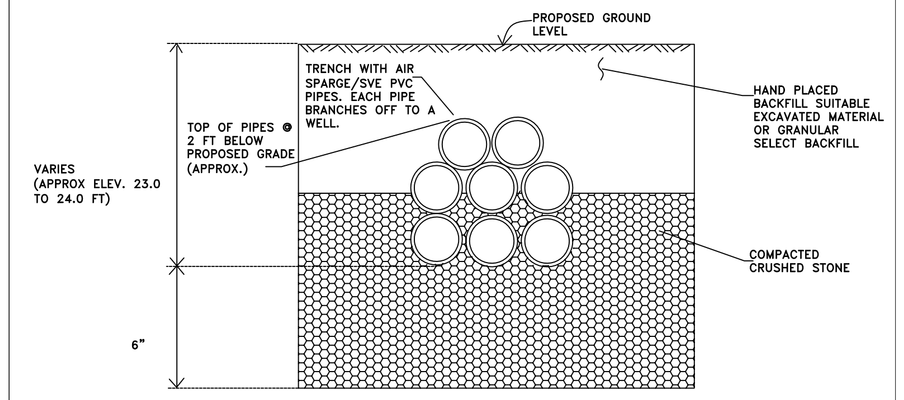
TYPICAL VAPOR EXTRACTION WELL



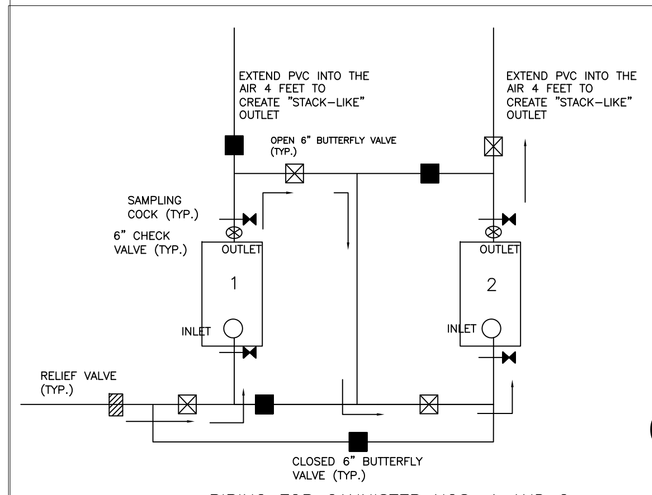
HIGH PRESSURE SYSTEM -
DEEP AIR SPARGING WELL



LOW PRESSURE SYSTEM -
SHALLOW AIR SPARGING WELL



TRENCH PIPE BEDDING



PIPING FOR CANNISTER NOS. 1 AND 2

CARBON CANISTER PIPING

NOTES:
1. ALL PIPING SHALL BE 6" SCHEDULE 40 PVC PIPE.
2. VALVES SHALL BE 6" BUTTERFLY VALVES WITH COMPANION FLANGES. VALVES SHALL BE INSTALLED INLINE WITH GLUE IN VALVE
3. BOTH RELIEF AND CHECK VALVES SHALL BE 6" IN DIAMETER.
4. SAMPLING COCKS SHALL REMAIN CLOSED UNLESS SAMPLING IS TAKING PLACE.
5. SYSTEM APPURTENANCES SHALL BE INSTALLED IN THE LOCATIONS AS SHOWN ON THE PLAN.
6. ALL PIPING SHALL BE ADEQUATELY SUPPORTED.

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132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK

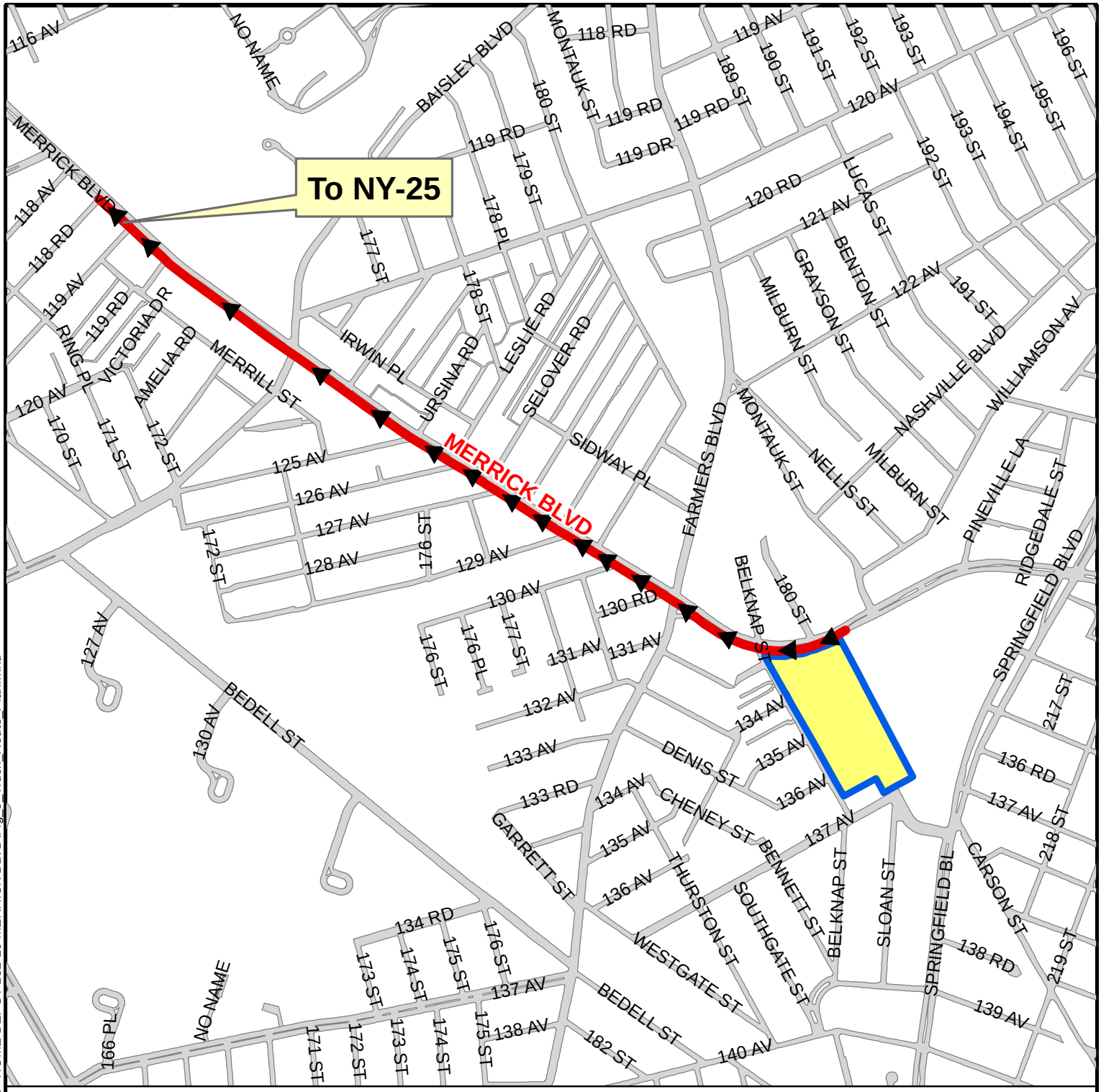
AS/SVE SYSTEM DETAILS

DATE
6.5.09

SCALE
NTS

PROJECT No.
80022

FIGURE
8B



Legend

- Truck Route
- Project Site Location

0 1,000 2,000 Feet

132-20 MERRICK BLVD
SPRINGFIELD GARDENS, NEW YORK

TRUCK HAUL ROUTE

AKRF

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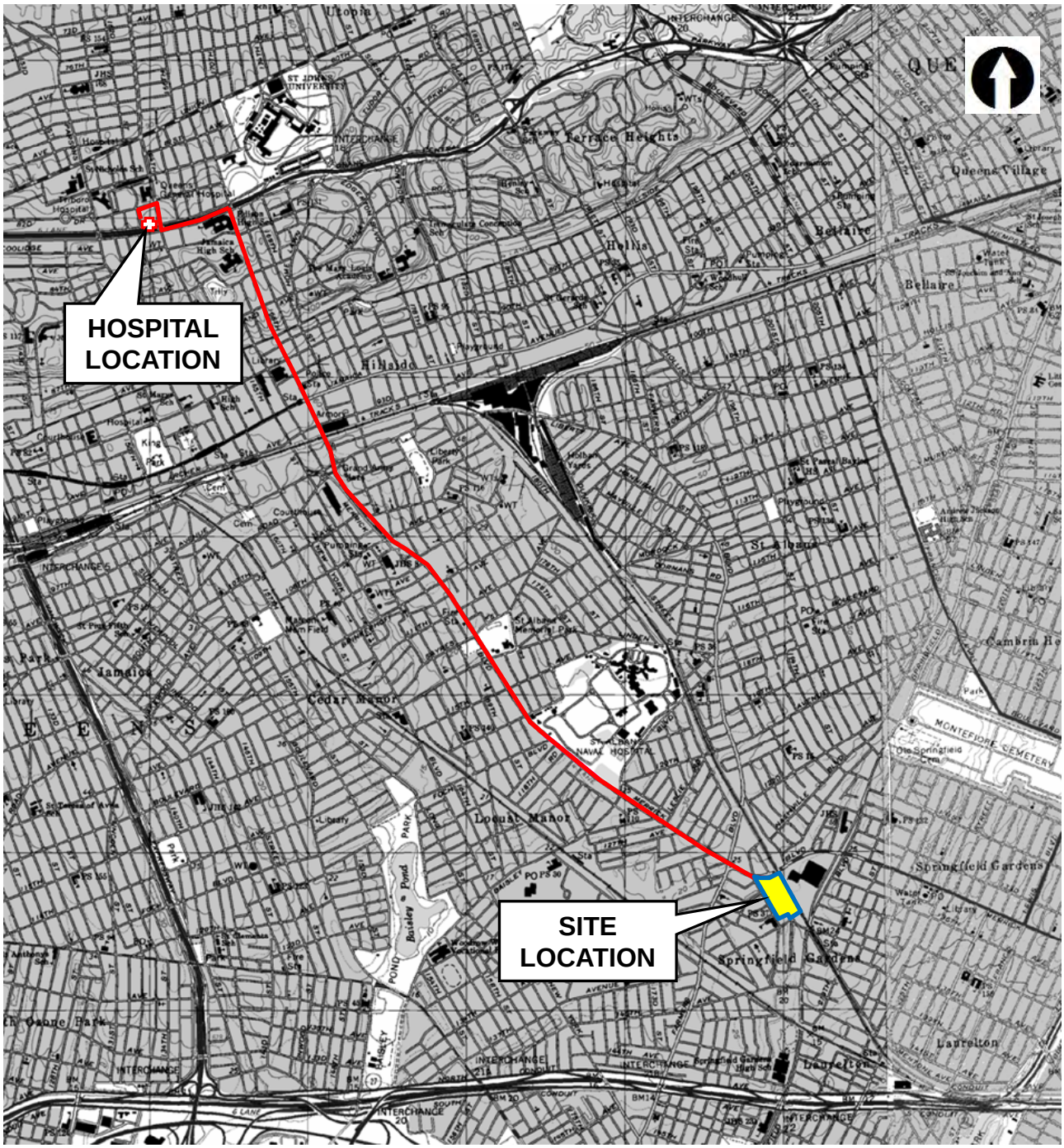
DATE
7.23.09

PROJECT No.
80022

FIGURE
9



Queens General Hospital
82-68 164th Street,
Jamaica, NY 11432

HOME DEPOT 132-20 MERRICK BLVD.
SPRINGFIELD GARDENS, NEW YORK

HOSPITAL LOCATION MAP

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DATE	9.8.10
SCALE.	1"=2,000'
PROJECT No.	80022
FIGURE	10

TABLES

Table 1

132-20 Merrick Blvd.

Springfield Gardens, Queens, NY

Groundwater Analytical Results

Volatile Organic Compounds

Client ID	NYSDEC	MW-1					MW-3				
Lab Sample ID	Class GA	207787-08	209707-6	211456-006	220-2024-1	220-7534-1	207787-02	209707-2	211456-007	220-1964-2	220-7534-2
Date Sampled	Ambient Standard	10/12/2004	6/3/2005	11/21/2005	6/30/2007	12/11/2008	10/8/2004	6/3/2005	11/21/2005	6/25/2007	12/11/2008
Dilution		1	1	1	1	1	1	1	1	1	1
Units=µg/L											
1,1,1-Trichloroethane	5	0.9 U	0.4 U	0.4 U	0.4 U	0.69 U	0.9 U	0.4 U	0.4 U	0.4 U	0.69 U
1,1,2,2-Tetrachloroethane	5	0.7 U	0.4 U	0.4 U	0.4 U	0.81 U	0.7 U	0.4 U	0.4 U	0.4 U	0.81 U
1,1,2-Trichloroethane	1	0.8 U	0.6 U	0.6 U	0.6 U	0.65 U	0.8 U	0.6 U	0.6 U	0.6 U	0.65 U
1,1-Dichloroethane	5	0.4 U	0.6 U	0.6 U	0.6 U	1.0 U	0.4 U	0.6 U	0.6 U	0.6 U	1.0 U
1,1-Dichloroethene	5	0.8 U	0.7 U	0.7 U	0.7 U	0.83 U	0.8 U	0.7 U	0.7 U	0.7 U	0.83 U
1,2-Dichloroethane	0.6	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U
1,2-Dichloropropane	1	0.7 U	0.9 U	0.9 U	0.9 U	0.71 U	0.7 U	0.9 U	0.9 U	0.9 U	0.71 U
2- Butanone (MEK)	50	1.6 U	1.2 U	1.2 U	1.2 U	1.1 U	1.6 U	1.2 U	1.2 U	1.2 U	1.1 U
2-Hexanone	50	0.7 U	0.8 U	0.8 U	0.8 U	1.1 U	0.7 U	0.8 U	0.8 U	0.8 U	1.1 U
4-Methyl-2-pentanone (MIBK)	NS	0.9 U	0.7 U	0.7 U	0.7 U	0.38 U	0.9 U	0.7 U	0.7 U	0.7 U	0.38 U
Acetone	50	2 U	1.4 U	1.4 U	2.4 J B	1.0 U	2 U	1.4 U	1.4 U	1.4 U	1.0 U
Benzene	1	0.5 U	0.4 U	0.4 U	0.4 U	0.74 U	0.5 U	0.4 U	0.4 U	0.4 U	0.74 U
Bromodichloromethane	50	0.7 U	0.4 U	0.4 U	0.4 U	0.48 U	0.7 U	0.4 U	0.4 U	0.4 U	0.48 U
Bromoform	50	0.8 U	0.8 U	0.8 U	0.8 U	0.46 U	0.8 U	0.8 U	0.8 U	0.8 U	0.46 U
Bromomethane	5	2.7 U	1.2 U	1.2 U	1.2 U	2.1 U	2.7 U	1.2 U	1.2 U	1.2 U	2.1 U
Carbon disulfide	60	0.4 U	0.9 U	0.9 U	0.9 U	0.90 U	0.4 U	0.9 U	0.9 U	0.9 U	0.90 U
Carbon tetrachloride	5	0.6 U	1 U	1 U	1 U	1.1 U	0.6 U	1 U	1 U	1 U	1.1 U
Chlorobenzene	5	0.5 U	0.4 U	0.4 U	0.4 U	0.72 U	0.5 U	0.4 U	0.4 U	0.4 U	0.72 U
Chloroethane	5	1.7 U	0.8 U	0.8 U	0.8 U *	1.1 U	1.7 U	0.8 U	0.8 U	0.8 U	1.1 U
Chloroform	7	0.6 U	0.7 U	0.7 U	0.7 U	0.67 U	0.6 U	0.7 U	0.7 U	0.9 J	0.67 U
Chloromethane	5	1.4 U	0.5 U	0.5 U	0.5 U *	1.1 U	1.4 U	0.5 U	0.5 U	0.5 U *	1.1 U
cis-1,2-Dichloroethene	5	0.7 U	0.6 U	0.6 U	0.6 U	0.99 U	23	2.4 J	0.6 U	35	24
cis-1,3-Dichloropropene	0.4	0.4 U	0.5 U	0.5 U	0.5 U	0.28 U	0.4 U	0.5 U	0.5 U	0.5 U	0.28 U
Dibromochloromethane	50	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U
Ethylbenzene	5	0.5 U	1 U	1 U	1 U	0.87 U	0.5 U	1 U	1 U	1 U	0.87 U
Methylene Chloride	5	0.6 U	0.4 U	0.4 UB	0.4 U	0.78 U	0.6 U	0.4 U	0.63 JB	0.4 U	0.78 U
Methyl-tert-butyl-ether (MTBE)	10	NA	0.3 U	0.3 U	0.82 J	NA	NA	6.2	0.5 J	0.3 U	NA
Styrene	5	0.7 U	0.5 U	0.5 U	0.5 U	0.64 U *	0.7 U	0.5 U	0.5 U	0.5 U	0.64 U *
Tetrachloroethene	5	0.4 U	1 J	1.9 J	0.5 U	+ J	98	41	10	7.7	3.2 J
Toluene	5	0.4 U	0.3 U	0.3 U	0.3 U	0.72 U	0.4 U	0.3 U	0.3 U	0.3 U	0.72 U
trans-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.76 U	0.5 U	0.5 U	0.5 U	0.5 U	0.76 U
trans-1,3-Dichloropropene	0.4	0.8 U	0.8 U	0.8 U	0.8 U	0.57 U	0.8 U	0.8 U	0.8 U	0.8 U	0.57 U
Trichloroethene	5	0.8 U	0.7 U	0.7 U	0.7 U	0.62 U	3 J	0.7 U	0.7 U	1.5 J	0.66 J
Vinyl acetate	NS	1.9 U	0.2 U	0.2 U	NA	NA	1.9 U	0.2 U	0.2 U	NA	NA
Vinyl chloride	2	0.6 U	0.8 U	0.8 U	0.8 U	0.99 U	0.6 U	0.8 U	0.8 U	0.8 U *	0.99 U
Xylenes, Total	5	0.9 U	1 U	1 U	1 U	2.3 U	0.9 U	1 U	1 U	1 U	2.3 U

Table 1

132-20 Merrick Blvd.

Springfield Gardens, Queens, NY

Groundwater Analytical Results

Volatile Organic Compounds

Client ID	NYSDEC	MW-5S					MW-6				
Lab Sample ID	Class GA	207787-01	209707-5	211456-003	220-1964-4	220-7534-3	207787-05	209707-7	211456-005	220-1964-5	220-7534-4
Date Sampled	Ambient Standard	10/12/2004	6/3/2005	11/21/2005	6/25/2007	12/11/2008	10/12/2004	6/3/2005	11/21/2005	6/25/2007	12/11/2008
Dilution		1	1	1	1	1	1	1	1	1	1
Units=µg/L											
1,1,1-Trichloroethane	5	0.9 U	0.4 U	0.4 U	0.4 U	0.69 U	0.9 U	0.4 U	0.4 U	0.4 U	0.69 U
1,1,2,2-Tetrachloroethane	5	0.7 U	0.4 U	0.4 U	0.4 U	0.81 U	0.7 U	0.4 U	0.4 U	0.4 U	0.81 U
1,1,2-Trichloroethane	1	0.8 U	0.6 U	0.6 U	0.6 U	0.65 U	0.8 U	0.6 U	0.6 U	0.6 U	0.65 U
1,1-Dichloroethane	5	0.4 U	0.6 U	0.6 U	0.6 U	1.0 U	0.4 U	0.6 U	0.6 U	0.6 U	1.0 U
1,1-Dichloroethene	5	0.8 U	0.7 U	0.7 U	0.7 U	0.83 U	0.8 U	0.7 U	0.7 U	0.7 U	0.83 U
1,2-Dichloroethane	0.6	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U
1,2-Dichloropropane	1	0.7 U	0.9 U	0.9 U	0.9 U	0.71 U	0.7 U	0.9 U	0.9 U	0.9 U	0.71 U
2- Butanone (MEK)	50	1.6 U	1.2 U	1.2 U	1.2 U	1.1 U	1.6 U	1.2 U	1.2 U	1.2 U	1.1 U
2-Hexanone	50	0.7 U	0.8 U	0.8 U	0.8 U	1.1 U	0.7 U	0.8 U	0.8 U	0.8 U	1.1 U
4-Methyl-2-pentanone (MIBK)	NS	0.9 U	0.7 U	0.7 U	0.7 U	0.38 U	0.9 U	0.7 U	0.7 U	0.7 U	0.38 U
Acetone	50	2 U	1.4 U	1.4 U	1.4 U	1.0 U	2 U	1.4 U	1.4 U	1.4 U	1.0 U
Benzene	1	0.5 U	0.94 J	4.6 J	0.4 U	0.74 U	0.5 U	0.4 U	0.4 U	8.3	0.74 U
Bromodichloromethane	50	0.7 U	0.4 U	0.4 U	0.4 U	0.48 U	0.7 U	0.4 U	0.4 U	0.4 U	0.48 U
Bromoform	50	0.8 U	0.8 U	0.8 U	0.8 U	0.46 U	0.8 U	0.8 U	0.8 U	0.8 U	0.46 U
Bromomethane	5	2.7 U	1.2 U	1.2 U	1.2 U	2.1 U	2.7 U	1.2 U	1.2 U	1.2 U	2.1 U
Carbon disulfide	60	0.4 U	0.9 U	0.9 U	0.9 U	0.90 U	0.4 U	0.9 U	0.9 U	0.9 U	0.90 U
Carbon tetrachloride	5	0.6 U	1 U	1 U	1 U	1.1 U	0.6 U	1 U	1 U	1 U	1.1 U
Chlorobenzene	5	0.5 U	0.4 U	0.4 U	0.4 U	0.72 U	0.5 U	0.4 U	0.4 U	0.4 U	0.72 U
Chloroethane	5	1.7 U	0.8 U	0.8 U	0.8 U	1.1 U	1.7 U	0.8 U	0.8 U	0.8 U	1.1 U
Chloroform	7	0.6 U	0.7 U	0.7 U	0.7 U	0.67 U	0.6 U	1.3 J	0.7 U	0.7 U	0.67 U
Chloromethane	5	1.4 U	0.5 U	0.5 U	0.5 U *	1.1 U	1.4 U	0.5 U	0.5 U	0.5 U *	1.1 U
cis-1,2-Dichloroethene	5	0.7 U	0.6 U	0.6 U	0.6 U	0.99 U	1,4 J	0.6 U	0.6 U	0.6 U	0.99 U
cis-1,3-Dichloropropene	0.4	0.4 U	0.5 U	0.5 U	0.5 U	0.28 U	0.4 U	0.5 U	0.5 U	0.5 U	0.28 U
Dibromochloromethane	50	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U
Ethylbenzene	5	0.5 U	1 U	1 U	1 U	0.87 U	0.5 U	1 U	1 U	1 U	0.87 U
Methylene Chloride	5	0.6 U	0.4 U	0.4 UB	0.4 U	0.78 U	0.6 U	0.46 B	0.64 JB	0.4 U	0.78 U *
Methyl-tert-butyl-ether (MTBE)	10	NA	19	5.9	11	NA	NA	4 J	6.1	11	NA
Styrene	5	0.7 U	0.5 U	0.5 U	0.5 U	0.64 U *	0.7 U	0.5 U	0.5 U	0.5 U	0.64 U
Tetrachloroethene	5	1.1 J	5.6	3.2 J	1.4 J	2.1 J	170	26	14	5 J	5.6
Toluene	5	0.4 U	0.3 U	0.3 U	0.3 U	0.72 U	0.4 U	0.3 U	0.3 U	0.3 U	0.72 U
trans-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.76 U	0.5 U	0.5 U	0.5 U	0.5 U	0.76 U
trans-1,3-Dichloropropene	0.4	0.8 U	0.8 U	0.8 U	0.8 U	0.57 U	0.8 U	0.8 U	0.8 U	0.8 U	0.57 U
Trichloroethene	5	0.8 U	0.7 U	0.7 U	0.7 U	0.62 U	1.9 J	0.7 U	0.7 U	0.7 U	0.62 U
Vinyl acetate	NS	1.9 U	0.2 U	0.2 U	NA	NA	1.9 U	0.2 U	0.2 U	NA	NA
Vinyl chloride	2	0.6 U	0.8 U	0.8 U	0.8 U *	0.99 U	0.6 U	0.8 U	0.8 U	0.8 U *	0.99 U
Xylenes, Total	5	0.9 U	1 U	1 U	1 U	2.3 U	0.9 U	1 U	1 U	1 U	2.3 U

Table 1

132-20 Merrick Blvd.

Springfield Gardens, Queens, NY

Groundwater Analytical Results

Volatile Organic Compounds

Client ID	NYSDEC	MW-7					MW-14S				
Lab Sample ID	Class GA	207787-07	209707-3	211456-009	220-2024-3	220-7534-5	207787-01	209707-1	211456-008	220-1964-1	220-7534-6
Date Sampled	Ambient Standard	10/12/2004	6/3/2005	11/22/2005	6/30/2007	12/11/2008	10/8/2004	6/3/2005	11/22/2005	6/22/2007	12/11/2008
Dilution		1	1	1	1	1	1	1	1	1	1
Units=µg/L											
1,1,1-Trichloroethane	5	0.9 U	0.4 U	0.4 U	0.4 U	0.69 U	0.9 U	0.4 U	0.4 U	0.4 U	0.69 U
1,1,2,2-Tetrachloroethane	5	0.7 U	0.4 U	0.4 U	0.4 U	0.81 U	0.7 U	0.4 U	0.4 U	0.4 U	0.81 U
1,1,2-Trichloroethane	1	0.8 U	0.6 U	0.6 U	0.6 U	0.65 U	0.8 U	0.6 U	0.6 U	0.6 U	0.65 U
1,1-Dichloroethane	5	0.4 U	0.6 U	0.6 U	0.6 U	1.0 U	0.4 U	0.6 U	0.6 U	0.6 U	1.0 U
1,1-Dichloroethene	5	0.8 U	0.7 U	0.7 U	0.7 U	0.83 U	0.8 U	0.7 U	0.7 U	0.7 U	0.83 U
1,2-Dichloroethane	0.6	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U
1,2-Dichloropropane	1	0.7 U	0.9 U	0.9 U	0.9 U	0.71 U	0.7 U	0.9 U	0.9 U	0.9 U	0.71 U
2- Butanone (MEK)	50	1.6 U	1.2 U	1.2 U	1.2 U	1.1 U	1.6 U	1.2 U	1.2 U	1.2 U	1.1 U
2-Hexanone	50	0.7 U	0.8 U	0.8 U	0.8 U	1.1 U	0.7 U	0.8 U	0.8 U	0.8 U	1.1 U
4-Methyl-2-pentanone (MIBK)	NS	0.9 U	0.7 U	0.7 U	0.7 U	0.38 U	0.9 U	0.7 U	0.7 U	0.7 U	0.38 U
Acetone	50	2 U	1.4 U	1.4 U	1.5 J B	4.0 J	2 U	1.4 U	1.4 U	1.4 U	1.2 J
Benzene	1	0.5 U	0.4 U	0.4 U	0.4 U	0.74 U	0.5 U	0.4 U	0.4 U	0.4 U	0.74 U
Bromodichloromethane	50	0.7 U	0.4 U	0.4 U	0.4 U	0.48 U	0.7 U	0.4 U	0.4 U	0.4 U	0.48 U
Bromoform	50	0.8 U	0.8 U	0.8 U	0.8 U	0.46 U	0.8 U	0.8 U	0.8 U	0.8 U	0.46 U
Bromomethane	5	2.7 U	1.2 U	1.2 U	1.2 U	2.1 U	2.7 U	1.2 U	1.2 U	1.2 U	2.1 U
Carbon disulfide	60	0.4 U	0.9 U	0.9 U	0.9 U	0.90 U	0.4 U	0.9 U	0.9 U	0.9 U	0.90 U
Carbon tetrachloride	5	0.6 U	1 U	1 U	1 U	1.1 U	0.6 U	1 U	1 U	1 U	1.1 U
Chlorobenzene	5	0.5 U	0.4 U	0.4 U	0.4 U	0.72 U	0.5 U	0.4 U	0.4 U	0.4 U	0.72 U
Chloroethane	5	1.7 U	0.8 U	0.8 U	0.8 U *	1.1 U	1.7 U	0.8 U	0.8 U	0.8 U	1.1 U
Chloroform	7	0.6 U	0.7 U	0.7 U	0.7 U	0.67 U	0.6 U	0.7 U	0.7 U	0.7 U	0.67 U
Chloromethane	5	1.4 U	0.5 U	0.5 U	0.5 U *	1.1 U	1.4 U	0.5 U	0.5 U	0.5 U	1.1 U
cis-1,2-Dichloroethene	5	0.7 U	11	8.1	0.6 U	0.99 U	19	17	1.1 J	12	1.3 J
cis-1,3-Dichloropropene	0.4	0.4 U	0.5 U	0.5 U	0.5 U	0.28 U	0.4 U	0.5 U	0.5 U	0.5 U	0.28 U
Dibromochloromethane	50	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U
Ethylbenzene	5	0.5 U	1 U	1 U	1 U	0.87 U	0.5 U	1 U	1 U	1 U	0.87 U
Methylene Chloride	5	0.6 U	0.4 U	0.4 U B	0.4 U	0.78 U	0.6 U	0.4 U	0.45 J B	0.4 U	0.78 U
Methyl-tert-butyl-ether (MTBE)	10	NA	0.6 J	1.6 J	0.3 U	NA	NA	2.5 J	0.3 U	0.3 U	NA
Styrene	5	0.7 U	0.5 U	0.5 U	0.5 U	0.64 U *	0.7 U	0.5 U	0.5 U	0.5 U	0.64 U *
Tetrachloroethene	5	4.2 J	1.7 J	1.1 J	0.5 U	0.81 U	86	66	6.8	44	5.4
Toluene	5	0.4 U	0.3 U	0.3 U	0.3 U	0.72 U	0.4 U	0.3 U	0.3 U	0.3 U	0.72 U
trans-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.76 U	0.5 U	0.5 U	0.5 U	0.5 U	0.76 U
trans-1,3-Dichloropropene	0.4	0.8 U	0.8 U	0.8 U	0.8 U	0.57 U	0.8 U	0.8 U	0.8 U	0.8 U	0.57 U
Trichloroethene	5	0.8 U	1.1 J	0.7 U	0.7 U	0.62 U	0.8 U	2.6 J	0.7 U	1.9 J	0.62 U
Vinyl acetate	NS	1.9 U	0.2 U	0.2 U	NA	NA	1.9 U	0.2 U	0.2 U	NA	NA
Vinyl chloride	2	0.6 U	0.8 U	0.8 U M	0.8 U	0.99 U	0.6 U	0.8 U	0.8 U	0.8 U	0.99 U
Xylenes, Total	5	0.9 U	1 U	1 U	1 U	2.3 U	0.9 U	1 U	1 U	1 U	2.3 U

Table 1

132-20 Merrick Blvd.

Springfield Gardens, Queens, NY

Groundwater Analytical Results

Volatile Organic Compounds

Client ID	NYSDEC	MW-16					MW-17I
Lab Sample ID	Class GA	207787-03	209707-4	211456-004	220-1964-3	220-7534-7	220-7534-8
Date Sampled	Ambient Standard	10/8/2004	6/3/2005	11/21/2005	6/25/2007	12/11/2008	12/11/2008
Dilution		1	1	1	1	1	1
Units=µg/L							
1,1,1-Trichloroethane	5	0.9 U	0.4 U	0.4 U	0.4 U	0.69 U	0.69 U
1,1,2,2-Tetrachloroethane	5	0.7 U	0.4 U	0.4 U	0.4 U	0.81 U	0.81 U
1,1,2-Trichloroethane	1	0.8 U	0.6 U	0.6 U	0.6 U	0.65 U	0.65 U
1,1-Dichloroethane	5	0.4 U	0.6 U	0.6 U	0.6 U	1.0 U	1.0 U
1,1-Dichloroethene	5	0.8 U	0.7 U	0.7 U	0.7 U	0.83 U	0.83 U
1,2-Dichloroethane	0.6	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U	0.72 U
1,2-Dichloropropane	1	0.7 U	0.9 U	0.9 U	0.9 U	0.71 U	0.71 U
2- Butanone (MEK)	50	1.6 U	1.2 U	1.2 U	1.2 U	1.1 U	1.1 U
2-Hexanone	50	0.7 U	0.8 U	0.8 U	0.8 U	1.1 U	1.1 U
4-Methyl-2-pentanone (MIBK)	NS	0.9 U	0.7 U	0.7 U	0.7 U	0.38 U	0.38 U
Acetone	50	2 U	1.4 U	1.4 UM	1.4 U	2.9 J	1.0 U
Benzene	1	0.5 U	3.9 J	8.6	1.5 J	0.74 U	0.74 U
Bromodichloromethane	50	0.7 U	0.4 U	0.4 U	0.4 U	0.48 U	0.48 U
Bromoform	50	0.8 U	0.8 U	0.8 U	0.8 U	0.46 U	0.46 U
Bromomethane	5	2.7 U	1.2 U	1.2 U	1.2 U	2.1 U	2.1 U
Carbon disulfide	60	0.4 U	0.9 U	0.9 U	0.9 U	0.90 U	0.90 U
Carbon tetrachloride	5	0.6 U	1 U	1 U	1 U	1.1 U	1.1 U
Chlorobenzene	5	0.5 U	0.4 U	0.4 U	0.4 U	0.72 U	0.72 U
Chloroethane	5	1.7 U	0.8 U	0.8 U	0.8 U	1.1 U	1.1 U
Chloroform	7	0.6 U	0.7 U	0.7 U	0.7 U	0.67 U	0.67 U
Chloromethane	5	1.4 U	0.5 U	0.5 U	0.5 U *	1.1 U	1.1 U
cis-1,2-Dichloroethene	5	0.7 U	0.6 U	0.6 U	0.6 U	0.99 U	0.99 U
cis-1,3-Dichloropropene	0.4	0.4 U	0.5 U	0.5 U	0.5 U	0.28 U	0.28 U
Dibromochloromethane	50	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U	0.55 U
Ethylbenzene	5	0.5 U	1 U	1 U	1 U	0.87 U	0.87 U
Methylene Chloride	5	0.6 U	0.4 U	0.53 JB	0.4 U	0.78 U *	0.78 U *
Methyl-tert-butyl-ether (MTBE)	10	NA	4.7 J	16	0.3 U	NA	NA
Styrene	5	0.7 U	0.5 U	0.5 U	0.5 U	0.64 U	0.64 U
Tetrachloroethene	5	16	3.9 J	3.6 J	1 J	0.81 U	15
Toluene	5	0.4 U	0.3 U	0.3 U	0.3 U	0.72 U	0.72 U
trans-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.76 U	0.76 U
trans-1,3-Dichloropropene	0.4	0.8 U	0.8 U	0.8 U	0.8 U	0.57 U	0.57 U
Trichloroethene	5	0.8 U	0.7 U	0.7 U	0.7 U	0.62 U	0.87 J
Vinyl acetate	NS	1.9 U	0.2 U	0.2 U	NA	NA	NA
Vinyl chloride	2	0.6 U	0.8 U	0.8 U	0.8 U *	0.99 U	0.99 U
Xylenes, Total	5	0.9 U	1 U	1 U	1 U	2.3 U	2.3 U

Table 1

132-20 Merrick Blvd.

Springfield Gardens, Queens, NY

Groundwater Analytical Results

Volatile Organic Compounds

Client ID	NYSDEC	MW-17S				
Lab Sample ID	Class GA	207787-01	209707-8	211456-010	220-2024-2	220-7534-9
Date Sampled	Ambient Standard	10/8/2004	6/3/2005	11/22/2005	6/30/2007	12/11/2008
Dilution		1	1	1	1	1
Units=µg/L						
1,1,1-Trichloroethane	5	0.9 U	0.4 U	0.4 U	0.4 U	0.69 U
1,1,2,2-Tetrachloroethane	5	0.7 U	0.4 U	0.4 U	0.4 U	0.81 U
1,1,2-Trichloroethane	1	0.8 U	0.6 U	0.6 U	0.6 U	0.65 U
1,1-Dichloroethane	5	0.4 U	0.6 U	0.6 U	0.6 U f	1.0 U
1,1-Dichloroethene	5	0.8 U	0.7 U	0.7 U	0.7 U	0.83 U
1,2-Dichloroethane	0.6	0.6 U	0.6 U	0.6 U	0.6 U	0.72 U
1,2-Dichloropropane	1	0.7 U	3 J	0.9 U	0.9 U	2.6 J
2- Butanone (MEK)	50	1.6 U	1.2 U	1.2 U	1.2 U	1.1 U
2-Hexanone	50	0.7 U	0.8 U	0.8 U	0.8 U	1.1 U
4-Methyl-2-pentanone (MIBK)	NS	0.9 U	0.7 U	0.7 U	0.7 U	0.38 U
Acetone	50	2 U	1.4 U	1.4 U	1.4 U	1.5 J
Benzene	1	0.5 U	0.4 U	0.4 U	0.4 U	0.74 U
Bromodichloromethane	50	0.7 U	0.4 U	0.4 U	0.4 U	0.48 U
Bromoform	50	0.8 U	0.8 U	0.8 U	0.8 U	0.46 U
Bromomethane	5	2.7 U	1.2 U	1.2 U	1.2 U	2.1 U
Carbon disulfide	60	0.4 U	0.9 U	0.9 U	0.9 U	0.90 U
Carbon tetrachloride	5	0.6 U	1 U	1 U	1 U	1.1 U
Chlorobenzene	5	0.5 U	0.4 U	0.4 U	0.4 U	0.72 U
Chloroethane	5	1.7 U	0.8 U	0.8 U	1.3 J *	1.1 U
Chloroform	7	0.6 U	0.7 U	0.7 U	0.7 U	0.67 U
Chloromethane	5	1.4	0.5 U	0.5 U	0.5 U *	1.1 U
cis-1,2-Dichloroethene	5	0.7 U	76	120	60	4.1 J
cis-1,3-Dichloropropene	0.4	0.4 U	0.5 U	0.5 U	0.5 U	0.28 U
Dibromochloromethane	50	0.5 U	0.5 U	0.5 U	0.5 U	0.55 U
Ethylbenzene	5	0.5 U	1 U	1 U	1 U	0.87 U
Methylene Chloride	5	0.6 U	0.4 U	0.52 JB	0.4 U	0.78 U
Methyl-tert-butyl-ether (MTBE)	10	NA	0.3 U	0.3 U	1.3 J	NA
Styrene	5	0.7 U	0.5 U	0.5 U	0.5 U	0.64 U *
Tetrachloroethene	5	0.4 U	31	44	5.9	3.8 J
Toluene	5	0.4 U	0.3 U	0.3 U	0.3 U	0.72 U
trans-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U f	0.76 U
trans-1,3-Dichloropropene	0.4	0.8 U	0.8 U	0.8 U	0.8 U	0.57 U
Trichloroethene	5	0.8 U	13	35	5.9	13
Vinyl acetate	NS	1.9 U	0.2 U	0.2 U	NA	NA
Vinyl chloride	2	0.6 U	1.8 J	1.7 J	1.5 J	0.99 U
Xylenes, Total	5	0.9 U	1 U	1 U	1 U	2.3 U

Table 1 Notes

132-20 Merrick Blvd.

Springfield Gardens, Queens, NY

Groundwater Analytical Results

Volatile Organic Compounds

µg/L	**:**	micrograms per Liter = parts per billion (ppb)
U	**:**	compound not detected
*****	**:**	MS/MSD quality control exceeds control limits
J	**:**	Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)
NA	**:**	Not Analyzed

Data only included for monitoring wells sampled between October 2004 and December 2008 as no digital form of the results prior to October 2004 are available. See Appendix E for laboratory analytical reports and summary tables available for the entire project record. See Table 3 for historical tetrachloroethene (PCE) summary.

Table 2
132-20 Merrick Boulevard
Springfield Gardens, Queens, NY
Post-Remediation Soil Vapor Survey Analytical Results
Volatile Organic Compounds

Client ID	SN-1-HOME-DEPOT	SN-2-HOME-DEPOT	SN-2-HOME-DEPOTDL	SN-3-HOME-DEPOT	SE-1-HOME-DEPOT
Lab Sample ID	Y5443-02	Y5443-03	Y5443-03DL	Y5443-04	Y5443-05
Date Sampled	11/30/07	11/30/07	11/30/07	11/30/07	11/30/07
Dilution	1	1	2	1	20
µg/m^3					
1,1,1-Trichloroethane	0.55 J	4.91	4.36 JD	2.18 J	40.37 J
1,1,2,2-Tetrachloroethane	0.16 U	0.16 U	0.33 U	0.16 U	3.30 U
1,1,2-Trichloroethane	0.24 U	0.24 U	0.48 U	0.24 U	4.80 U
1,1,2-Trichlorotrifluoroethane	0.20 U	0.20 U	0.39 U	0.20 U	3.91 U
1,1-Dichloroethane	0.10 U	0.10 U	0.19 U	0.10 U	1.94 U
1,1-Dichloroethene	0.10 U	0.10 U	0.19 U	0.10 U	1.94 U
1,2,4-Trichlorobenzene	0.26 U	0.26 U	0.52 U	0.26 U	5.20 U
1,2,4-Trimethylbenzene	1.47 J	2.46 J	1.97 JD	0.98 J	21.63 J
1,2-Dibromoethane	1.00 U	1.00 U	2.00 U	1.00 U	19.98 U
1,2-Dichlorobenzene	0.13 U	0.13 U	0.26 U	0.13 U	13.23 J
1,2-Dichloroethane	0.20 U	0.20 U	0.40 U	0.20 U	4.05 U
1,2-Dichloropropane	0.22 U	0.22 U	0.44 U	0.22 U	4.44 U
1,3,5-Trimethylbenzene	0.17 U	0.17 U	0.34 U	0.17 U	3.44 U
1,3-Butadiene	0.08 U	0.08 U	0.16 U	0.08 U	1.61 U
1,3-Dichlorobenzene	0.10 U	0.60 J	0.20 U	0.10 U	10.82 J
1,4-Dichlorobenzene	0.60 J	1.20 J	1.20 JD	0.15 U	9.62 J
1,4-Dioxane	0.25 U	0.25 U	0.50 U	0.25 U	5.00 U
2,2,4-Trimethylpentane	0.93 J	0.12 U	0.23 U	0.93 J	2.29 U
2-Butanone	12.98	26.84	25.66 D	5.60	50.14
2-Hexanone	0.85 J	0.83 U	1.62 U	0.83 U	16.16 U
4-Ethyltoluene	0.07 U	0.07 U	0.15 U	0.07 U	1.47 U
4-Methyl-2-Pentanone	0.41 J	0.20 U	0.41 U	0.20 U	4.06 U
Acetone	15.20	20.67	19.72 D	11.16	33.26 B
Allyl Chloride	0.19 U	0.19 U	0.38 U	0.19 U	3.76 U
Benzene	1.92	1.92	1.60 JD	1.60 J	2.81 U
Benzyl Chloride	0.18 U	0.18 U	0.36 U	0.18 U	3.55 U
Bromodichloromethane	0.33 U	0.33 U	0.67 U	0.33 U	6.70 U
Bromoethene	0.10 U	0.10 U	0.21 U	0.10 U	2.10 U
Bromoform	0.16 U	0.16 U	0.32 U	0.16 U	3.21 U
Bromomethane	0.09 U	0.09 U	0.19 U	0.09 U	1.86 U
Carbon Disulfide	2.18	2.49	2.18 JD	0.05 U	0.97 U
Carbon Tetrachloride	0.50	0.11 U	0.21 U	0.44	2.14 U
Chlorobenzene	0.12 U	0.12 U	0.23 U	0.12 U	2.35 U
Chloroethane	0.04 U	0.04 U	0.09 U	0.04 U	0.90 U
Chloroform	0.15 U	0.98 J	0.30 U	0.15 U	2.98 U
Chloromethane	1.45	2.27	2.27 D	1.65	1.01 U
cis-1,2-Dichloroethene	0.14 U	0.14 U	0.28 U	0.14 U	10.31 J
cis-1,3-Dichloropropene	0.23 U	0.23 U	0.45 U	0.23 U	4.49 U
Cyclohexane	0.69 J	0.69 J	0.08 U	0.04 U	0.83 U
Dibromochloromethane	0.22 U	0.22 U	0.43 U	0.22 U	4.34 U
Dichlorodifluoromethane	2.97	5.93	5.93 D	15.82	10878.53 E
Dichlorotetrafluoroethane	0.15 U	0.15 U	0.30 U	0.15 U	3.01 U
Ethanol	376.85 E	810.23 E	847.91 ED	141.32 E	960.97 E
Ethyl Acetate	0.19 U	0.19 U	0.38 U	0.19 U	3.77 U
Ethyl Benzene	0.87 J	0.87 J	0.16 U	0.43 J	1.56 U
Heptane	0.82 J	1.23 J	0.82 JD	0.82 J	1.97 U
Hexachloro-1,3-Butadiene	0.23 U	0.23 U	0.46 U	0.23 U	40.53 J
Hexane	2.82	1.76	1.76 JD	1.76	1.80 U
m/p-Xylene	2.17 J	2.61	2.61 JD	1.30 J	3.78 U
Methyl tert-Butyl Ether	0.06 U	0.36 J	0.12 U	0.06 U	1.23 U
Methylene Chloride	2.78 B	0.69 JB	1.04 JDB	1.04 JB	12.51 JB
o-Xylene	0.87 J	0.87 J	0.87 JD	0.43 J	2.08 U
Propene	4.12	1.72	1.89 D	2.58	0.74 U
Styrene	0.26 U	0.26 U	0.51 U	0.26 U	5.11 U
t-1,3-Dichloropropene	0.26 U	0.26 U	0.50 U	0.26 U	4.99 U
tert-Butyl alcohol	0.24 U	0.24 U	1.52 JD	0.24 U	4.85 U
Tetrachloroethene	0.68 J	39.33	36.62 D	21.70	94.94
Tetrahydrofuran	4.41	10.08	9.45 D	1.89 J	45.35 J
Toluene	4.52	5.65	5.28 D	3.39	6.03 J
trans-1,2-Dichloroethene	0.12 U	0.12 U	0.24 U	0.12 U	2.42 U
Trichloroethene	0.81	1.50	1.40 D	3.87	18.27
Trichlorofluoromethane	15.17	118.01 E	112.39 D	30.35	1067.73
Vinyl Acetate	0.35 U	0.35 U	0.68 U	0.35 U	6.84 U
Vinyl Chloride	0.06 U	0.06 U	0.12 U	0.06 U	1.23 U

Table 2
132-20 Merrick Boulevard
Springfield Gardens, Queens, NY
Post-Remediation Soil Vapor Survey Analytical Results
Volatile Organic Compounds

Client ID	SE-1-HOME-DEPOTDL	SE-2-HOME-DEPOT	SE-3-HOME-DEPOT	SE-3-HOME-DEPOTDL	SE-4-HOME-DEPOT
Lab Sample ID	Y5443-05DL	Y5443-06	Y5443-07	Y5443-07DL	Y5443-20
Date Sampled	11/30/07	11/30/07	11/30/07	11/30/07	12/04/07
Dilution	200	20	1	5	1
µg/m^3					
1,1,1-Trichloroethane	23.46 U	37.10 J	40.92	43.10 D	10.91
1,1,2,2-Tetrachloroethane	32.96 U	3.30 U	0.16 U	0.82 U	0.16 U
1,1,2-Trichloroethane	48.01 U	4.80 U	0.24 U	1.20 U	0.24 U
1,1,2-Trichlorotrifluoroethane	39.09 U	3.91 U	0.20 U	1.00 U	0.20 U
1,1-Dichloroethane	19.43 U	1.94 U	0.10 U	0.49 U	0.10 U
1,1-Dichloroethene	19.43 U	1.94 U	0.10 U	0.48 U	0.10 U
1,2,4-Trichlorobenzene	51.96 U	26.72 J	0.26 U	1.34 U	0.26 U
1,2,4-Trimethylbenzene	23.60 U	58.99	1.47 J	0.59 U	4.92
1,2-Dibromoethane	199.81 U	19.98 U	1.00 U	5.00 U	1.00 U
1,2-Dichlorobenzene	25.85 U	2.59 U	0.13 U	0.66 U	0.13 U
1,2-Dichloroethane	40.47 U	4.05 U	0.20 U	1.01 U	0.20 U
1,2-Dichloropropane	44.37 U	4.44 U	0.22 U	1.11 U	0.22 U
1,3,5-Trimethylbenzene	34.41 U	15.73 J	0.17 U	0.88 U	1.47 J
1,3-Butadiene	16.15 U	1.61 U	0.08 U	0.40 U	0.08 U
1,3-Dichlorobenzene	20.44 U	2.04 U	1.20 J	0.51 U	0.10 U
1,4-Dichlorobenzene	29.46 U	2.95 U	0.60 J	0.72 U	0.60 J
1,4-Dioxane	50.04 U	5.00 U	0.25 U	1.25 U	0.25 U
2,2,4-Trimethylpentane	22.89 U	2.29 U	0.12 U	0.56 U	0.93 J
2-Butanone	58.99 U	29.49	15.63	10.32 D	10.03
2-Hexanone	161.64 U	16.16 U	0.83 U	4.08 U	0.83 U
4-Ethyltoluene	14.75 U	1.47 U	0.07 U	0.37 U	1.47 J
4-Methyl-2-Pentanone	40.57 U	4.06 U	0.20 U	1.02 U	0.82 J
Acetone	38.01 U	30.88 B	18.29	19.95 D	47.51 EB
Allyl Chloride	37.56 U	3.76 U	0.19 U	0.97 U	0.19 U
Benzene	28.11 U	2.81 U	1.28 J	0.70 U	3.83
Benzyl Chloride	35.53 U	3.55 U	0.18 U	0.89 U	0.18 U
Bromodichloromethane	66.99 U	6.70 U	0.33 U	1.67 U	0.33 U
Bromoethene	20.99 U	2.10 U	0.10 U	0.52 U	0.10 U
Bromoform	32.05 U	3.21 U	0.16 U	0.79 U	0.16 U
Bromomethane	18.64 U	1.86 U	0.09 U	0.47 U	0.09 U
Carbon Disulfide	9.65 U	0.97 U	0.05 U	0.24 U	3.74
Carbon Tetrachloride	21.39 U	2.14 U	0.11 U	0.53 U	0.50
Chlorobenzene	23.49 U	2.35 U	0.12 U	0.60 U	0.12 U
Chloroethane	8.97 U	0.90 U	0.04 U	0.22 U	0.04 U
Chloroform	29.79 U	2.98 U	0.98 J	0.73 U	1.47 J
Chloromethane	10.12 U	6.20 J	0.05 U	0.25 U	0.05 U
cis-1,2-Dichloroethene	27.75 U	2.78 U	0.14 U	0.71 U	0.14 U
cis-1,3-Dichloropropene	44.94 U	4.49 U	0.23 U	1.13 U	0.23 U
Cyclohexane	8.26 U	0.83 U	0.04 U	0.21 U	0.69 J
Dibromochloromethane	43.45 U	4.34 U	0.22 U	1.11 U	0.22 U
Dichlorodifluoromethane	11373.01 D	227.46	49.45	54.39 D	4.94
Dichlorotetrafluoroethane	30.06 U	3.01 U	0.15 U	0.77 U	0.15 U
Ethanol	1130.55 D	678.33	471.06 E	527.59 ED	263.80 E
Ethyl Acetate	37.69 U	3.77 U	0.19 U	0.95 U	0.19 U
Ethyl Benzene	15.64 U	1.56 U	0.43 J	0.39 U	4.34
Heptane	19.67 U	1.97 U	0.82 J	0.49 U	2.05
Hexachloro-1,3-Butadiene	45.87 U	49.07 J	0.23 U	1.17 U	0.23 U
Hexane	17.97 U	1.80 U	1.76 J	0.46 U	2.47
m/p-Xylene	37.79 U	3.78 U	1.74 J	0.96 U	13.47
Methyl tert-Butyl Ether	12.26 U	1.23 U	0.06 U	0.30 U	0.06 U
Methylene Chloride	10.77 U	25.01 JB	1.39 JB	0.26 U	1.39 JB
o-Xylene	20.85 U	2.08 U	0.43 J	0.52 U	5.21
Propene	7.39 U	8.59 J	1.55	0.19 U	3.61
Styrene	51.09 U	5.11 U	0.26 U	1.32 U	0.85 J
t-1,3-Dichloropropene	49.94 U	4.99 U	0.26 U	1.27 U	0.26 U
tert-Butyl alcohol	48.50 U	4.85 U	2.43	1.21 U	0.24 U
Tetrachloroethene	64.42 U	33.91 J	16.27	46.11 D	19.67
Tetrahydrofuran	107.08 U	18.90 J	6.30	5.67 JD	4.41
Toluene	35.80 U	5.28 J	3.39	3.39 JD	16.58
trans-1,2-Dichloroethene	24.19 U	2.42 U	0.12 U	0.59 U	0.12 U
Trichloroethene	43.53 U	12.90	27.95	27.95 D	13.44
Trichlorofluoromethane	1404.91 D	1966.87	297.84 E	365.28 D	78.67
Vinyl Acetate	68.38 U	6.84 U	0.35 U	1.73 U	0.35 U
Vinyl Chloride	12.27 U	1.23 U	0.06 U	0.31 U	0.06 U

Table 2
132-20 Merrick Boulevard
Springfield Gardens, Queens, NY
Post-Remediation Soil Vapor Survey Analytical Results
Volatile Organic Compounds

Client ID	SE-4-HOME-DEPOTDL	SW-1-HOME-DEPOT	SW-2-HOME-DEPOT	SW-2-HOME-DEPOTDL	SW-3-HOME-DEPOT
Lab Sample ID	Y5443-20DL	Y5443-01	Y5443-08	Y5443-08DL	Y5443-09
Date Sampled	12/04/07	11/30/07	11/30/07	11/30/07	12/04/07
Dilution	4	1	1	10	1
µg/m^3					
1,1,1-Trichloroethane	12.00 D	0.55 J	36.56	37.10 D	0.12 U
1,1,2,2-Tetrachloroethane	0.65 U	0.16 U	0.16 U	1.65 U	0.16 U
1,1,2-Trichloroethane	0.98 U	0.24 U	0.24 U	2.40 U	0.24 U
1,1,2-Trichlorotrifluoroethane	0.77 U	0.20 U	0.20 U	1.99 U	0.20 U
1,1-Dichloroethane	0.38 U	0.10 U	0.10 U	0.97 U	0.10 U
1,1-Dichloroethene	0.39 U	0.10 U	0.10 U	0.99 U	0.10 U
1,2,4-Trichlorobenzene	1.04 U	0.26 U	0.26 U	2.60 U	0.26 U
1,2,4-Trimethylbenzene	3.93 JD	1.47 J	2.46	1.18 U	2.46
1,2-Dibromoethane	4.00 U	1.00 U	1.00 U	9.99 U	1.00 U
1,2-Dichlorobenzene	0.52 U	0.13 U	0.13 U	1.32 U	0.13 U
1,2-Dichloroethane	0.81 U	0.20 U	0.20 U	2.02 U	0.20 U
1,2-Dichloropropane	0.88 U	0.22 U	0.46 J	2.22 U	0.22 U
1,3,5-Trimethylbenzene	0.69 U	0.17 U	0.49 J	1.72 U	0.98 J
1,3-Butadiene	0.33 U	0.08 U	0.08 U	0.80 U	0.08 U
1,3-Dichlorobenzene	0.40 U	0.10 U	2.40 J	1.02 U	0.10 U
1,4-Dichlorobenzene	0.60 U	1.20 J	1.20 J	1.50 U	0.15 U
1,4-Dioxane	0.98 U	0.25 U	0.25 U	2.50 U	0.25 U
2,2,4-Trimethylpentane	0.46 U	0.93 J	0.12 U	1.17 U	0.47 J
2-Butanone	10.32 D	28.90	29.49	32.44 D	2.95
2-Hexanone	3.32 U	0.83 U	1.70 J	8.25 U	0.83 U
4-Ethyltoluene	0.29 U	0.07 U	0.07 U	0.74 U	0.98 J
4-Methyl-2-Pentanone	0.82 U	0.20 U	0.82 J	2.05 U	0.20 U
Acetone	52.26 DB	19.72	16.87	33.26 DB	11.64 B
Allyl Chloride	0.78 U	0.19 U	0.19 U	1.91 U	0.31 J
Benzene	3.83 JD	1.28 J	1.60	1.41 U	3.19
Benzyl Chloride	0.70 U	0.18 U	0.18 U	1.78 U	0.18 U
Bromodichloromethane	1.34 U	0.33 U	0.33 U	3.35 U	0.33 U
Bromoethene	0.42 U	0.10 U	0.10 U	1.05 U	0.10 U
Bromoform	0.63 U	0.16 U	0.16 U	1.55 U	0.16 U
Bromomethane	0.37 U	0.09 U	0.09 U	0.93 U	0.09 U
Carbon Disulfide	12.46 D	0.05 U	0.05 U	0.47 U	0.31 J
Carbon Tetrachloride	0.42 U	0.11 U	0.31	1.07 U	0.44
Chlorobenzene	0.46 U	0.12 U	0.12 U	1.20 U	0.12 U
Chloroethane	0.18 U	0.04 U	0.04 U	0.45 U	0.04 U
Chloroform	0.59 U	3.42	1.47 J	1.51 U	0.15 U
Chloromethane	0.20 U	0.05 U	0.05 U	4.75 JD	1.45
cis-1,2-Dichloroethene	0.56 U	0.14 U	0.14 U	1.39 U	0.79 J
cis-1,3-Dichloropropene	0.91 U	0.23 U	0.23 U	2.27 U	0.23 U
Cyclohexane	0.17 U	0.04 U	0.04 U	0.41 U	0.34 J
Dibromochloromethane	0.85 U	0.22 U	0.22 U	2.22 U	0.22 U
Dichlorodifluoromethane	0.33 U	0.08 U	0.08 U	34.61 D	3.46
Dichlorotetrafluoroethane	0.61 U	0.15 U	0.15 U	1.54 U	0.15 U
Ethanol	358.01 ED	904.44 E	697.17 E	810.23 ED	139.43 E
Ethyl Acetate	0.75 U	0.19 U	0.19 U	1.90 U	3.57
Ethyl Benzene	3.91 JD	0.43 J	0.87 J	0.78 U	2.61
Heptane	2.05 JD	0.41 J	0.82 J	0.98 U	0.41 J
Hexachloro-1,3-Butadiene	0.93 U	0.23 U	0.23 U	2.35 U	0.23 U
Hexane	2.47 JD	1.76	1.06 J	0.92 U	1.76 J
m/p-Xylene	12.60 D	1.74 J	2.61	1.87 U	8.25
Methyl tert-Butyl Ether	0.24 U	0.36 J	0.06 U	0.61 U	0.06 U
Methylene Chloride	2.08 JDB	1.39 JB	1.04 JB	5.21 JDB	2.78 B
o-Xylene	4.78 JD	0.43 J	0.87 J	1.04 U	3.04
Propene	4.98 D	0.04 U	0.04 U	5.15 JD	1.72
Styrene	1.06 U	0.26 U	0.26 U	2.64 U	0.43 J
t-1,3-Dichloropropene	1.04 U	0.26 U	0.26 U	2.59 U	0.26 U
tert-Butyl alcohol	0.97 U	0.24 U	0.24 U	2.39 U	0.24 U
Tetrachloroethene	18.99 D	1.36 J	20.34	20.34 JD	0.68 J
Tetrahydrofuran	5.04 JD	11.34	12.60	14.49 JD	1.89 J
Toluene	15.83 D	4.90	5.28	4.90 JD	13.19
trans-1,2-Dichloroethene	0.48 U	0.12 U	0.12 U	1.23 U	0.12 U
Trichloroethene	13.44 D	0.54	53.20	51.06 D	0.22 U
Trichlorofluoromethane	78.67 D	21.92	230.40 E	241.64 D	6.74
Vinyl Acetate	1.40 U	0.35 U	0.35 U	3.49 U	1.08 J
Vinyl Chloride	0.24 U	0.06 U	0.06 U	0.61 U	0.06 U

Table 2
132-20 Merrick Boulevard
Springfield Gardens, Queens, NY
Post-Remediation Soil Vapor Survey Analytical Results
Volatile Organic Compounds

Client ID	SW-4-HOME-DEPOT	SW-5-HOME-DEPOT	SW-6-HOME-DEPOT	SS-1-HOME-DEPOT	SS-2-HOME-DEPOT
Lab Sample ID	Y5443-11	Y5443-12	Y5443-13	Y5443-14	Y5443-16
Date Sampled	12/04/07	12/04/07	12/04/07	12/04/07	12/04/07
Dilution	1	1	1	1	1
µg/m^3					
1,1,1-Trichloroethane	0.12 U	0.55 J	1.09 J	1.09 J	1.09 J
1,1,2,2-Tetrachloroethane	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,1,2-Trichloroethane	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
1,1,2-Trichlorotrifluoroethane	0.77 J	0.20 U	0.20 U	0.77 J	0.77 J
1,1-Dichloroethane	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethene	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
1,2,4-Trichlorobenzene	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
1,2,4-Trimethylbenzene	1.97 J	3.44	4.42	2.46 J	3.93
1,2-Dibromoethane	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
1,2-Dichlorobenzene	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
1,2-Dichloroethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,2-Dichloropropane	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,3,5-Trimethylbenzene	0.49 J	0.98 J	1.47 J	0.98 J	0.98 J
1,3-Butadiene	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
1,3-Dichlorobenzene	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
1,4-Dichlorobenzene	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,4-Dioxane	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,2,4-Trimethylpentane	0.93 J	0.93 J	1.40 J	1.40 J	0.93 J
2-Butanone	3.83	5.31	5.90	4.13	5.31
2-Hexanone	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
4-Ethyltoluene	0.98 J	0.98 J	1.47 J	0.98 J	0.98 J
4-Methyl-2-Pentanone	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Acetone	17.34 B	23.75 B	16.39 B	12.83 B	15.92 B
Allyl Chloride	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzene	2.56	3.83	3.51	2.88	2.56
Benzyl Chloride	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Bromodichloromethane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Bromoethene	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Bromoform	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Bromomethane	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Carbon Disulfide	1.87	0.05 U	0.05 U	0.05 U	0.05 U
Carbon Tetrachloride	0.38	0.44	0.44	0.44	0.50
Chlorobenzene	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Chloroethane	0.53 J	0.04 U	0.04 U	0.04 U	0.04 U
Chloroform	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Chloromethane	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,2-Dichloroethene	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
cis-1,3-Dichloropropene	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
Cyclohexane	0.69 J	0.69 J	1.03 J	0.69 J	0.69 J
Dibromochloromethane	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Dichlorodifluoromethane	2.97	9.89	0.08 U	2.47	2.97
Dichlorotetrafluoroethane	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Ethanol	114.94 E	207.27 E	160.16 E	126.24 E	150.74 E
Ethyl Acetate	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Ethyl Benzene	2.61	3.91	3.47	2.61	2.61
Heptane	1.64 J	0.41 J	1.23 J	0.82 J	0.82 J
Hexachloro-1,3-Butadiene	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
Hexane	1.41 J	1.41 J	1.41 J	1.06 J	2.11
m/p-Xylene	7.82	13.47	12.16	7.82	7.82
Methyl tert-Butyl Ether	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Methylene Chloride	2.08 B	1.74 JB	2.78 B	1.39 JB	5.91 B
o-Xylene	3.04	4.78	5.21	3.04	3.47
Propene	18.90	1.20	1.03	1.20	1.37
Styrene	0.43 J	0.43 J	0.43 J	0.43 J	0.43 J
t-1,3-Dichloropropene	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
tert-Butyl alcohol	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Tetrachloroethene	1.36 J	1.36 J	2.71 J	1.36 J	1.36 J
Tetrahydrofuran	1.89 J	3.78	3.15 J	1.89 J	2.52 J
Toluene	12.06	19.60	16.96	12.06	11.31
trans-1,2-Dichloroethene	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Trichloroethene	0.22 U	0.22 U	0.27	0.22 U	0.48
Trichlorofluoromethane	30.91	11.24	19.67	21.92	61.82
Vinyl Acetate	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
Vinyl Chloride	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U

Table 2

132-20 Merrick Boulevard

Springfield Gardens, Queens, NY

Post-Remediation Soil Vapor Survey Analytical Results

Volatile Organic Compounds

Client ID	SS-3-HOME-DEPOT	SS-4-HOME-DEPOT	SS-4-HOME-DEPOTDL	SSW-2-HOME-DEPOT
Lab Sample ID	Y5443-17	Y5443-18	Y5443-18DL	Y5443-19
Date Sampled	12/04/07	12/04/07	12/04/07	11/30/07
Dilution	1	1	5	1
µg/m^3				
1,1,1-Trichloroethane	3.82	1.64 J	0.60 U	3.27
1,1,2,2-Tetrachloroethane	0.16 U	0.16 U	0.82 U	0.16 U
1,1,2-Trichloroethane	0.24 U	0.24 U	1.20 U	0.24 U
1,1,2-Trichlorotrifluoroethane	0.77 J	0.20 U	1.00 U	0.77 J
1,1-Dichloroethane	0.10 U	0.10 U	0.49 U	0.10 U
1,1-Dichloroethene	0.10 U	0.40 J	0.48 U	0.10 U
1,2,4-Trichlorobenzene	0.26 U	0.26 U	1.34 U	0.26 U
1,2,4-Trimethylbenzene	4.42	3.44	0.59 U	0.98 J
1,2-Dibromoethane	1.00 U	1.00 U	5.00 U	1.00 U
1,2-Dichlorobenzene	0.13 U	0.13 U	0.66 U	0.13 U
1,2-Dichloroethane	0.20 U	0.20 U	1.01 U	0.20 U
1,2-Dichloropropane	0.22 U	0.22 U	1.11 U	0.22 U
1,3,5-Trimethylbenzene	0.98 J	0.98 J	0.88 U	0.17 U
1,3-Butadiene	0.08 U	0.08 U	0.40 U	0.08 U
1,3-Dichlorobenzene	0.10 U	0.10 U	0.51 U	0.10 U
1,4-Dichlorobenzene	0.15 U	0.15 U	0.72 U	0.15 U
1,4-Dioxane	0.25 U	0.25 U	1.25 U	0.25 U
2,2,4-Trimethylpentane	0.93 J	0.93 J	0.56 U	0.93 J
2-Butanone	4.72	5.01	3.24 JD	5.01
2-Hexanone	1.70 J	0.83 U	4.08 U	0.83 U
4-Ethyltoluene	0.98 J	0.98 J	0.37 U	0.07 U
4-Methyl-2-Pentanone	0.41 J	0.20 U	1.02 U	0.20 U
Acetone	16.63 B	30.88 B	28.51 D	12.35 B
Allyl Chloride	0.19 U	0.19 U	0.97 U	0.19 U
Benzene	2.24	2.24	0.70 U	1.60 J
Benzyl Chloride	0.18 U	0.18 U	0.89 U	0.18 U
Bromodichloromethane	0.33 U	0.33 U	1.67 U	0.33 U
Bromoethene	0.10 U	0.10 U	0.52 U	0.10 U
Bromoform	0.16 U	0.16 U	0.79 U	0.16 U
Bromomethane	0.09 U	0.09 U	0.47 U	0.09 U
Carbon Disulfide	0.05 U	20.86	15.57 D	0.05 U
Carbon Tetrachloride	0.44	0.44	0.53 U	0.57
Chlorobenzene	0.12 U	0.12 U	0.60 U	0.12 U
Chloroethane	0.04 U	0.04 U	0.22 U	0.04 U
Chloroform	0.15 U	0.49 J	0.73 U	0.15 U
Chloromethane	1.86	0.05 U	0.25 U	1.65
cis-1,2-Dichloroethene	0.14 U	0.14 U	0.71 U	0.14 U
cis-1,3-Dichloropropene	0.23 U	0.23 U	1.13 U	0.23 U
Cyclohexane	0.04 U	0.04 U	0.21 U	0.04 U
Dibromochloromethane	0.22 U	0.22 U	1.11 U	0.22 U
Dichlorodifluoromethane	2.97	3.46	3.46 JD	6.92
Dichlorotetrafluoroethane	0.15 U	0.15 U	0.77 U	0.15 U
Ethanol	207.27 E	207.27 E	207.27 ED	114.94 E
Ethyl Acetate	0.19 U	0.19 U	0.95 U	0.19 U
Ethyl Benzene	3.04	2.61	0.39 U	0.43 J
Heptane	0.41 J	0.82 J	0.49 U	1.23 J
Hexachloro-1,3-Butadiene	0.23 U	0.23 U	1.17 U	0.23 U
Hexane	1.06 J	2.11	0.46 U	1.41 J
m/p-Xylene	9.56	9.12	5.65 JD	1.30 J
Methyl tert-Butyl Ether	0.06 U	0.06 U	0.30 U	0.06 U
Methylene Chloride	2.43 B	1.04 JB	0.26 U	1.74 JB
o-Xylene	3.91	3.91	0.52 U	0.43 J
Propene	1.20	80.74 E	73.87 D	2.58
Styrene	0.43 J	0.43 J	1.32 U	0.26 U
t-1,3-Dichloropropene	0.26 U	0.26 U	1.27 U	0.26 U
tert-Butyl alcohol	0.24 U	0.24 U	1.21 U	0.24 U
Tetrachloroethene	14.92	2.71 J	4.75 JD	3.39 J
Tetrahydrofuran	3.15 J	3.15 J	2.65 U	1.89 J
Toluene	11.31	11.31	7.54 JD	3.01
trans-1,2-Dichloroethene	0.12 U	0.12 U	0.59 U	0.12 U
Trichloroethene	1.29	0.32	1.07 U	4.35
Trichlorofluoromethane	26.41	14.05	14.61 D	26.41
Vinyl Acetate	0.35 U	0.35 U	1.73 U	0.35 U
Vinyl Chloride	0.06 U	0.06 U	0.31 U	0.06 U

Table 2
132-20 Merrick Boulevard
Springfield Gardens, Queens, NY
Post-Remediation Soil Vapor Survey Analytical Results
Volatile Organic Compounds

Client ID	AA-NORTH-HOME-DEPOT	AA-SOUTH-HOME-DEPOT
Lab Sample ID	Y5443-10	Y5443-15
Date Sampled	12/04/07	12/04/07
Dilution	1	1
µg/m^3		
1,1,1-Trichloroethane	0.12 U	0.12 U
1,1,2,2-Tetrachloroethane	0.16 U	0.16 U
1,1,2-Trichloroethane	0.24 U	0.24 U
1,1,2-Trichlorotrifluoroethane	0.77 J	0.77 J
1,1-Dichloroethane	0.10 U	0.10 U
1,1-Dichloroethene	0.10 U	0.10 U
1,2,4-Trichlorobenzene	0.26 U	0.26 U
1,2,4-Trimethylbenzene	0.49 J	1.47 J
1,2-Dibromoethane	1.00 U	1.00 U
1,2-Dichlorobenzene	0.13 U	0.13 U
1,2-Dichloroethane	0.20 U	0.20 U
1,2-Dichloropropane	0.22 U	0.22 U
1,3,5-Trimethylbenzene	0.17 U	0.17 U
1,3-Butadiene	0.08 U	0.08 U
1,3-Dichlorobenzene	0.10 U	0.10 U
1,4-Dichlorobenzene	0.15 U	0.15 U
1,4-Dioxane	0.25 U	0.25 U
2,2,4-Trimethylpentane	0.12 U	0.47 J
2-Butanone	0.88 J	1.47 J
2-Hexanone	0.83 U	0.83 U
4-Ethyltoluene	0.07 U	0.07 U
4-Methyl-2-Pentanone	0.20 U	0.20 U
Acetone	7.13 B	10.45 B
Allyl Chloride	0.19 U	0.19 U
Benzene	1.28 J	1.28 J
Benzyl Chloride	0.18 U	0.18 U
Bromodichloromethane	0.33 U	0.33 U
Bromoethene	0.10 U	0.10 U
Bromoform	0.16 U	0.16 U
Bromomethane	0.09 U	0.09 U
Carbon Disulfide	0.62 J	0.05 U
Carbon Tetrachloride	0.50	0.63
Chlorobenzene	0.12 U	0.12 U
Chloroethane	0.04 U	0.04 U
Chloroform	0.15 U	0.15 U
Chloromethane	1.24	1.24
cis-1,2-Dichloroethene	0.14 U	0.14 U
cis-1,3-Dichloropropene	0.23 U	0.23 U
Cyclohexane	0.04 U	0.04 U
Dibromochloromethane	0.22 U	0.22 U
Dichlorodifluoromethane	2.97	2.97
Dichlorotetrafluoroethane	0.15 U	0.15 U
Ethanol	9.99	14.51
Ethyl Acetate	0.19 U	0.19 U
Ethyl Benzene	0.08 U	0.43 J
Heptane	0.10 U	0.41 J
Hexachloro-1,3-Butadiene	0.23 U	0.23 U
Hexane	1.41 J	1.41 J
m/p-Xylene	0.87 J	1.74 J
Methyl tert-Butyl Ether	0.06 U	0.06 U
Methylene Chloride	2.43 B	4.17 B
o-Xylene	0.10 U	0.87 J
Propene	1.55	2.06
Styrene	0.26 U	0.26 U
t-1,3-Dichloropropene	0.26 U	0.26 U
tert-Butyl alcohol	0.24 U	0.24 U
Tetrachloroethene	0.33 U	0.33 U
Tetrahydrofuran	0.53 U	0.53 U
Toluene	1.88	3.01
trans-1,2-Dichloroethene	0.12 U	0.12 U
Trichloroethene	1.67	0.22 U
Trichlorofluoromethane	1.69 J	1.69 J
Vinyl Acetate	0.35 U	0.35 U
Vinyl Chloride	0.06 U	0.06 U

Table 2 Notes

132-20 Merrick Blvd.

Springfield Gardens, Queens, NY

Post-Remediation Soil Vapor Survey Analytical Results

Notes

U : The compound was not detected at the indicated concentration.

J : Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero.

B : The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

P : For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.

E : Indicates the analyte's concentration exceeds the calibrated range of the intrument for that specific analysis.

D : This flag identifies all compounds identified in an analysis at a secondary dilution factor.

$\mu g/m^3$: micrograms per cubic meter of air

Table 3

132-20 Merrick Blvd.

Springfield Gardens, Queens, NY

Groundwater Analytical Results

Historical PCE Groundwater Concentrations

Client ID Analyte [µg/L]	Date Sampled	NYSDEC Class GA Ambient Standard	MW-1	MW-3	MW-4	MW-5S	MW-6	MW-7	MW-11	MW-13	MW-14S	MW-15	MW-16	MW-17S
Tetrachloroethylene	**7/18/1988**	**5**	NS	NS	**105**	NS	NS	4	2	**94**	NS	**150**	NS	NS
Tetrachloroethylene	**10/28/1988**	**5**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tetrachloroethylene	**2/26/1989**	**5**	NS	NS	NS	NS	NS	1	1	**53**	NS	NS	NS	NS
Tetrachloroethylene	**02/04/1999**	**5**	NS	**240**	NS	**710**	**120**	ND	NS	NS	**82**	NS	**870**	**74**
Tetrachloroethylene	**07/28/2000**	**5**	NS	**230**	NS	NS	NS	ND	NS	NS	**39**	NS	**7.5**	ND
Tetrachloroethylene	**08/10/2001**	**5**	**21**	**15**	NS	0.4	**18**	1	NS	NS	**100**	NS	**130**	**7**
Tetrachloroethylene	**12/18/2001**	**5**	**52**	**6**	NS	ND	**63**	0.8	NS	NS	**90**	NS	**29**	**7**
Tetrachloroethylene	**04/17/2002**	**5**	**11**	**24**	NS	**7**	**130**	ND	NS	NS	**510**	NS	**19**	2
Tetrachloroethylene	**08/02/2002**	**5**	NS	**120**	NS	ND	**95**	ND	NS	NS	**230**	NS	**310**	**6**
Tetrachloroethylene	**11/06/2002**	**5**	**72**	**53**	NS	2	**35**	ND	NS	NS	NS	NS	**120**	**18**
Tetrachloroethylene	**02/05/2003**	**5**	**28**	**71**	NS	ND	**82**	ND	NS	NS	**33**	NS	**89**	**6**
Tetrachloroethylene	**05/09/2003**	**5**	**18**	**410**	NS	1	**32**	0.4	NS	NS	**71**	NS	**32**	**13**
Tetrachloroethylene	**08/22/2003**	**5**	2	**130**	NS	5	**28**	1 J	NS	NS	**230**	NS	**88**	**17**
Tetrachloroethylene	**12/26/2003**	**5**	3	**160**	NS	**34**	**60**	ND	NS	NS	**350**	NS	**160**	**23**
Tetrachloroethylene	**05/19/2004**	**5**	0.7	**81**	NS	**10**	**120**	ND	NS	NS	**400**	NS	**29**	0.8
Tetrachloroethylene	**10/08/2004**	**5**	ND	**98**	NS	1.1	**170**	4.2 J	NS	NS	**86**	NS	**16**	0.4
Tetrachloroethylene	**06/22/2005**	**5**	1	**41**	NS	**5.6**	**26**	1.7 J	NS	NS	**66**	NS	3.9	**31**
Tetrachloroethylene	**11/21/2005**	**5**	1.9	**10**	NS	3.2	**14**	1.1 J	NS	NS	**6.8**	NS	3.6	**44**
Tetrachloroethylene	**06/22/2007**	**5**	0.5	**7.7**	NS	1.4	5	ND	NS	NS	**44**	NS	1	**5.9**
Tetrachloroethylene	**12/11/2008**	**5**	1.4 J	3.2 J	NS	2.1 J	**5.6**	ND	NS	NS	**5.4**	NS	0.8 U	3.8

ND-Not Detected

NS-Not Sampled. MW-4, MW-11, MW-13, and MW-15 due to well being destroyed during on-site construction activites.

Wells shown are upper glacial unit (shallow) wells only as they pertain to the zone of concern during remediation.

APPENDIX A

Metes and Bounds

New York Land Services, Inc.

Title No.: 00NYQ8072 A, B, C, D, E
Policy No.: 207-975770

DEED VESTING SCHEDULE

As to Parcel A:

Home Depot U.S.A., Inc., which acquired title by deed dated as of June 15, 2000, made by FC Springfield Associates LLC, and recorded in the Office of the New York City Register, Queens County, on June 30, 2000, in Reel 5618, page 2181.

As to Parcel B:

Home Depot U.S.A., Inc., which acquired title by deed dated June 21, 2000, made by Lesly Bontemps and Serge Bontemps and recorded in the Office of the New York City Register, Queens County, on July 12, 2000, in Reel 5630, page 957.

As to Parcel C:

Home Depot U.S.A., Inc., which acquired title by deed dated December 22, 2000, made by Marlo Brown and recorded in the Office of the New York City Register, Queens County, on January 24, 2001, in Reel 5771, page 1718.

As to Parcel D:

Home Depot U.S.A., Inc., which acquired title by deed dated January 12, 2001, made by Lillian Williams and Marguerite Williams and recorded in the Office of the New York City Register, Queens County, on February 22, 2001, in Reel 5797, page 1459.

As to Parcel E:

Home Depot U.S.A., Inc., which acquired title by deed dated December 26, 2000, made by Lillie Coleman, f/k/a Lillie Howard, and Georgia Monroe, f/k/a Georgia Smith and recorded in the Office of the New York City Register, Queens County, on January 24, 2001, in Reel 5771, page 1728.

END OF DEED VESTING SCHEDULE

New York Land Services, Inc.

Title No.: 00NYQ8072 A, B, C, D, E
Policy No.: 207-975770

SCHEDULE A
DESCRIPTION

Parcel A

ALL that certain plot, piece or parcel of land, situate, lying and being in the Fourth Ward, Borough of Queens, City and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the southerly side of Merrick Boulevard, 100 feet wide, with the easterly side of Belknap Street, 60 feet wide;

RUNNING THENCE easterly along the southerly side of Merrick Boulevard, along an arc of a circle bearing to the left having a radius of 717.793 feet, a distance of 428 feet (deed) (428.14 feet on survey) to a point;

THENCE still easterly along the southerly side of Merrick Boulevard, north 79 degrees 45 minutes 26 seconds east, 9.37 feet to the westerly line of land of the Long Island Railroad Co.;

THENCE southerly along the westerly line of land of the Long Island Railroad Co. and parallel with the easterly side of Belknap Street, 920.36 feet to a point;

THENCE south 78 degrees 37 minutes 00 seconds west, 1 90 feet to a point;

THENCE north 11 degrees 23 minutes 00 seconds west, parallel with the easterly side of Belknap Avenue, 100 feet;

THENCE south 78 degrees 37 minutes 00 seconds west, parallel with the northerly side of 137th Avenue, 220 feet to the easterly side of Belknap Street;

THENCE along the easterly side of Belknap Street, north 11 degrees 23 minutes 00 seconds west, 952.56 feet to the corner, the point or place of BEGINNING.

New York Land Services, Inc.

Title No.: 00NYQ8072 A, B, C, D, E
Policy No.: 207-975770

SCHEDULE A
DESCRIPTION

Parcel B

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough and County of Queens, City and State of New York, known and designated as Lots 34, 35, 36, and 37 in Block 27 on a certain map entitled "Map of Springfield Gardens in the Fourth Ward, Borough of Queens, City of New York, surveyed April, 1911, by Frederick L. Greiffenberg, C.E. and C.S." and filed on February 21, 1912 as Map No. 38, more particularly bounded and described according to said map as follows:

BEGINNING at a point on the northerly side of Midland Boulevard (now known as 137th Avenue) distant 140 feet easterly from the corner formed by the intersection of the northerly side of Midland Boulevard with the easterly side of Highland Avenue (now known as Belknap Street);

RUNNING THENCE northerly parallel with Highland Avenue 100 feet;

THENCE easterly parallel with Midland Boulevard 80 feet;

THENCE southerly again parallel with Highland Avenue 100 feet to the northerly side of Midland Boulevard;

THENCE westerly along the northerly side of Midland Boulevard 80 feet to the point or place of BEGINNING.

New York Land Services, Inc.

Title No.: 00NYQ8072 A, B, C, D, E
Policy No.: 207-975770

SCHEDULE A
DESCRIPTION

Parcel C

ALL that certain plot, piece or parcel of land, situate, lying and being in the Fourth Ward, Borough and County of Queens, City and State of New York, known and designated as Lots 38 and 39 in Block 27 on a certain map entitled, "Map of Springfield Gardens, Situated in the Fourth Ward, Borough of Queens, City of New York, Property of Springfield Development Company, surveyed April, 1911, by Frederick L. Greiffenberg, C.E. & C.S.," filed in the Office of the Clerk (now Register) of the County of Queens, February 21, 1912, as Map No. 38, bounded and described according to said map as follows:

BEGINNING at a point on the northerly side of Midland Boulevard (now 137th Avenue) distant 100 feet easterly from the corner formed by the intersection of the northerly side of Midland Boulevard (now 137th Avenue) with the easterly side of Highland Avenue (now known as Belknap Street);

RUNNING THENCE northerly parallel with Belknap Street, 100 feet;

THENCE easterly, parallel with 137th Avenue, 40 feet;

THENCE southerly again parallel with Belknap Street, 100 feet to the northerly side of 137th Avenue;

THENCE westerly along the northerly side of 137th Avenue, 40 feet to the point or place of BEGINNING.

Title No.: 00NYQ8072 A, B, C, D, E
Policy No.: 207-975770

SCHEDULE A
DESCRIPTION

Parcel D

ALL that certain plot, piece or parcel of land, situate, lying and being in the Fourth Ward of the Borough and County of Queens, City and State of New York, known and designated as Lot No. 40 and the easterly part of Lot No. 41 in Block 27 on a certain map entitled, "Map of Springfield Gardens, situated in the Fourth Ward, Borough of Queens, City of New York, Property of Springfield Development Co.," surveyed April, 1911, by Frederick L. Greiffenberg, and filed in the Office of the Clerk of the County of Queens on February 21, 1912, as Map No. 38, and bounded and described according to said map as follows:

BEGINNING at a point on the northerly side of 137th Avenue (formerly Midland Boulevard) distant 60.60 feet easterly from the corner formed by the intersection of the northerly side of 137th Avenue with the easterly side of Belknap Street (formerly Highland Avenue);

RUNNING THENCE easterly along the northerly side of 137th Avenue, 39.40 feet;

THENCE northerly and parallel with Belknap Street, 100 feet;

THENCE westerly parallel with 137th Avenue, 39.40 feet;

THENCE southerly again parallel with Belknap Street, 100 feet to the northerly side of 137th Avenue at the point or place of BEGINNING.

New York Land Services, Inc.

Title No.: 00NYQ8072 A, B, C, D, E
Policy No.: 207-975770

SCHEDULE A
DESCRIPTION

Parcel E

ALL that certain plot, piece or parcel of land, situate, lying and being in the Fourth Ward, Borough and County of Queens, City and State of New York, known and designated as Lots 42, 43, 44, and part of Lot 41 in Block 27 on a certain map entitled, "Map of Springfield Gardens, situated in the Fourth Ward, Borough of Queens, City of New York, Property of Springfield Development Co.," surveyed April, 1911, by Frederick L. Greiffenberg, and filed in the Office of the Clerk (now Register) of the County of Queens on February 21, 1912 as Map No. 38, and bounded and described according to said map as follows:

BEGINNING at the corner formed by the intersection of the northerly side of Midland Boulevard, now 137th Avenue, with the easterly side of Highland Avenue, now Belknap Street;

RUNNING THENCE northerly along the easterly side of Highland Avenue, 100 feet;

THENCE easterly parallel with Midland Boulevard, 60.60 feet;

THENCE southerly parallel with Highland Avenue, 100 feet to the northerly side of Midland Avenue;

THENCE westerly along the northerly side of Midland Boulevard, 60.60 feet to the corner at the point or place of BEGINNING.

END OF SCHEDULE A

APPENDIX B

ALTA/ASCM Site Survey

LEGEND

X 123.45	EXISTING SPOT ELEVATION
X TC 123.45	EXIST. TOP OF CURB ELEVATION
X G 122.95	EXIST. GUTTER ELEVATION
X TW 123.45	EXIST. TOP OF WALL ELEVATION
X BW 122.95	EXIST. BOTTOM OF WALL ELEVATION
X TI 123.45	EXIST. TOP OF ISLAND ELEVATION
X BI 122.95	EXIST. BOTTOM OF ISLAND ELEVATION
	HYDRANT
WV	WATER VALVE
GV	GAS VALVE
— OH —	OVERHEAD WIRES
— — G — —	UNCONFIRMED LOC. UNDERGROUND GAS LINE PER REF 8 (NOT FIELD VERIFIED, SEE NOTE 3)
— — W — —	UNCONFIRMED LOC. UNDERGROUND WATER LINE PER REF 8 (NOT FIELD VERIFIED, SEE NOTE 3)
— — E — —	UNCONFIRMED LOC. UNDERGROUND ELECTRIC LINE PER REF 8 (NOT FIELD VERIFIED, SEE NOTE 3)
	UTILITY POLE
	UTILITY POLE/LIGHT POLE
	GUY WIRE
	TRAFFIC SIGNAL POLE
	TRAFFIC SIGNAL
MW	MONITORING WELL
G	GAS METER
	SIGN
	MAIL BOX
	BOLLARD
	GUIDE RAIL
L.S.A.	LANDSCAPED AREA
E.O.P.	EDGE OF PAVEMENT
D.C.	DEPRESSED CURB
MC	METAL COVER
(S.N.12)	SEE NOTE 12
C.L.F.	CHAIN LINK FENCE
N.P.V.	NO PIPES VISIBLE
TOP	TOP OF PIPE
	AREA LIGHT
	PAINTED ARROWS
#	TITLE REPORT EXCEPTION
10	PARKING SPACE COUNT
1.0'	DENOTES OFFSET OF STRUCTURE AT GROUND LEVEL RELATIVE TO PROPERTY LINE
	STREET LIGHT
12"T	TREE LOCATION AND TRUNK DAIMETER
E	MANHOLE ELECTRIC
S	MANHOLE SEWER
MH	MANHOLE USE UNKNOWN
W	MANHOLE WATER
COL.○	COLUMN
	SOIL VAPOR RECOVERY SYSTEM PER REF 8 (NOT FIELD VERIFIED, SEE NOTE 3

TITLE SEARCH
LEGAL DESCRIPTION
PARCEL A

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE FOURTH WARD, BOROUGH OF QUEENS, CITY AND STATE OF NEW YORK, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE CORNER FORMED BY THE INTERSECTION OF THE SOUTHERLY SIDE OF MERRICK BOULEVARD, 100.00 FEET WIDE, WITH THE EASTERLY SIDE OF BELKNAP STREET, 60.00 FEET WIDE;

RUNNING THENCE EASTERLY ALONG THE SOUTHERLY SIDE OF MERRICK BOULEVARD, ALONG AN ARC OF A CIRCLE BEARING TO THE LEFT HAVING A RADIUS OF 717.793 FEET, A DISTANCE OF 428.00 FEET (DEED) 428.14 FEET ON SURVEY) TO A POINT;

THENCE STILL EASTERLY ALONG THE SOUTHERLY SIDE OF MERRICK BOULEVARD, NORTH 79 DEGREES – 45 MINUTES – 26 SECONDS EAST, 9.37 FEET TO THE WESTERLY LINE OF LAND OF THE LONG ISLAND RAILROAD CO.;

THENCE SOUTHERLY ALONG THE WESTERLY LINE OF LAND OF THE LONG ISLAND RAILROAD CO. AND PARALLEL WITH THE EASTERLY SIDE OF BELKNAP STREET, 920.36 FEET TO A POINT;

THENCE SOUTH 78 DEGREES – 37 MINUTES – 00 SECONDS WEST, 190.00 FEET TO A POINT;

THENCE NORTH 11 DEGREES – 23 MINUTES – 00 SECONDS WEST, PARALLEL WITH THE EASTERLY SIDE OF BELKNAP AVENUE, 100.00 FEET;

THENCE SOUTH 78 DEGREES – 37 MINUTES – 00 SECONDS WEST, PARALLEL WITH THE NORTHERLY SIDE OF 137TH AVENUE, 220.00 FEET TO THE EASTERLY SIDE OF BELKNAP STREET;

THENCE ALONG THE EASTERLY SIDE OF BELKNAP STREET, NORTH 11 DEGREES – 23 MINUTES – 00 SECONDS WEST, 952.56 FEET TO THE CORNER, THE POINT OR PLACE OF BEGINNING.

TITLE SEARCH
LEGAL DESCRIPTION
PARCEL B

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, KNOWN AND DESIGNATED AS LOTS 34, 35, 36 AND 37 IN BLOCK 27 ON A CERTAIN MAP ENTITLED "MAP OF SPRINGFIELD GARDENS IN THE FOURTH WARD, BOROUGH OF QUEENS, CITY OF NEW YORK, SURVEYED APRIL, 1911, BY FREDERICK L. GREIFFENBERG, C.E. AND C.S." AND FILED ON FEBRUARY 21, 1912 AS MAP NO. 38, MORE PARTICULARLY BOUNDED AND DESCRIBED ACCORDING TO SAID MAP AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHERLY SIDE OF MIDLAND BOULEVARD (NOW KNOWN AS 137TH AVENUE) DISTANT 140.00 FEET EASTERLY FROM THE CORNER FORMED BY THE INTERSECTION OF THE NORTHERLY SIDE OF MIDLAND BOULEVARD WITH THE EASTERLY SIDE OF HIGHLAND AVENUE (NOW KNOWN AS BELKNAP STREET);

RUNNING THENCE NORTHERLY PARALLEL WITH HIGHLAND AVENUE 100.00 FEET;

THENCE EASTERLY PARALLEL WITH MIDLAND BOULEVARD 80.00 FEET;

THENCE SOUTHERLY AGAIN PARALLEL WITH HIGHLAND AVENUE 100.00 FEET TO THE NORTHERLY SIDE OF MIDLAND BOULEVARD;

THENCE WESTERLY ALONG THE NORTHERLY SIDE OF MIDLAND BOULEVARD 80.00 FEET TO THE POINT OR PLACE OF BEGINNING.

TITLE SEARCH
LEGAL DESCRIPTION
PARCEL C

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE FOURTH WARD, BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, KNOWN AND DESIGNATED AS LOTS 38 AND 39 IN BLOCK 27 ON A CERTAIN MAP ENTITLED "MAP OF SPRINGFIELD GARDENS, SITUATED IN THE FOURTH WARD, BOROUGH OF QUEENS, CITY OF NEW YORK, PROPERTY OF SPRINGFIELD DEVELOPMENT COMPANY, SURVEYED APRIL, 1911, BY FREDERICK L. GREIFFENBERG, C.E. AND C.S." FILED IN THE OFFICE OF THE CLERK (NOW REGISTER) OF THE COUNTY OF QUEENS, FEBRUARY 21, 1912 AS MAP NO. 38, BOUNDED AND DESCRIBED ACCORDING TO SAID MAP AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHERLY SIDE OF MIDLAND BOULEVARD (NOW 137TH AVENUE) DISTANT 100.00 FEET EASTERLY FROM THE CORNER FORMED BY THE INTERSECTION OF THE NORTHERLY SIDE OF MIDLAND BOULEVARD (NOW 137TH AVENUE) WITH THE EASTERLY SIDE OF HIGHLAND AVENUE (NOW KNOWN AS BELKNAP STREET);

RUNNING THENCE NORTHERLY PARALLEL WITH BELKNAP STREET, 100.00 FEET;

THENCE EASTERLY, PARALLEL WITH 137TH AVENUE, 40.00 FEET;

THENCE SOUTHERLY AGAIN PARALLEL WITH BELKNAP STREET, 100.00 FEET TO THE NORTHERLY SIDE OF 137TH AVENUE;

THENCE WESTERLY ALONG THE NORTHERLY SIDE OF 137TH AVENUE, 40.00 FEET TO THE POINT OR PLACE OF BEGINNING.

TITLE SEARCH
LEGAL DESCRIPTION
PARCEL D

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE FOURTH WARD, BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, KNOWN AND DESIGNATED AS LOT NO. 40 AND THE EASTERLY PART OF LOT NO. 41 IN BLOCK 27 ON A CERTAIN MAP ENTITLED "MAP OF SPRINGFIELD GARDENS, SITUATED IN THE FOURTH WARD, BOROUGH OF QUEENS, CITY OF NEW YORK, PROPERTY OF SPRINGFIELD DEVELOPMENT CO.," SURVEYED APRIL, 1911, BY FREDERICK L. GREIFFENBERG, AND FILED IN THE OFFICE OF THE CLERK OF THE COUNTY OF QUEENS ON FEBRUARY 21, 1912, AS MAP NO. 38, BOUNDED AND DESCRIBED ACCORDING TO SAID MAP AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHERLY SIDE OF 137TH AVENUE (FORMERLY MIDLAND BOULEVARD) DISTANT 60.60 FEET EASTERLY FROM THE CORNER FORMED BY THE INTERSECTION OF THE NORTHERLY SIDE OF 137TH AVENUE WITH THE EASTERLY SIDE OF BELKNAP STREET (FORMERLY HIGHLAND AVENUE);

RUNNING THENCE EASTERLY ALONG THE NORTHERLY SIDE OF 137TH AVENUE, 39.40 FEET;

THENCE NORTHERLY AND PARALLEL WITH BELKNAP STREET, 100.00 FEET;

THENCE WESTERLY PARALLEL WITH 137TH AVENUE, 39.40 FEET;

THENCE SOUTHERLY AGAIN PARALLEL WITH BELKNAP STREET, 100.00 FEET TO THE NORTHERLY SIDE OF 137TH AVENUE AT THE POINT OR PLACE OF BEGINNING.

TITLE SEARCH
LEGAL DESCRIPTION
PARCEL E

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE FOURTH WARD, BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, KNOWN AND DESIGNATED AS LOTS 42, 43, 44 AND PART OF LOT 41 IN BLOCK 27 ON A CERTAIN MAP ENTITLED "MAP OF SPRINGFIELD GARDENS, SITUATED IN THE FOURTH WARD, BOROUGH OF QUEENS, CITY OF NEW YORK, PROPERTY OF SPRINGFIELD DEVELOPMENT CO." SURVEYED APRIL, 1911, BY FREDERICK L. GREIFFENBERG, AND FILED IN THE OFFICE OF THE CLERK (NOW REGISTER) OF THE COUNTY OF QUEENS ON FEBRUARY 21, 1912, AS MAP NO. 38, AND BOUNDED AND DESCRIBED ACCORDING TO SAID MAP AS FOLLOWS:

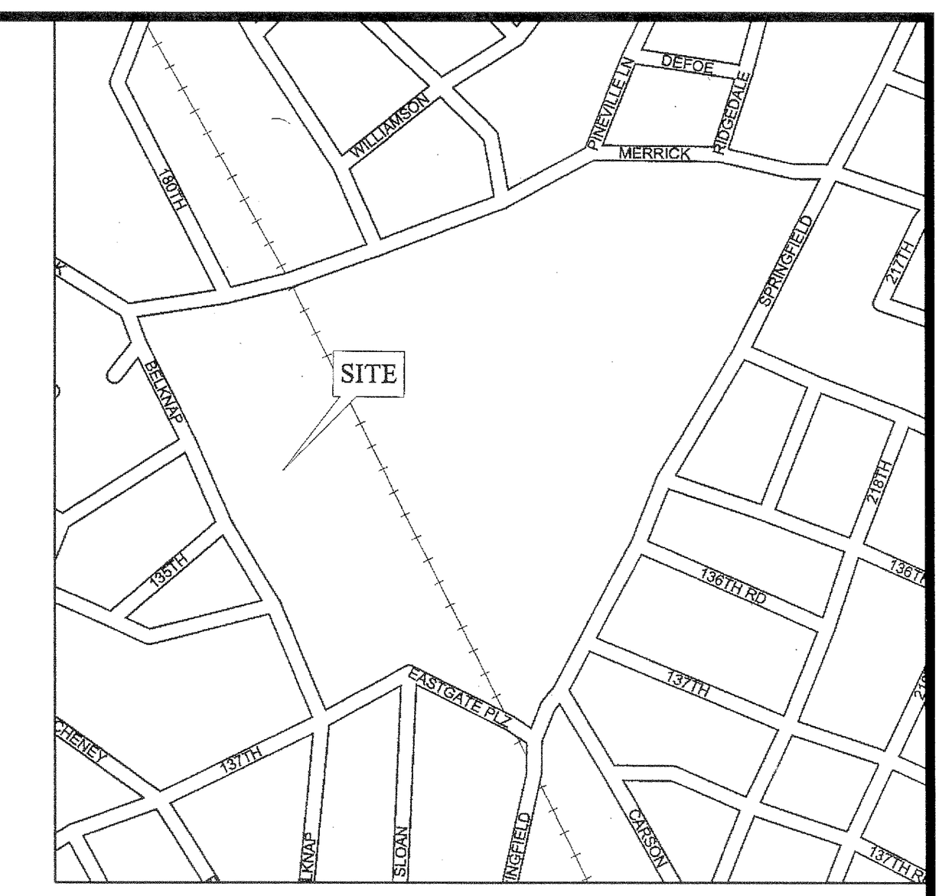
BEGINNING AT THE CORNER FORMED BY THE INTERSECTION OF THE NORTHERLY SIDE OF MIDLAND BOULEVARD, NOW 137TH AVENUE, WITH THE EASTERLY SIDE OF HIGHLAND AVENUE, NOW BELKNAP STREET;

RUNNING THENCE NORTHERLY ALONG THE EASTERLY SIDE OF HIGHLAND AVENUE, 100.00 FEET;

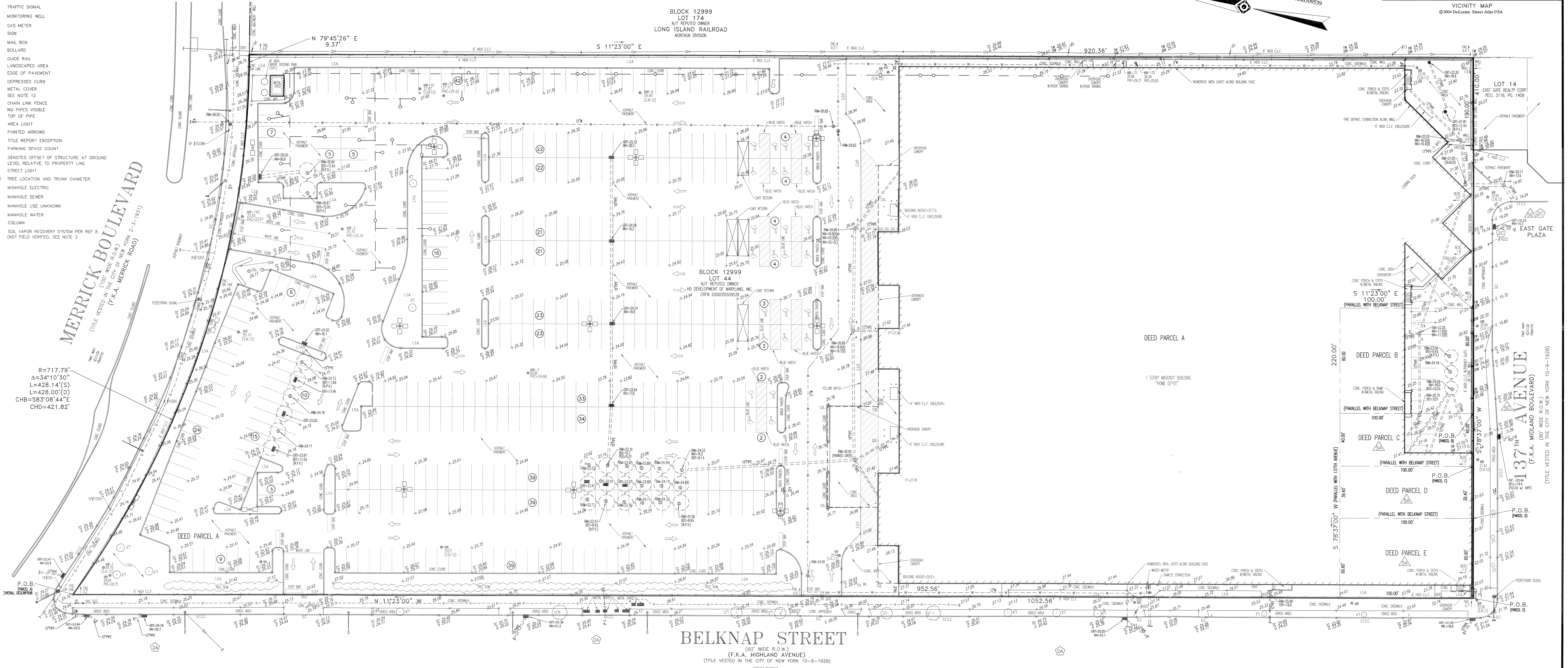
THENCE EASTERLY PARALLEL WITH MIDLAND BOULEVARD, 60.60 FEET;

THENCE SOUTHERLY PARALLEL WITH HIGHLAND AVENUE, 100.00 FEET TO THE NORTHERLY SIDE OF MIDLAND AVENUE;

THENCE WESTERLY ALONG THE NORTHERLY SIDE OF MIDLAND BOULEVARD, 60.60 FEET TO THE CORNER AT THE POINT OR PLACE OF BEGINNING.
1.



VICINITY MAP
©2004 DeLorme. Street Atlas USA



NOTES:

1. PROPERTY KNOWN AS LOT 44, BLOCK 12999 AS SHOWN ON THE OFFICIAL TAX MAP OF THE BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK
2. AREA = 394,917 S.F. OR 9.066 AC.
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. ALL LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE ASBUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC. AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. **THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN. PRIOR TITLE REPORT INFORMATION SHOWN**
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD HAZARD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN) PER REF. 2.
7. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
8. THERE WERE NO NATURAL STREAMS OR WATERCOURSES VISIBLE AT THE TIME OF THE FIELD SURVEY.
9. ENCROACHMENTS AND VAULTS, IF ANY, BELOW SURFACE NOT SHOWN HEREON
10. ELEVATIONS ARE BASED UPON THE BOROUGH OF QUEENS HIGHWAY DATUM, REFERENCE BENCHMARK 2423, ELEVATION 25.929 FEET, REPUTED TO BE 2.725 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK (N.G.V.D. 1929).
11. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.
12. MONITORING WELLS SHOWN HEREON WITHOUT PVC ELEVATION INFORMATION DUE TO LOCATIONS PACKED WITH GREASE.

REFERENCES:

1. THE OFFICIAL TAX MAPS OF BOROUGH OF QUEENS, QUEENS COUNTY, CITY AND STATE OF NEW YORK, SECTION 55, SHEETS 7 AND 8.
2. MAP ENTITLED "FIRM, FLOOD INSURANCE RATE MAP, CITY OF NEW YORK, NEW YORK, BRONX, RICHMOND, NEW YORK, QUEENS AND KINGS COUNTIES," PANEL 242 OF 457 MAP NUMBER 3604970242 MAP REVISED SEPTEMBER 5, 2007.
3. MAP ENTITLED "MAP SHOWING STREET SYSTEM FOR THE TERRITORY DESIGNATED AS SECTION 157 OF THE FINAL MAPS OF THE BOROUGH OF QUEENS" DATED MARCH 16, 1933.
4. MAP ENTITLED "MAP SHOWING STREET SYSTEM FOR THE TERRITORY DESIGNATED AS (PARTIAL) SECTION 152 OF THE FINAL MAPS OF THE BOROUGH OF QUEENS" DATED MAY 1, 1930.
5. MAP ENTITLED "CITY OF NEW YORK, BOROUGH OF QUEENS OFFICE OF THE PRESIDENT, TOPOGRAPHICAL BUREAU, MAP NO. 3815 SHOWING A CHANGE IN THE STREET SYSTEM HERETOFORE LAID OUT WITHIN THE TERRITORY BOUNDED BY MERRICK BOULEVARD, LIRR, MONTAUK DIVISION, 137TH AVENUE AND BELKNAP STREET IN THE FOURTH WARD" DATED APRIL 18, 1955.
6. MAP ENTITLED "CITY OF NEW YORK, BOROUGH OF QUEENS OFFICE OF THE PRESIDENT, TOPOGRAPHICAL BUREAU, MAP NO. 4369 SHOWING A CHANGE IN THE STREET SYSTEM HERETOFORE LAID OUT WITHIN THE TERRITORY BOUNDED BY MERRICK BOULEVARD, LI (MONTAUK DIVISION) RR, 137TH AVENUE AND BELKNAP STREET" DATED JULY 14, 1964.
7. MAP ENTITLED "SURVEY OF TAX LOTS 44, 54, 74 AND 94, BLOCK 12999 SPRINGFIELD GARDENS, BOROUGH OF QUEENS, NEW YORK CITY, NY" PREPARED BY FREDERICK R. POKORNY DATED SEPTEMBER 19, 1988.
8. PLAN ENTITLED "SCQ 147/00SB SITE CONNECTION DRAINAGE AND GRADING PLAN, THE HOME DEPOT 132-30 MERRICK BOULEVARD, SPRINGFIELD GARDENS, N.Y.," PREPARED BY VOLLMUTH & BRUSH, DATED OCTOBER 20, 2000, LAST REVISED APRIL 17, 2001, SHEET SC1.
9. MAP ENTITLED "ALTA/ACSM LAND TITLE SURVEY, HOME DEPOT U.S.A., INC. LOTS 33, 35, 37, 39, 41, 44, 54, 74 & 94, BLOCK 12999, SECTION 55, 132-30 MERRICK BLVD, BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK," PREPARED BY CONTROL POINT ASSOCIATES, DATED JANUARY 22, 1999, LAST REVISED JUNE 18, 2001.
10. MAP ENTITLED "CHLORINATED SOLVENT LEVELS IN GROUND WATER 11/21/2005, 132-20 MERRICK BOULEVARD, JAMAICA, NEW YORK," PREPARED BY AKRF ENVIRONMENTAL CONSULTANTS, DATED FEBRUARY 23, 2006.

PRIOR TITLE:

THIS SURVEY IS PREPARED WITH REFERENCE TO A TITLE REPORT PREPARED BY NEW YORK LAND SERVICES, INC. TITLE NO. 00NYQ8072A, DATED: JUNE 2000. FOR LOTS 33, 35, 44, 54, 74 & 94, WE REVIEWED THE FOLLOWING SURVEY RELATED ITEMS IN SCHEDULE B:

2A WATER MAIN EASEMENT IN LIBER 3960, PG. 482-RIGHTS TO JAMAICA WATER SUPPLY COMPANY TO LAY WATER MAINS – APPROXIMATE LOCATION SHOWN.

2B UTILITY EASEMENT IN LIBER 1944, PG. 38-RIGHTS TO NEW YORK TELEPHONE COMPANY FOR MAINTENANCE OF THEIR FACILITIES ALONG AND ACROSS HIGHWAYS, REFERENCES AN EXHIBIT "A", DOCUMENT NOT PROVIDED.

2C DECLARATION IN LIBER 6905, PG. 228.-PERTAINING TO THE INSTALLATION OF A PRIVATE STORM DRAIN IN SPRINGFIELD BOULEVARD, 137TH AVENUE AND EAST GATE PLAZA – SHOWN.

THIS SURVEY IS PREPARED WITH REFERENCE TO A TITLE REPORT PREPARED BY NEW YORK LAND SERVICES, INC., TITLE NUMBER 00NYQ8072-C, WITH AN EFFECTIVE DATE OF AUGUST 8, 2000 FOR LOT 37; TITLE NUMBER 00NYQ8072-D, WITH AN EFFECTIVE DATE OF AUGUST 8, 2000 FOR LOT 39; AND TITLE NUMBER 00NYQ8072-E WITH AN EFFECTIVE DATE OF AUGUST 8, 2000 FOR LOT 41, WHERE THE FOLLOWING SURVEY RELATED ITEMS APPEAR IN SCHEDULE B:

5A COVENANTS AND RESTRICTIONS REFERRED TO IN AGREEMENT IN DATED SEPTEMBER 9, 1921 AND RECORDED IN LIBER 2369, PAGE 518. BUILDING RESTRICTIONS WHICH PROHIBIT THE ERECTION OF ANY BUILDINGS EXCEPT DETACHED PRIVATE DWELLINGS, BLANKET.

5B UTILITY EASEMENT IN FAVOR OF NEW YORK TELEPHONE COMPANY RECORDED IN LIBER 1944, PAGE 38. RIGHTS TO NEW YORK TELEPHONE COMPANY FOR MAINTENANCE OF THEIR FACILITIES AND ACROSS HIGHWAYS. REFERENCES AN EXHIBIT A, DOCUMENT NOT PROVIDED.

5C DECLARATION DATED AUGUST 21, 1956, BY 899 KENT CORP. AND RECORDED AUGUST 24, 1956 IN LIBER 6905, PAGE 228 FOR INSTALLATION OF A PRIVATE STORM WATER DRAIN IN SPRINGFIELD BOULEVARD, 137TH AVENUE AND EAST GATE PLAZA – SHOWN.

TITLE SEARCH PREPARED BY CHICAGO TITLE INSURANCE COMPANY, NO. 3608-95087, DATED DECEMBER 19, 2008 WITH THE FOLLOWING EXCEPTION CONTAINED THEREIN.

1 TELEPHONE EASEMENT IN FAVOR OF VERIZON RECORDED IN REEL 6380, PAGE 380, DESCRIPTION VAGUE.

OVERALL LEGAL DESCRIPTION
LOT 44, BLOCK 12999
SECTION 55
BOROUGH OF QUEENS
QUEENS COUNTY, CITY AND STATE OF NEW YORK

BEGINNING AT A POINT OF INTERSECTION OF THE SOUTHERLY SIDELINE OF MERRICK BOULEVARD (100 FEET WIDE, AKA MERRICK ROAD), WITH THE EASTERLY SIDELINE OF BELKNAP STREET (60 FEET WIDE), FKA HIGHLAND AVENUE, AND FROM SAID POINT OF BEGINNING RUNNING, THENCE;

1. ALONG THE SOUTHERLY SIDELINE OF MERRICK BOULEVARD ALONG A CURVE TO THE LEFT HAVING A CENTRAL ANGLE OF 34 DEGREES – 10 MINUTES – 30 SECONDS, A RADIUS OF 717.79 FEET AND AN ARC LENGTH OF 428.14 FEET (428.00 DEED), BEARING A CHORD OF SOUTH 83 DEGREES – 08 MINUTES – 44 SECONDS EAST, A CHORD DISTANCE 421.82 FEET TO A POINT OF TANGENCY, THENCE;
2. ALONG THE SOUTHERLY SIDELINE OF MERRICK BOULEVARD NORTH 79 DEGREES – 45 MINUTES – 26 SECONDS EAST, A DISTANCE OF 9.37 FEET TO A POINT, THENCE;
3. ALONG THE DIVIDING LINE BETWEEN LOT 44 AND LOT 174, BLOCK 12999 SOUTH 11 DEGREES – 23 MINUTES – 00 SECONDS EAST, A DISTANCE OF 920.36 FEET TO A POINT, THENCE;
4. ALONG THE DIVIDING LINE BETWEEN LOT 44 AND LOT 14, (AKA MIDLAND BOULEVARD AS PER TAX MAP) AND ALONG THE NORTHERLY SIDELINE OF 137TH AVENUE, AKA MIDLAND BOULEVARD (80 FEET WIDE), SOUTH 78 DEGREES – 37 MINUTES – 00 SECONDS WEST, A DISTANCE OF 410.00 FEET TO A POINT ON THE EASTERLY SIDELINE OF BELKNAP STREET, THENCE;
5. ALONG THE EASTERLY SIDELINE OF BELKNAP STREET NORTH 11 DEGREES – 23 MINUTES – 00 SECONDS WEST, A DISTANCE OF 1052.56 FEET TO THE POINT AND PLACE OF BEGINNING

CONTAINING 394,917 SQUARE FEET OR 9.066 ACRES

UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

STOP - CALL BEFORE YOU DIG!

THE STATE OF NEW YORK REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE STATE.

CERTIFIED TO:

THE STATE OF NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT WAS BASED WERE MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA, AND NSPS IN 2005, AND INCLUDES ITEMS 2, 3, 4, 8, 9, 10 & 13 OF TABLE A THEREOF. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR REGISTERED IN THE STATE OF NEW YORK, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR BLUE INK SEAL

1-12-2009
DATE

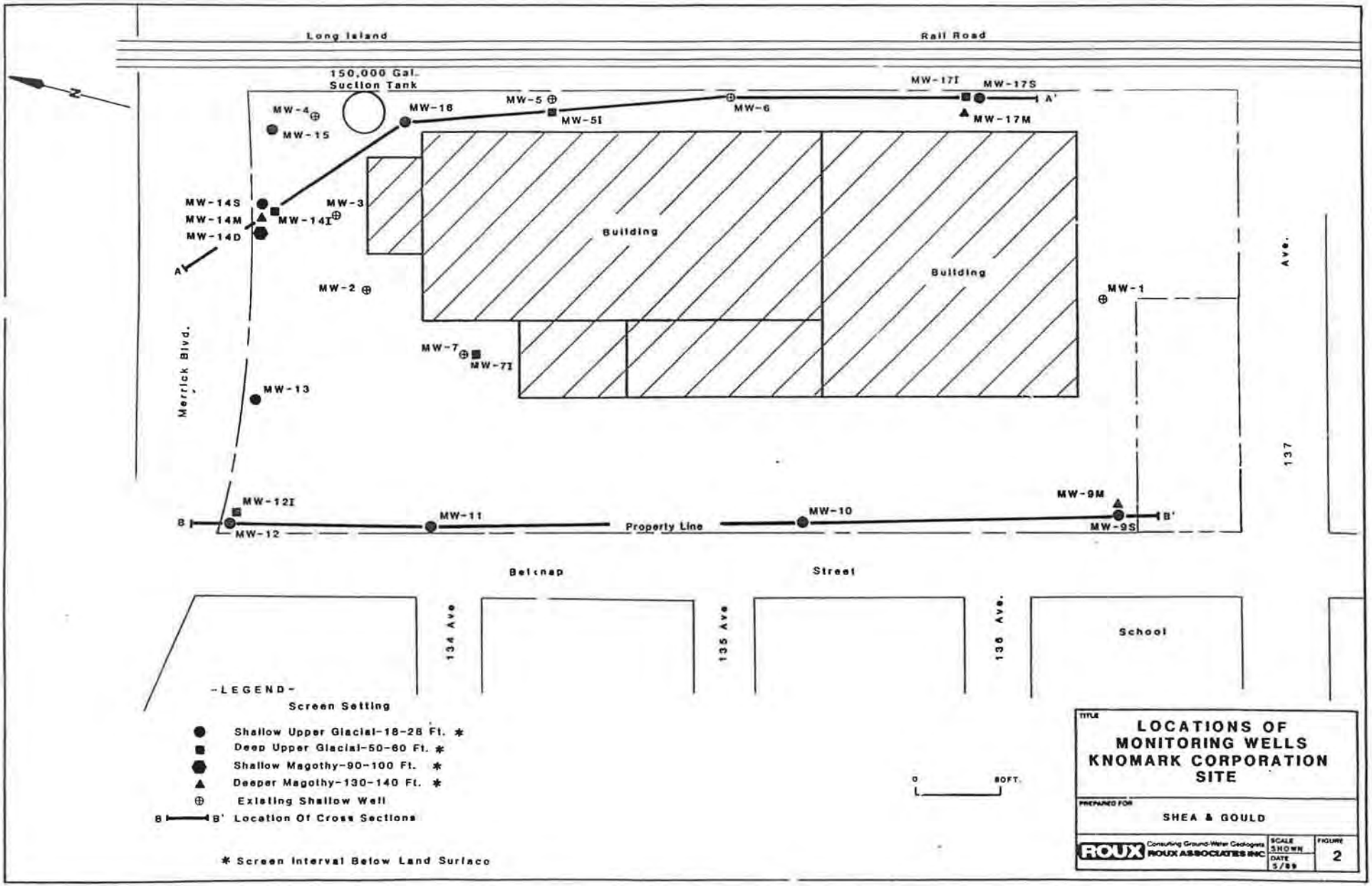
GREGORY S. GALLAS
NEW YORK PROFESSIONAL LAND SURVEYOR #50124

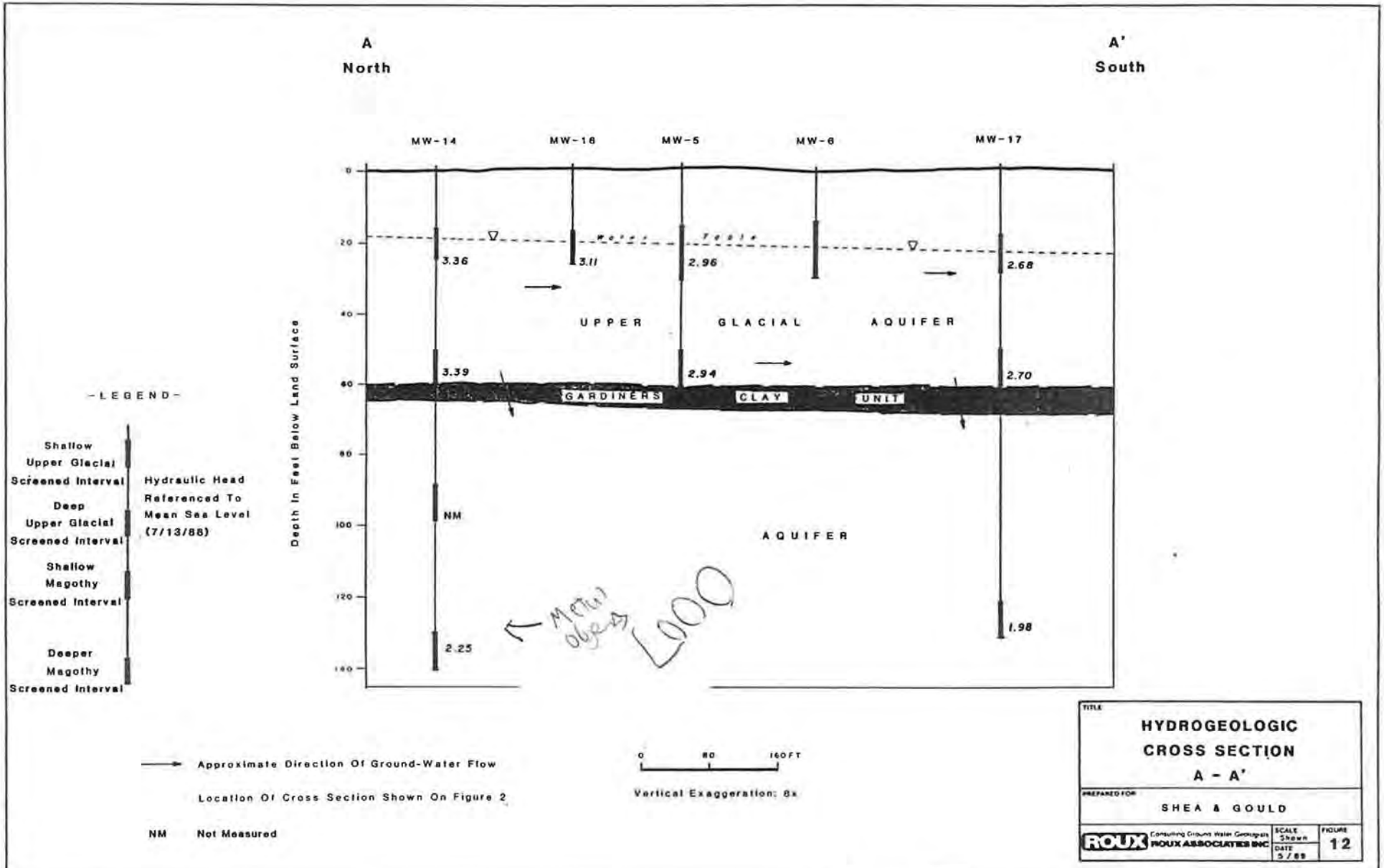
FIELD DATE	ALTA/ACSM LAND TITLE SURVEY
12-22-08	HOME DEPOT U.S.A., INC.
FIELD BOOK NO. 08-35	132-20 MERRICK BOULEVARD LOT 44, BLOCK 12999
FIELD BOOK PG. 70-74	BOROUGH AND COUNTY OF QUEENS CITY AND STATE OF NEW YORK
FIELD CREW B.B./S.R.	CONTROL POINT ASSOCIATES, INC.
DRAWN: G.R.E.	35 TECHNOLOGY DRIVE, WARREN, NJ 07059, 908.668.0099 - 908.668.9595 FAX NEW BRITAIN CORPORATE CENTER, 1600 MANOR DRIVE, SUITE 120, CHALFONT, PA 18914, 215.712.9800 – 215.712.9802 FAX

REVIEWED:	APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
F.B.L.	D.A.H.	1-12-2009	1"=30'	C98534.01	1 OF 1

APPENDIX C

Geologic Cross Sections


Long Island
Rail Road
150,000 Gal.
Suction Tank
MW-4
MW-15
MW-16
MW-5
MW-5I
MW-6
MW-17I
MW-17S
MW-17M
A'
MW-14S
MW-14M
MW-14D
MW-14I
MW-3
A
MW-2
Building
Building
MW-1
Ave.
Merrick Blvd.
MW-7
MW-7I
MW-13
137
MW-12I
MW-9M
B
MW-11
MW-10
Property Line
B'
MW-12
MW-9S
Belknap
Street
134 Ave
135 Ave
136 Ave.
School
-LEGEND-
Screen Setting
Shallow Upper Glacial-18-28 Ft. *
Deep Upper Glacial-50-60 Ft. *
Shallow Magothy-90-100 Ft. *
Deeper Magothy-130-140 Ft. *
Existing Shallow Well
B B' Location Of Cross Sections
* Screen Interval Below Land Surface
0
80FT.
TITLE
LOCATIONS OF MONITORING WELLS KNOMARK CORPORATION SITE
PREPARED FOR
SHEA & GOULD
ROUX
Consulting Ground-Water Geologists
ROUX ASSOCIATES INC
SCALE SHOWN
DATE 5/89
FIGURE 2



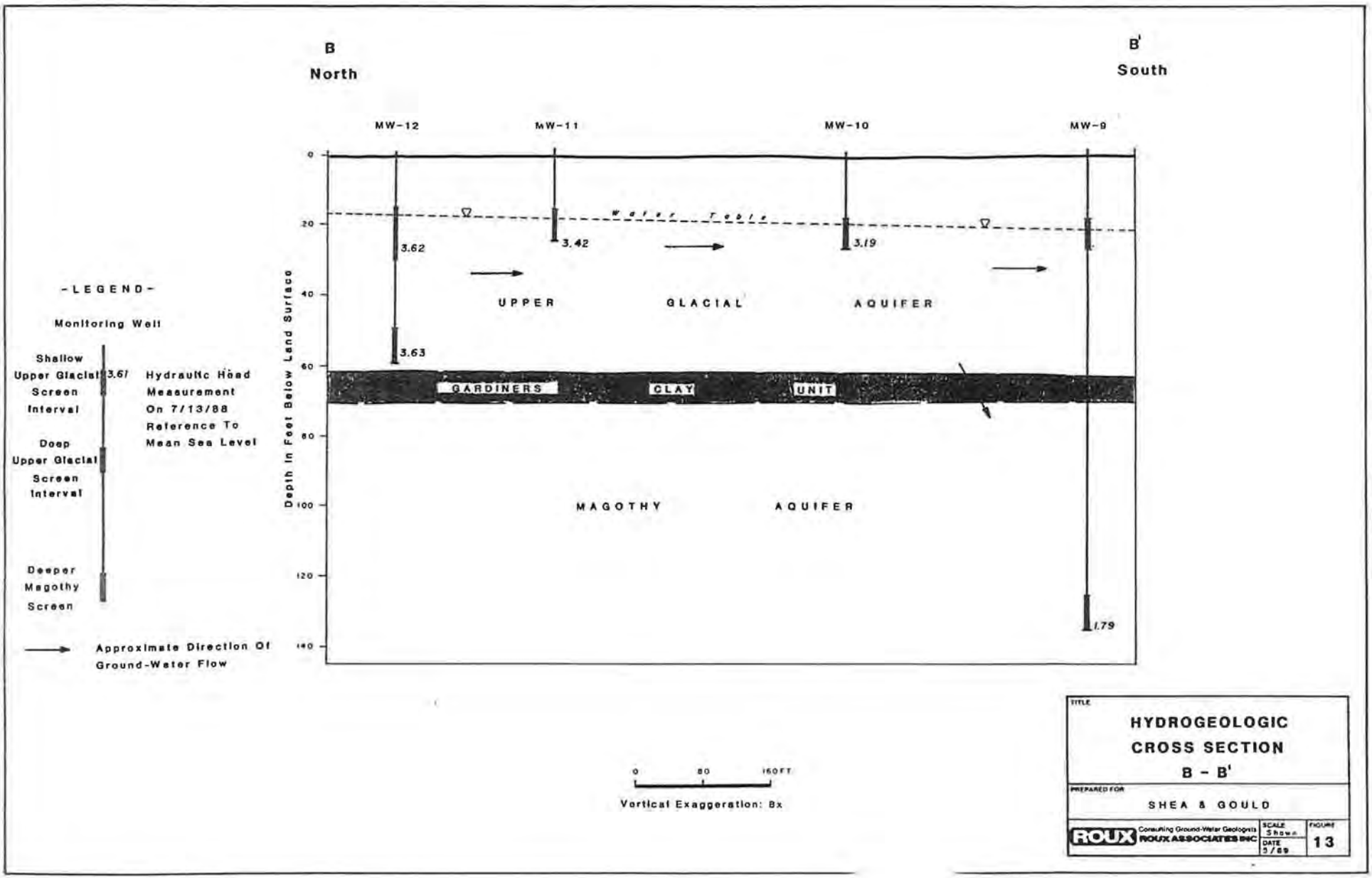
TITLE
HYDROGEOLOGIC CROSS SECTION A - A'

PREPARED FOR
SHEA & GOULD

ROUX Consulting Ground Water Geologists ROUX ASSOCIATES INC

SCALE Shown
DATE 5/89

FIGURE 12



TITLE

HYDROGEOLOGIC CROSS SECTION

B - B'

PREPARED FOR

SHEA & GOULD

ROUX Consulting Ground-Water Geologists ROUX ASSOCIATES INC

SCALE: Shown

DATE: 5/89

FIGURE: 13

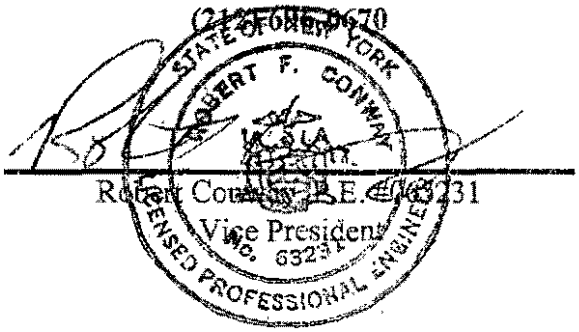
APPENDIX D

Remedial Work Plan

REMEDIAL WORK PLAN
132-20 MERRICK BOULEVARD
SPRINGFIELD GARDENS
QUEENS, NEW YORK

Prepared By:

AKRF Engineering , P.C.
117 East 29th Street
New York, New York 10017
(212) 696-0670



Robert Conway, P.E. #063231
Vice President

Revised
October, 1999

TABLE OF CONTENTS

1. INTRODUCTION

The Voluntary Cleanup site is located at 132-20 Merrick Boulevard in Springfield Gardens, Queens (see site location and vicinity map, Figures 1 and 2). This Remedial Work Plan presents the conceptual plan for remediation of the site. Further submissions will be made to DEC as described below. The goal of the remediation is to remove solvent contamination from the shallow upper glacial aquifer unit so the groundwater is not adversely affected by on-site conditions.

1.1 Site Description

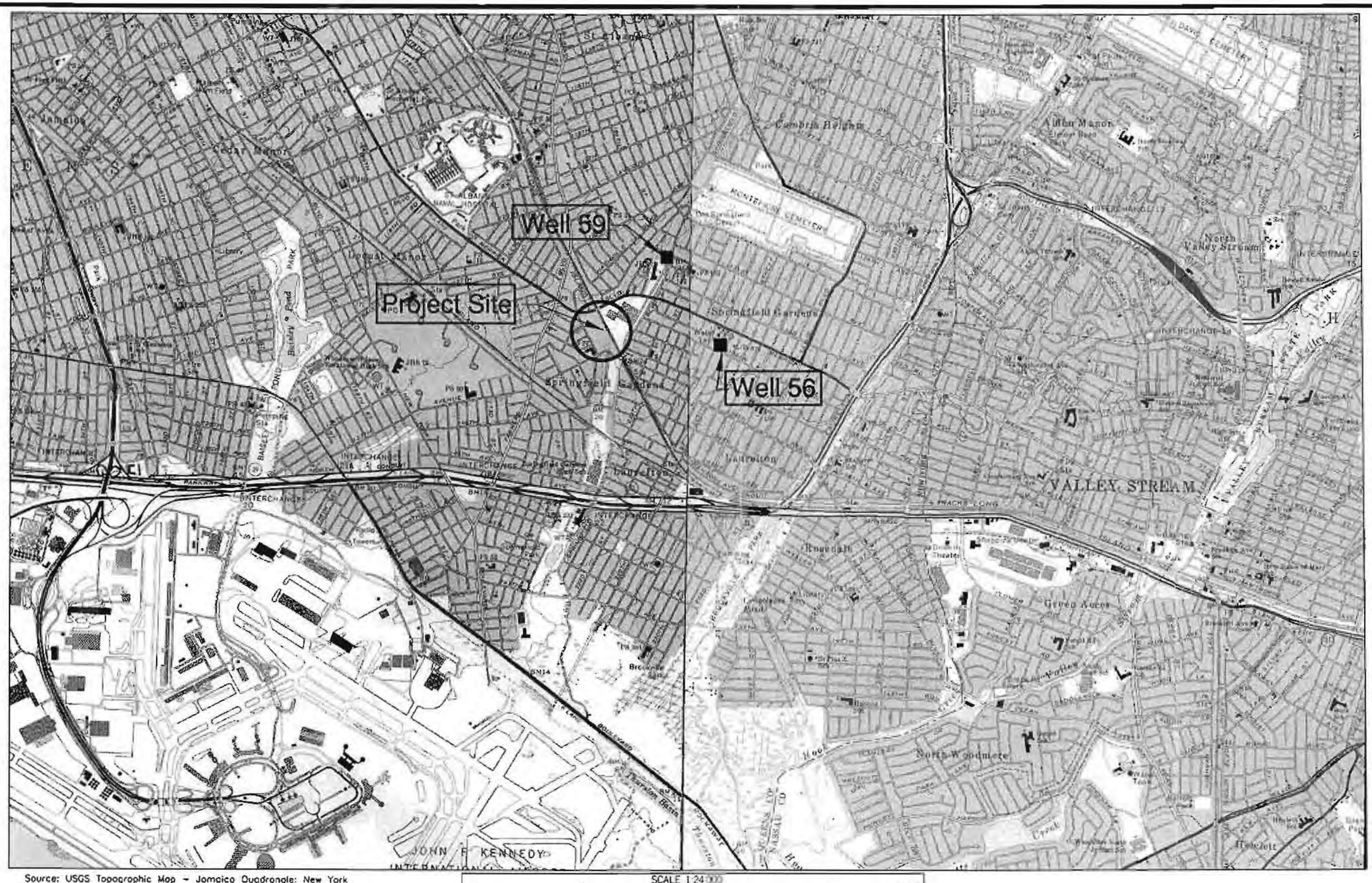
The site consists of approximately 8.56 acres. An approximately 189,000 square-foot, vacant warehouse, along with paved parking areas, occupies nearly the entire project site. The subject property is designated as Block 12999, Lot 44. The project site is bounded on the north by Merrick Boulevard, on the south by 137th Avenue, on the east by Belknap Street, and on the west by the Long Island Railroad tracks.

The site is located in a light industrial area, which includes commercial and residential uses. To the north, along Merrick Boulevard, and to the east, opposite the Long Island Railroad tracks, along Springfield Avenue, are commercial properties. Residential areas are located to the south of the site, along Belknap Street. A public school is located approximately 1,000 feet to the southeast of the project site, on the west side of Belknap.

Water wells belonging to the New York City Department of Environmental Protection (DEP), formerly of the Jamaica Water Company, are situated approximately 3,000 feet to the northeast, at 90-42 Springfield Boulevard, and 4,000 feet to the east, at 222nd Street and 134th Road.

The following table provides further information about the nearest wells in the area, and is based upon data published by the former Jamaica Water Supply Company and conversations with the current owner of these wells, the New York City Department of Environmental Protection (DEP).

DEC Well No.	Location/distance from project site	Aquifer	Well depth/ Production rate	Remarks
Q3029	Springfield Blvd. & Lucas Street/ 3,000 ft. NE of project site	M	445 feet 1.87 M.G.D.	Active well used as potable drinking water source. Upgradient of project site.



Source: USGS Topographic Map - Jamaica Quadrangle: New York
Dated 1966; Photorevised 1979. Contour Interval 10 feet.
Quadrangle Longitude 73°45' Quadrangle Latitude: 40°37'30"
National Geodetic Vertical Datum of 1929.

SCALE 1:24,000

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

CONTOUR INTERVAL 5 FEET
DATUM IS MEAN SEA LEVEL

AKRF, Inc.
Environmental Consultants
117 East 29th Street New York, N.Y. 10016

132-20 MERRICK BOULEVARD
SPRINGFIELD GARDENS, NEW YORK

PROJECT SITE LOCATION
CLOSEST WELLS TO SITE

DATE 8/25/99

SCALE

PROJECT No. 30079

FIGURE No. 1

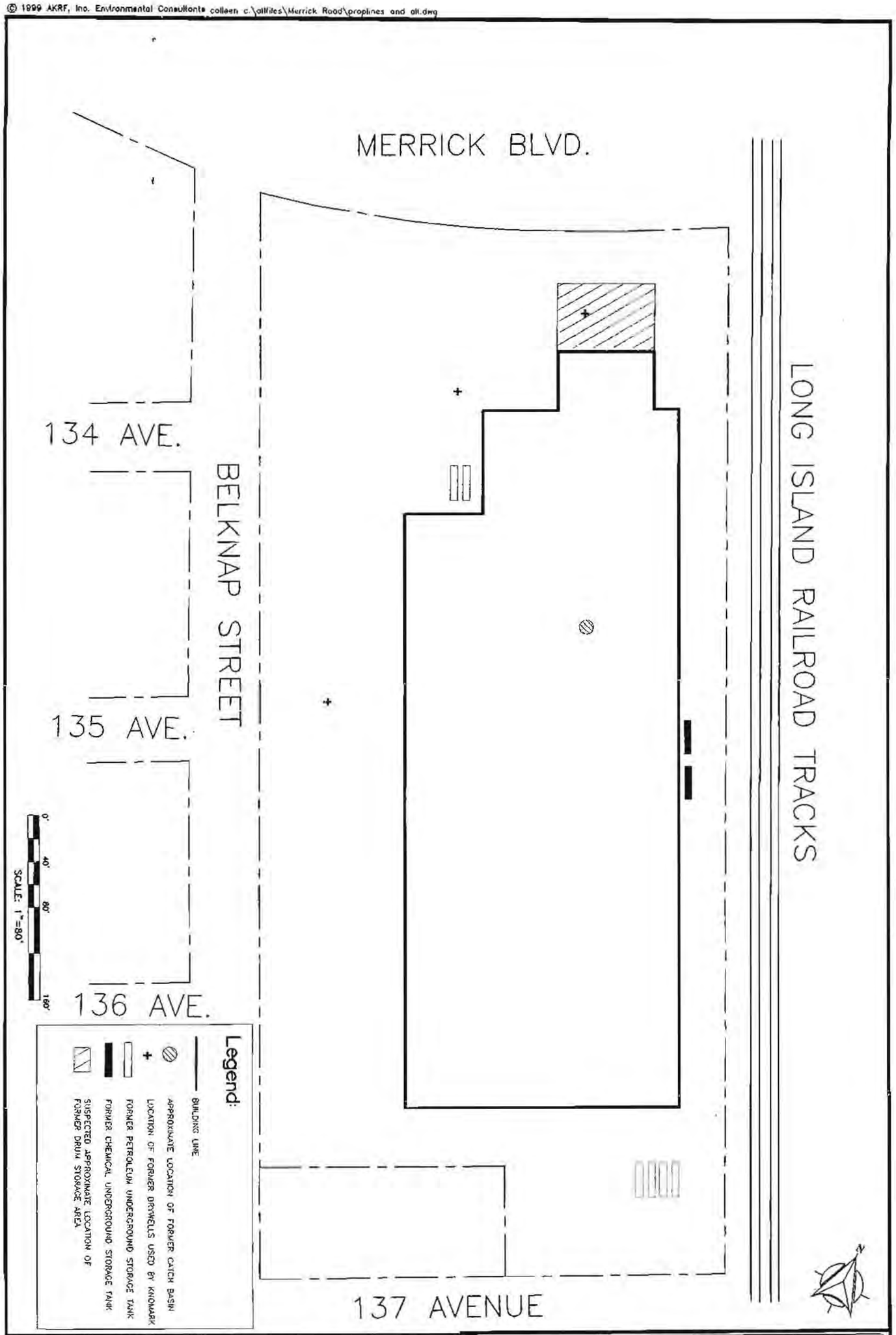


FIGURE No. 2	PROJECT No. 30079	SCALE 1"=80'	DATE 8/25/99	132-20 MERRICK BOULEVARD SPRINGFIELD GARDENS, NEW YORK SITE PLAN	**AKRF, Inc.** Environmental Consultants 117 East 29th Street New York, N.Y. 10016

DEC Well No.	Location/distance from project site	Aquifer	Well depth/ Production rate	Remarks
Q2955	222nd Street and 134th road/ 4,000 ft. E of project site.	M	417 feet 1.87 M.G.D.	Active well used as potable drinking water source. Cross-gradient of project site.

Key: M = Magothy wells; M.G.D. = Millions of Gallons per Day

1.2 Geology and Hydrogeology

The hydrogeologic units in Queens County, New York consist of unconsolidated sediments underlain by crystalline bedrock. The aquifer system underlying the project site is designated by the U.S. Environmental Protection Agency as a "sole source aquifer" for drinking water supply.

The principal hydrological units on the project site are upper Pleistocene glacial deposits, the Gardiners Clay, and the Magothy Formation. Boring logs and geophysical logs of the three Magothy wells at the site (MW-9M, MW-14M, and MW-17M) reveal the presence of a six to eight foot clay layer at approximately 55-60 feet that is continuous throughout the site. This unit is referred to as the "Gardiners Clay" in the Roux Report. Below the "Gardiners Clay" is another clay layer, at approximately 140 feet, that is less continuous, as discussed in the Roux Associates Report. Well design drawings indicate that the wells in the Magothy were properly installed, thereby avoiding cross-contamination between the upper glacial units and the underlying Magothy. (Note: well construction drawings show that the Magothy wells had been screened 60 feet below the "Gardiners Clay", have a 5-foot bentonite seal above the well screen, and had a cement/bentonite grout around the PVC well casing.) Thus, the Gardiners Clay restricts flow between the upper Pleistocene deposits and the underlying Magothy Formation.

On site monitoring wells revealed an approximate depth to groundwater of 17 feet in the shallow upper Pleistocene glacial deposits and 88 feet in the Magothy Unit (Note: on-site wells in the aquifers have been screened at various depths, and therefore have been described as a shallow upper glacial, deep upper glacial, shallow Magothy, and deep Magothy). Based upon surveyed groundwater elevations, the direction of groundwater flow is to the southeast for the upper glacial aquifer units and to the southwest for the Magothy. Prior to 1986, the regional groundwater flow in the area had been to the north, towards the former Jamaica Water Company well field at 90-42 Springfield Boulevard. A pump test showed the groundwater flow rate of the upper Pleistocene glacial deposits to be 1 foot per day, and of the Magothy to be 0.1-0.2 foot per day.

1.3 Prior Site Usage

Below is a brief summary of the site history based on the Phase I Environmental Assessment Report prepared by Eder Associates on behalf of the current property owner dated July 1998, and

the Phase I Environmental Site Assessment Report prepared by EMCON on behalf of the United States Postal Service.

Prior to 1957:

Historical Sanborn maps for 1926 and 1949 show no industrial usage of the site for this period. According to the 1926 map, only a private residence occupied the northwest corner of the site, with the remainder of the site being undeveloped. By 1949, the site was labeled as "Sherwood Oval" and appeared to be playing fields.

1957-1988:

Knomark Inc constructed the current on-site building in 1957. This firm manufactured various products, including fabric softeners, toilet bowl cleaners, fabric dyes and shoe polish from 1957 to 1988. By the early 1960s the current property owner had purchased the property from Knomark, which continued to occupy the site until 1988 as a tenant.

Knomark's manufacturing process used the solvent tetrachloroethene (PCE) and mineral oil spirits. The company had stored each of these chemicals in two 5,000-gallon underground storage tank (USTs) on the property. Other chemicals used by Knomark included 1,1,1-trichloroethene, methylene chloride and methyl ethyl ketone. The key manufacturing process involved the use of batch mixing tanks (for mixing of volatile chemicals) and kettles (for nonvolatile chemicals). Sludge from Knomark's manufacturing process settled out into an above-ground catch basin and was disposed of off-site by a private waste contractor. After the sludge had settled out into the catch basin, the wastewater from the facility was discharged into New York City's sewer lines. See Roux Associates Inc. report titled "Environmental Audit", dated 1988 for a detailed description of Knomark's manufacturing processes

1988-1999

After Knomark left the site, United Parcel Service (UPS) leased the property between 1988 and 1998 as a processing and distribution center for shipped packages. UPS also installed petroleum USTs for fueling of its vehicles. UPS vacated the site during 1995, and the property has remained vacant since that year.

1.4 Previous Environmental Studies and Remediation

Numerous soil and groundwater investigations have been conducted on the project. A brief overview of the previous testing and remediation work is presented below. The reports, test results and other documentation cited have previously been submitted to DEC.

Existing site conditions prior to site cleanup, by Roux Associates: "Environmental Audit of Toxic and Hazardous Waste Management and Disposal at Knomark, Inc. (1988)

Roux Associates ("Roux") was retained by the law firm, Shea and Gould, representing the property owner, to conduct an environmental audit when the facility was still occupied by its tenant Knomark. The purpose of Roux's audit was to evaluate environmental conditions existing at the site in order to determine Knomark's responsibility for cleanup at the termination of its lease.

Significant findings of Roux's 1988 audit are as follows:

- Knomark used volatile chemicals, including tetrachloroethylene, 1,1,1-trichloroethane, methylene chloride, and methyl ethyl ketone, in its manufacturing process. The manufacturing of dyes account for most of these chemicals used at the facility.
- All wastewater from the building led to an indoor, above-ground catch basin (for settling and sludge collection) which then discharged into the city sewer lines. Knomark generated approximately 6,000 kilograms of sludge per month, which was pumped out regularly from the aboveground catch basin and carted off-site by Liberty Ash of Elmont, New York. Air emissions by Knomark generally complied with permits from the City of New York Department of Environmental Protection.
- Several potential sources of groundwater contamination were identified and included a drum storage outside the building, at the north end of the site, lacked a drum storage pad or bermed area, underground chemical storage and petroleum storage tanks, and spills or leaks onto the ground, which could migrate into on-site drywells in the parking areas
- Soil samples taken from a drywell near the exterior drum storage area and in the back of the building had elevated levels of solvents (See following section and discussion of TRC Environmental Consultants Report).

Site Cleanup by Knomark (1988)

In 1988, Knomark retained H2M Group to conduct site activities relating to the closure of its site operations, including overseeing the surficial cleaning of stained building surfaces, removal of the chemical storage and fuel oil USTs (one 10,000-gallon and one 20,000-gallon tank), and removal of two drywells and associated contaminated soil. The remediation firm, Marine Pollution Control of Patchague, New York performed the

excavation of contaminated soil surrounding storm drains, as reported by Roux Associates (See Roux Associates Report dated 1989). Documentation indicating the scope of the soil removal is not available at this time.

H2M oversaw removal of the chemical storage tanks, the drywells and associated contaminated soil. The building owner retained Roux Associates, which completed the surficial cleaning of the building and removal of the fuel oil USTs (See Roux Associates Reports titled "Results of the Building Decontamination" and "Removal of Underground Fuel Oil Tanks").

H2M prepared no closure report documenting the removal of the dry wells, contaminated soil, and chemical storage USTs. A subsurface investigation conducted at the time of H2M cleanup documented the excavation of two drywells and associated contaminated soil (See TRC Environmental Consultants Report). Results of screening soil for volatile contamination in the area previously occupied by the chemical tanks indicated no contaminated soil in these areas. These results were forwarded to the New York State Department of Environmental Conservation (DEC). See letter to the DEC from Shea & Gould, along with head-space measurements by H2M, indicating no remaining contamination from the chemical tanks.

Subsurface Investigation by TRC: "Environmental Investigation of Subsurface Conditions", (1988)

TRC Environmental Consultants (TRC) was retained by United Parcel Service (UPS) to assess potential groundwater contamination at the site prior to UPS's lease. To meet this objective, TRC installed one (1) downgradient monitoring well and six (6) monitoring wells within the immediate vicinity of the underground fuel oil USTs, the former chemical USTs, and the dry wells north of the building. In addition, TRC sampled blue-stained soil from excavated areas formerly occupied by drywells and the northeast corner of the building. Groundwater samples were analyzed for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), total petroleum hydrocarbons, and RCRA metals. Soil samples were analyzed for VOCs and RCRA metals.

The significant findings of TRC's report were:

- No VOCs were found in blue-stained soil from areas near the drywells removed during Knomark's cleanup of the site.
- Solvents were found in all but one of the wells. TRC attributed the groundwater contamination to past usage of the property. However, the highest levels of VOCs were found in a well at the upgradient end of the site, and further testing indicated an off-site source of solvent contamination (See Roux, 1990 Report).
- All drywells and soil contaminated by solvents were excavated from the property.

Site Cleanup by Roux Associates: "Results of Building Decontamination", (1989)

The property owner retained Roux Associates to complete the site cleanup. Roux oversaw the decontamination of the building, which was performed by O.H. Materials, and documented this cleanup in its report dated March 21, 1989. A total of 25 concrete chip samples from the first floor and 15 concrete chip samples from the second floor were collected and analyzed for EP Toxicity for metals using EPA method 1310.

Significant findings of Roux Associates Report were:

- All floors and walls of the second floor and production areas of the first floor underwent the following surficial cleanup,
  a. power washing,
  b. removal of chemically deteriorated concrete,
  c. collection of any standing water for off-site disposal,
  d. sandblasting of cleaned surfaces,
  e. confirmatory concrete chip sampling after completion of surficial cleaning, and
  f. epoxy coating of cleaned surfaces.
- Laboratory results indicated that metal levels were 10 percent or less of the Toxic Characteristic Leaching Procedure (TCLP) standards,
- Building decontamination resulted in the accumulation of 60 cubic yards of hazardous waste, which was incinerated off-site as per applicable regulations.

Removal of Underground Fuel Oil Tanks by Roux Associates: "Removal of Underground Fuel Oil Tanks" (1989)

Roux Associates was retained by the building owner to oversee the removal of two underground fuel oil tanks (a 10,000-gallon and a 20,000-gallon tank). The 10,000-gallon tank had stored number two fuel oil and the 20,000-gallon tanks had stored number four fuel oil. The tanks were being removed because the new tenant, United Parcel Service, was converting the heating system to natural gas.

Significant findings of Roux's report were:

- The tanks had been tightness tested prior to removal, and after repairs to the feed line of the 10,000 gallon UST, both tanks passed the test,
- Soil borings in the UST areas showed petroleum contaminated soil at 8-10 feet within the vicinity of the repaired feed line, and
- The NYDEC representative, Randy Austin, was present during the removal of the tanks, and directed the removal of 10 cubic yards of petroleum contaminated soil along the previously repaired feeder line.

Subsurface Investigation by Roux Associates, "Evaluation of Soil and Ground-water Quality" (1989)

Roux performed a comprehensive soil and groundwater sampling program on behalf of the property owner in response to TRC's report that the site had impacted groundwater conditions. The study included installation of 18 monitoring wells and 20 soil borings. Groundwater samples were collected from both the upper glacial unit and the Magothy Formation. These two separate aquifers were screened at four depth intervals: shallow upper glacial unit (18-28 feet below grade), deep upper glacial unit (50-60 feet), Magothy (90-100 feet), and deep Magothy (130-140 feet).

Significant findings of Roux's 1989 study were:

- No significant contamination was detected in soil above the groundwater table.
- Groundwater flow in the shallow and intermediate aquifers is to the southeast. Groundwater flow in the deep aquifer is to the southwest.
- Prior site usage had caused a limited impact to groundwater conditions on the property, and was mainly attributed to releases that had occurred in the former drum storage area outside the building.

Ground Water Sampling Report by Roux Associates: "Results of the April 1990 Groundwater Sampling" (1990)

Roux resampled all groundwater monitoring wells in response to a meeting between the property owner and the DEC. New wells were installed to replace damaged existing wells. A total of 22 on-site monitoring wells were sampled.

Significant findings of Roux's 1990 groundwater study were:

- Groundwater contamination on the site was attributed to an off-site source. Highest levels of solvents were detected in the groundwater wells at the upgradient end of the property, which is to the north.
- Roux concluded that no further action was warranted for the site since an off-site source was responsible for the groundwater contamination.

Tank Closure Report by Leggette, Brashears & Graham, Inc.: "Underground Storage Tank Closure" (1998)

UPS retained Leggette, Brashears & Graham Inc. (LBG) to conduct environmental monitoring during the removal of its petroleum USTs and aboveground storage tanks (ASTs). The closure activities included the removal of four 4,000-gallon gasoline USTs, two dispenser islands and associated piping, and removal of two 275 gallon ASTs used for the storage of anti-freeze and used-oil.

Significant findings of LBG's report were:

- A visual inspection of the gasoline USTs showed that the tanks were in excellent condition,
- Post-excavation sampling results from the gasoline USTs areas indicated no impact to surrounding soil conditions,
- Post-excavation sampling results from the dispenser islands and associated piping indicated no impact to surrounding soil conditions, and
- A visual inspection of the two 275-gallon ASTs showed that the tanks to be in excellent condition.

Phase II Study by Malcolm Pirnie Inc.: Analytical Results Only (1998)

Malcolm Pirnie performed soil and groundwater sampling on behalf of a prospective buyer. The sampling consisted of collecting and analyzing 14 soil samples and resampling groundwater from existing wells.

Significant findings of Malcolm Pirnie's investigation were:

- No solvents were detected in any of the soil samples,
- No pesticides, semivolatile organic compounds (SVOCs) or polychlorinated biphenyls (PCBs) were detected in the groundwater wells, and
- Low levels of solvents were detected in the existing wells. They were similar to the levels detected by Roux in its 1990 groundwater sampling.

Dry well sampling cleanup of drywells by Malcolm Pirnie/Corrective Action by Eder Associates: Letter Report by Eder (1998)

Malcolm Pirnie and Eder sampled the sediment found inside the current on-site drywells. Analytical results identified no VOCs in the samples. Eder also removed the drywell sediment and disposed of it as a petroleum-contaminated waste.

Subsurface Investigation by AKRF Inc.: Phase II Environmental Assessment (1999)

Forest City Ratner Companies, a prospective purchaser, retained AKRF to implement a comprehensive soil and groundwater investigation as well as to sample building materials for asbestos. The overall objectives of the study were:

1. Confirm the current direction of groundwater flow and groundwater quality,
2. Sample soil and groundwater underneath the building since no previous testing had evaluated subsurface conditions at this location,
3. Sample soil and groundwater in the areas of the former chemical tanks and dry wells to verify that these areas of environmental concern had been remediated,
4. Perform an asbestos survey to identify, locate and quantify asbestos-containing

building materials.

AKRF sampled all 18 existing monitoring wells, collected 8 soil samples and 6 groundwater samples under the building, and collected 8 soil samples from the former locations of chemical USTs and drywells.

Significant findings of AKRF's Phase II Environmental Assessment were:

- Laboratory analysis showed only trace amounts of VOCs in the soil. The levels detected were well below DEC recommended cleanup objectives for soil at inactive hazardous waste sites and DEC guidance values for petroleum spills (Stars Memorandum #1). Thus, past remedial actions, as documented in prior studies, were effective in removing solvent and gasoline contamination from the vadose zone.

- Solvent levels, in particular tetrachloroethene, exceeded DEC Class GA water quality standards at most groundwater sampling locations in the shallow upper glacial aquifer. The highest tetrachloroethene levels were found downgradient or within the immediate vicinity of former chemical drum storage area, drywells (removed), and chemical storage tanks. This finding suggests that prior site usage contributed to the impact to the site's groundwater quality. The presence of tetrachloroethene in upgradient wells suggests that an off-site source is also present.

- Solvent levels in the deep upper glacial aquifer did not exceed DEC class GA standards. Historic levels of tetrachloroethene showed a noticeable decrease in all wells installed in the deep upper glacial aquifer. The higher levels of solvents detected in the Magothy wells most likely reflect a regional groundwater problem. The former Jamaica Water Supply Company operated wells in the Magothy throughout southeastern Queens, New York. As of 1990, groundwater quality data showed that nearly half of their Magothy wells had solvent levels greater than 5 ppb or pumped to a VOC removal treatment plant. The current owner of the Jamaica Water Supply Company wells, the NYCDEP, reports a similar widespread contamination of the Magothy in the area at this time. Furthermore, groundwater sampling on the site showed the presence of tetrachloroethene at the upgradient Magothy well MW-14 (well is located at the north end of the site). This finding lends further support that the PCE detected in the Magothy wells reflects the regional groundwater quality.

- The asbestos survey identified no asbestos-containing materials (ACMs) within the interior and exterior of the building.

Supplemental Soil/Groundwater Sampling by AKRF Inc.: Results Only (1999)

At the time of AKRF's Phase II investigation, AKRF was unable to locate monitoring well MW-12 installed by Roux Associates at the northwest corner of the site is no longer

present. Consequently, AKRF installed a replacement well in the shallow upper glacial aquifer at this location. The purpose of installing this well was to determine groundwater conditions at the upgradient end of the site, to verify the groundwater flow direction to the southeast, and to identify any potential on-site sources of contamination at this location. During the installation of the replacement well, MW-12 was found. Consequently, the replacement well, MW-18S, was offset to the south in order to optimize site coverage.

During installation of the monitoring well, soil samples were collected every two feet until the groundwater table. Based upon field measurements or observations, soil samples exhibiting evidence of contamination were submitted to a state certified laboratory and analyzed for TCL-VOCs. Sampling and analytical methodology complied with applicable DEC and New York State Department of Health (DOH) protocol.

Significant findings of AKRF's supplemental testing were:

- Soil sampling found no tetrachloroethene in the soil above the groundwater at MW-18S (Results are included in Appendix C).

Supplemental Indoor Air Quality Study by AKRF Inc.:

AKRF performed an indoor air monitoring survey of the existing on-site building located at 132-20 Merrick Boulevard in the Springfield Gardens neighborhood of Queens, New York. The purpose of this air sampling was to determine whether nearby groundwater contamination by tetrachloroethene (PCE) had impacted the ambient atmosphere within the on-site building. All sampling and analysis was conducted in accordance with New York State Department of Health protocol.

Significant findings of AKRF's supplemental indoor air quality study were:

- Levels of airborne volatile organic compounds inside the building were comparable to background levels measured outside the building and to levels measured at the NYSDEC monitoring station in Brooklyn, which is considered typical of urban background levels.
- All PCE levels were less than 1 part per billion (Results are included in Appendix D).

1.5 Evaluation of Environmental Contamination

Extensive sampling has occurred on the project site. Figure 3 shows all soil sampling locations except those by Malcolm Pirnie, which are unavailable, and by Leggette, Brashears & Graham, Inc., which correspond only to the former gasoline tank area. Figure 4 shows all groundwater sampling locations.

LONG ISLAND RAILROAD TRACKS

MERRICK BLVD.

137 AVENUE

BELKNAP STREET

134 AVE.

135 AVE.

136 AVE.

GP-1 GP-2 GP-3 GP-4 GP-5 GP-6 GP-7 GP-8 GP-9 GP-10 GP-11 GP-12 GP-13 GP-14 GP-15 GP-16 GP-17

SB-1 SB-2 SB-3 SB-4 SB-5 SB-6 SB-7 SB-8 SB-9 SB-10 SB-11 SB-12 SB-13 SB-14 SB-15 SB-16 SB-18 SB-19 SB-20

0' 40' 80' 160'

SCALE: 1"=80'

Legend:

- BUILDING LINE
- GEOPROBE SOIL SAMPLING BY AKRF
- SOIL SAMPLING BY ROUX ASSOCIATES
- SOIL SAMPLING BY TRC
- APPROXIMATE LOCATION OF FORMER CATCH BASIN
- LOCATION OF FORMER DRYWELLS USED BY KNOMARK
- FORMER PETROLEUM UNDERGROUND STORAGE TANK
- FORMER CHEMICAL UNDERGROUND STORAGE TANK
- SUSPECTED APPROXIMATE LOCATION OF FORMER DRUM STORAGE AREA

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132-20 MERRICK BOULEVARD
SPRINGFIELD GARDENS, NEW YORK

SOIL SAMPLING LOCATIONS

DATE 8/25/99

SCALE 1"=80'

PROJECT No. 30079

FIGURE No. 3

LONG ISLAND RAILROAD TRACKS

MERRICK BLVD.

137 AVENUE

MW-4
MW-15 PCE 448 ppb
MW-15 PCE 870 ppb
MW-5S PCE 710 ppb
MW-6 PCE 1120 ppb
MW-7S
MW-7I
PCE 74
MW-7M
GP-6 PCE 4 ppb
GP-4 PCE 8 ppb
GP-5 PCE 8 ppb
MW-1
MW-14S PCE 92 ppb
MW-14I
MW-14M
MW-14D
MW-3 PCE 240 ppb
GP-9 PCE 290 ppb
MW-2 PCE 43 ppb
GP-2 PCE ND ppb
MW-7I
MW-7 PCE ND ppb
GP-8 PCE ND ppb
MW-13 PCE 6 ppb
MW-18S
MW-12S
MW-10
MW-9
MW-11 PCE 2 ppb

BELKNAP STREET

134 AVE.
135 AVE.
136 AVE.

0' 40' 80' 160'
SCALE: 1"=80'

Legend:

- APPROXIMATE EXTENT OF CONTAMINATION IN SHALLOW UPPER GLACIAL UNIT
- BUILDING LINE
- SHALLOW UPPER GLACIAL — Monitoring wells (shallow) MW-# (NO LETTERS) OR (LETTER S)
- DEEP UPPER GLACIAL — MW-# (W/ LETTER I) Geoprobe Sample Location
- MAGOTHY AQUIFER — MW-# (W/ LETTER M OR D)
- WELL NOT FOUND

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132-20 MERRICK BOULEVARD
SPRINGFIELD GARDENS, NEW YORK

GROUNDWATER SAMPLING LOCATIONS

DATE 8/25/99
SCALE 1"=80'
PROJECT No. 30079
FIGURE No. 4

Based upon the results of this extensive soil and groundwater testing, the tetrachloroethene levels in the shallow upper glacial unit represent the only environmental contamination requiring remediation. As explained previously, the low levels of solvent contamination in the deeper Magothy can be attributed to off-site sources.

An evaluation of other environmental issues is presented below.

Contaminated soil above the water table

Soil sampling at over 40 locations (3 by TRC, 20 by Roux Associates, 16 by AKRF Inc., and 7 by Malcolm Pirnie) showed no elevated levels of VOCs in the soil. Soil sampling by TRC Consultants and Roux Associates at over 20 locations (3 by TRC, 20 by Roux Associates) detected no elevated levels of metals in the soil.

VOC Levels in the soil gas

Subsurface investigations by Roux Associates (1989) and AKRF (1999) evaluated VOC levels in the soil gas. In both studies, the method used to measure VOC levels in the soil gas consisted of collecting soil samples, then taking head-space readings with appropriate field instrumentation (organic vapor meter). Headspace readings showed no elevated levels of VOCs in the soil gas due to solvent contamination. In nearly all borings, VOC levels in the soil gas ranged from nondetected to ten parts per million (Note: elevated VOC levels were found within the immediate vicinity of a former fuel oil tank. As documented by Roux Associates Tank Closure Report, the petroleum impacted soil was removed from the site.)

This finding coincides with the soil sampling results, which showed VOC levels in the soil to be well below New York State cleanup objectives, as per Technical Guidance Memorandum 4046 (See Table 2 in AKRF Report and Table 10 of Roux 1989 report), and documentation indicating the removal of contaminated soil above the groundwater table. Other than installation of subsurface utilities during site development, no significant disturbance of the site soils is planned.

PCBs:

The original Knomark facility potentially had PCB-containing capacitors and step-up transformers inside the building (See Roux Environmental Audit Report). This equipment was removed prior to tenant occupancy by UPS. All stained floor and wall surfaces were removed during building decontamination activities (See Roux Environmental Audit Report). AKRF's soil borings revealed no oil-stained soil beneath the building slab. Groundwater sampling by Malcolm Pirnie identified no PCBs in the wells tested.

Petroleum Bulk Storage Tanks:

All petroleum USTs and ASTs have been removed from the property. Post-excavation sampling results showed that the gasoline USTs and associated piping caused no impact to soil

conditions. Roux Associates documented that the DEC oversaw the removal of the 10,000- and 20,000-gallon fuel oil USTs and any petroleum contaminated soil.

Asbestos-containing materials (ACMs):

AKRF's asbestos survey identified no ACMs within the interior and exterior of the building. These findings coincide with a letter from Hygeia Inc., dated March 17, 1989, stating that ACMs have been removed from the building.

1.6 Further testing

As previously discussed, AKRF was unable to locate monitoring well MW-12 during our Phase II Investigation. Consequently, a replacement well, MW-18S, was installed in the shallow upper glacial aquifer at the northwest end of the site. In addition, an off-site well to the north of the project site, along Merrick Boulevard, will be installed. The purpose of sampling MW-18S, MW-12 and the new off-site well is to determine groundwater conditions at the upgradient end of the site, to verify the groundwater flow direction to the southeast, and to identify any potential on-site sources of contamination at this location. To accomplish this objective, MW-18S and the off-site well will be surveyed to the same benchmark as the other on-site wells, then depths to water levels of the wells in the shallow upper glacial aquifer will be measured. After purging of the wells, MW-12, MW-18S, and the off-site well will be sampled for Target Compound List Volatile Organic Compounds (TCL-VOCs). Sampling and analytical methodology will comply with applicable DEC and New York State Department of Health (DOH) protocol.

Other than sampling of MW-12, MW-18S and an off-site monitoring well and sampling required for the design of the groundwater remediation system, this remedial work plan proposes no further testing to characterize the contamination on the project site. Extensive soil and groundwater sampling has been performed throughout the project site, and samples were analyzed for contaminants of concern based upon detailed knowledge of the past industrial usage on the site (See Roux Associates Environmental Audit). The groundwater contamination found at the site reflects the past usage of the site as well as possible off-site sources.

Any new data shall meet the Department's Quality Assurance/Quality Control (QA/QC) requirements, including a Data Usability Summary Report (DUSR).

1.7 On-site and Off-site Exposure Assessment

Contamination Source:

The groundwater of the shallow upper glacial unit (18-28 feet) has levels of tetrachloroethene that exceed DEC Class GA water quality standards. Extensive sampling has discovered no other on-site contamination sources. The deeper Magothy Unit also contains tetra-chloroethene levels exceeding GA standards; however, the contamination of this deeper aquifer can be attributed to off-site sources and generally reflects regional groundwater quality.

Pathway/Receptor Analysis:

There are no on-site and no known off-site usages of the shallow upper glacial unit within a 1-mile radius of the project site. The nearest production wells rely upon the Magothy formation as their source of water. According to the DEP, quarterly groundwater sampling results show that these wells currently meet DEC Class GA water quality standards.

Other pathways than direct water consumption would be volatile organic compounds (VOCs) off-gassing from the groundwater and direct contact or inhalation of VOCs during dewatering for construction. To evaluate the potential for VOCs off-gassing from the groundwater, the indoor air of the building was tested for volatile organic compounds. The testing was performed in accordance with the sampling and analytical procedures established by the New York State Department of Health. Test results indicated that all Tetrachloroethene levels within the indoor air were less than one part per billion (ppb) and were comparable to background levels outside the building and to levels at the nearest NYSDEC monitoring station in Brooklyn, New York. Thus, off-gassing of VOCs from the groundwater would unlikely pose a significant risk to future building occupants.

Similarly, no impact from this pathway would be expected to off-site receptors since air testing on the project site, where the highest levels of PCE in the groundwater were present, showed no impact to receptors. Nonetheless, a quantitative exposure assessment was performed to evaluate the impact of VOC off-gassing upon the nearest potential, residential off-site receptor. The assessment is presented in Appendix B and is based upon the Emergency Standard Guide for Risk-Based Corrective Action (RBCA) issued by the American Society for Testing Material (ASTM). The analysis indicates that no such impacts would occur from the levels of VOCs in the shallow upper glacial unit. Direct contact or inhalation of VOCs during construction will be avoided by implementation of the work plan's health & safety plan.

2. OVERVIEW OF REMEDIATION PLAN

Groundwater on portions of the site has been found to be contaminated by tetrachloroethene (PCE). As shown in Figure 4, the shallow upper glacial unit has PCE levels exceeding Class GA standards in the northeast and east areas of the project side building. These areas correspond approximately to the location of a former chemical bulk storage tank system and drum storage area. The proposed remediation will consist of an air sparging system working in conjunction with an soil vapor extraction (SVE) system to remove PCE from the saturated zone (See Figure 5).

Construction of the proposed project will not conflict with the installation and operation of the remediation system.

The project organization for this project will be:

Project Manager	William Silveri
Project Engineer	Colleen Birnstiel
Quality Assurance Officer	Andrew Rudko
Field Manager	Mohamed Ahmed

All investigation and remediation operations on the site will be performed in accordance with the project Health and Safety Plan (Appendix A).

MERRICK BLVD.

134 AVE.

BELKNAP STREET

135 AVE.

136 AVE.

137 AVENUE

LONG ISLAND RAILROAD TRACKS

SECTION OF BUILDING TO BE REMOVED.

SCALE: 1"=80'

0 40' 80' 160'

Legend:

- BUILDING LINE
- EQUIPMENT ENCLOSURE BLDG
- AIR SPARGING WELL
- SOIL VAPOR EXTRACTION WELL

FIGURE No. 5	PROJECT No. 30079	SCALE 1"=80'	DATE 8/25/99	132-20 MERRICK BOULEVARD SPRINGFIELD GARDENS, NEW YORK CONCEPTUAL DESIGN - REMEDIATION WELL LOCATIONS

AKRF, Inc.
Environmental Consultants
117 East 29th Street New York, N.Y. 10016

3. GROUNDWATER REMEDIATION PLAN

3.1 Pilot Study

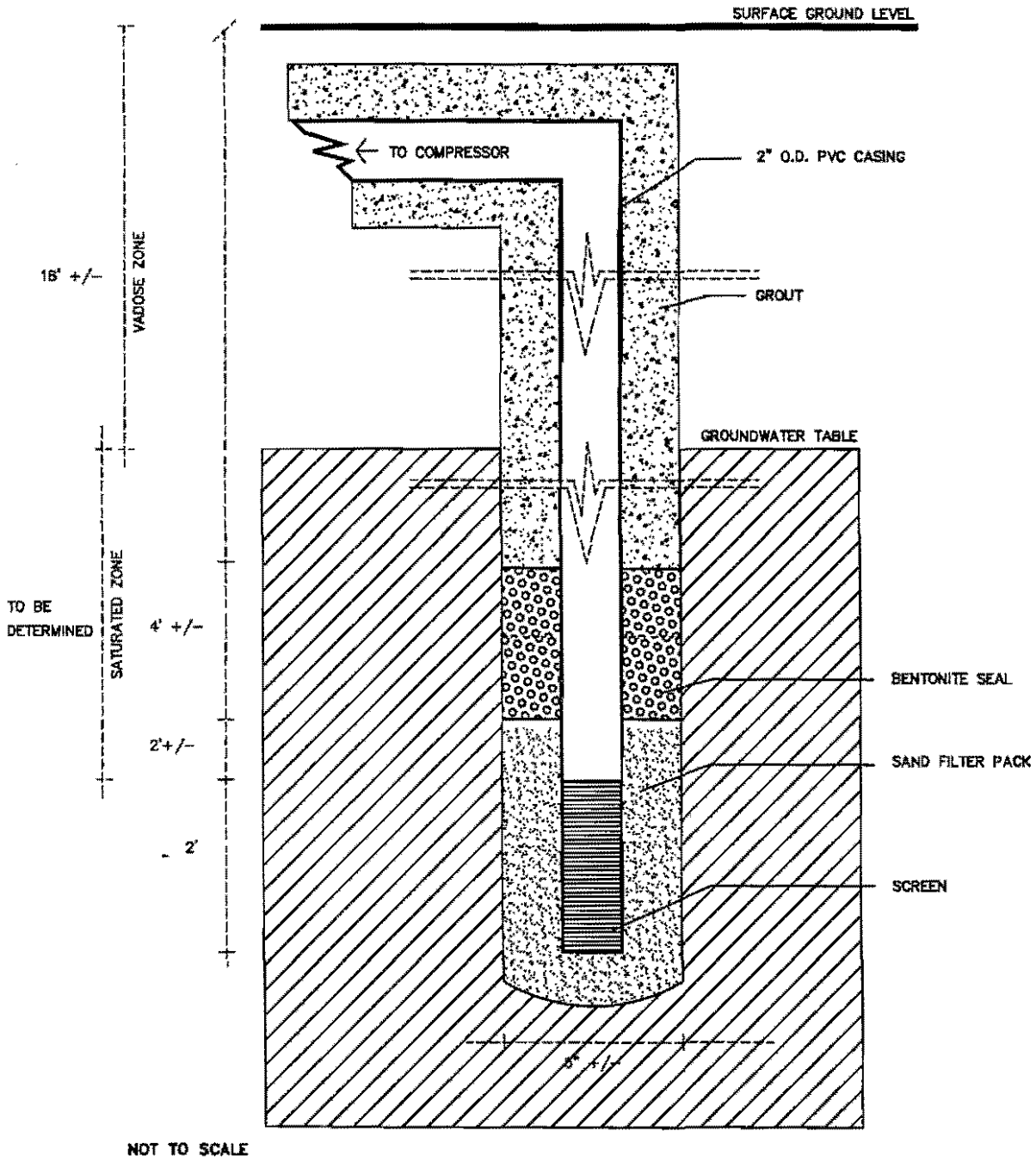
The groundwater remediation will be performed using an in situ air sparging system which will operate simultaneously with an SVE system. Off-gas from the SVE system will be treated with an activated carbon adsorption system. Pilot tests for both systems will be conducted prior to the final design and installation of the full-scale system. The goals of the pilot study are to determine the feasibility of the SVE and air sparging approach and to estimate parameters needed for system design, including soil permeability, zone of influence for the SVE and air sparging wells, anticipated vapor concentrations in the off-gas, vacuum and flow rates necessary to adequately affect the subsurface soil, and the depth at which the air sparging well screens will be located.

In the SVE pilot test, soil gas will be extracted from an SVE well while vacuum measurements are made at monitoring wells that will be located at varying distances and directions from the extraction well. The blower flow rate and vacuum will be varied to determine its effect on pressures in the soil by measuring the vacuum response at the monitoring wells.

Similarly, the air sparging pilot test will consist of injecting air into the groundwater from an air sparging well, and taking pressure measurements at monitoring wells that will be installed at varying distances and directions from the air sparging well. The blower flow rate will be varied to determine its effect on pressures in the soil by measuring the pressure response at the monitoring wells. In addition, levels of dissolved oxygen and groundwater elevations will be measured at existing monitoring wells MW-3, MW-4 and MW-14S to determine the air sparging system's zone of influence.

The pilot test for the SVE system will occur first, followed by the test for the air sparging test. The SVE pilot test will then be repeated to remove any volatile contaminants from the vadose zone created by the air sparging test. Diagrams of the SVE and air sparging wells are shown in Figures 6 and 7, respectively. Figure 8 presents a plan view of the pilot tests showing the location of the air sparging and SVE wells with monitoring points spaced approximately 15, 30, 45 and 60 feet in one direction and 10 feet in other directions from the air sparging and extraction wells. A pressure gauge will be attached to the top of each monitoring point.

The well used for the SVE pilot test will consist of two-inch O.D. PVC casing with a five-foot screen. The bottom of the screen will be placed about five feet above the groundwater table. The well used for the air sparging pilot test constructed of two-inch O.D. PVC casing with a two-foot screen. The depth of the screen will be based upon depth of contamination determined by soil borings advanced into the shallow upper glacial unit (see description below). The monitoring wells will consist of one-inch or two-inch PVC pipes, with appropriate screens. The pilot tests will be conducted using a regenerative blower driven by a 5 HP motor, with power supplied by a generator or electricity from the on-site building. Two-inch diameter vacuum hose or PVC pipe will be used to connect the blower to the extraction and injection wells, with a moisture trap installed between



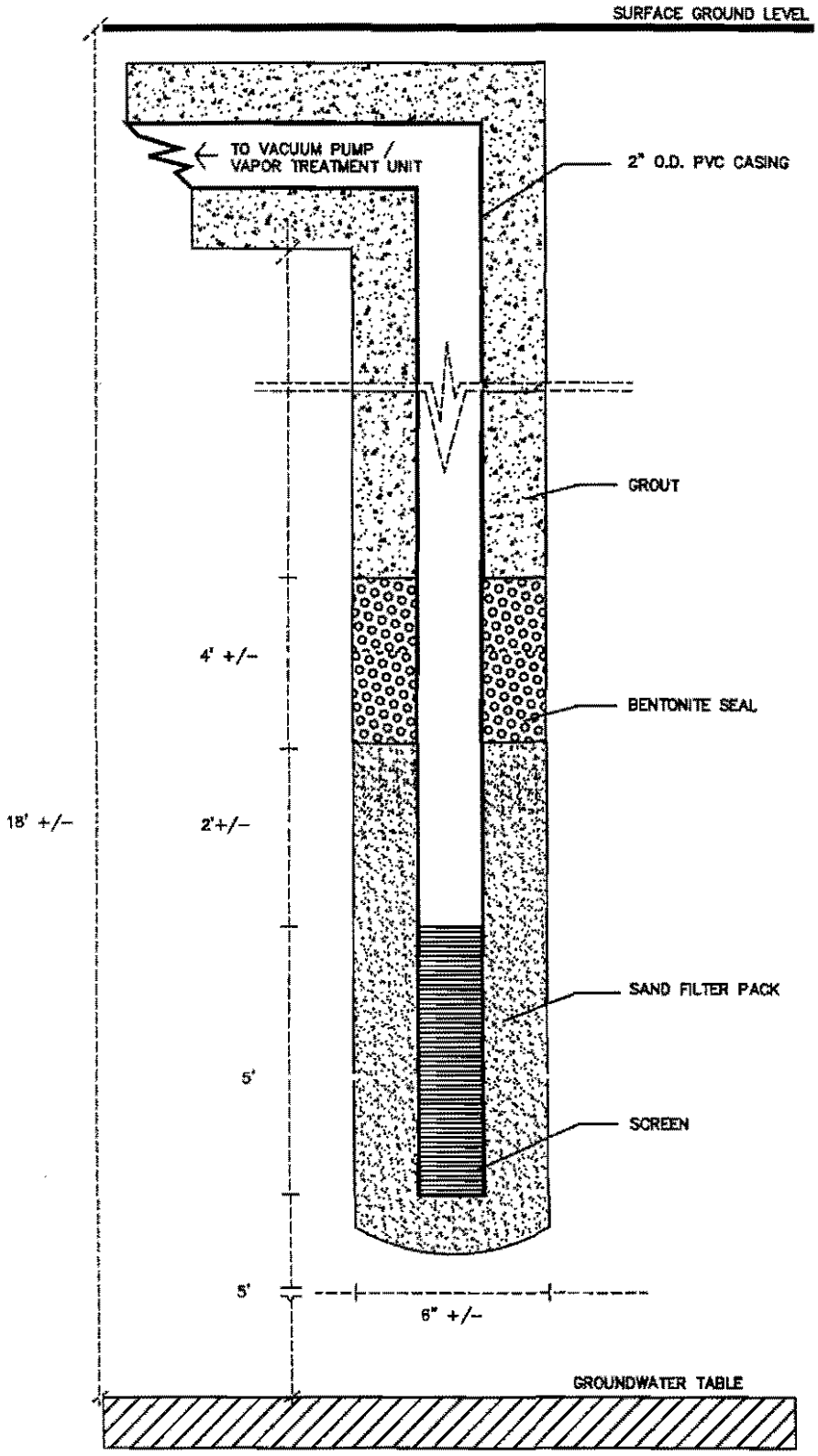
NOT TO SCALE

132-20 MERRICK BOULEVARD
SPRINGFIELD GARDENS, NEW YORK

AIR SPARGING WELL

AKRF, Inc.
Environmental Consultants
117 East 29 Street New York, N.Y. 10016

DATE 10/18/99
PROJECT No. 30079
FIGURE No. 6



132-20 MERRICK BOULEVARD
SPRINGFIELD GARDENS, NEW YORK

SOIL VAPOR EXTRACTION WELL

AKRF, Inc.
Environmental Consultants
117 East 29 Street New York, N.Y. 10016

DATE 10/18/99
PROJECT No. 30079
FIGURE No. 7

the extraction point and the blower. The system will be installed so that it is air-tight. Output from the blower will be routed to an activated carbon cannister.

The PCE concentrations in the soil gas being extracted by the SVE system will be measured both before and after entrance into the carbon cannister. These concentrations will be necessary to size the carbon system in the full-scale design. Concentrations of PCE in the blower output before the activate carbon collector will be determined by collecting and analyzing bag samples and utilizing a photoionization detector (PID) calibrated for PCE. These samples will be collected during various phase of the pilot test: shortly after start-up of the SVE test, following removal of vapors in the vadose zone and influence of the system has been established at nearby monitoring wells, and after operation of the air sparging pilot test following removal of vapors in the vadose zone.

In order to determine the depth of penetration of PCE below the groundwater surface, soil borings will be advanced at locations within the area of contamination. This sampling will occur prior to the SVE/air sparging pilot test. Soil sampling will be performed at two-foot intervals starting just above the groundwater surface. Soil samples will be obtained by a steel, 24-inch long, 2-inch in diameter split-spoon sampler that will be driven through the subsurface soils ahead of a hollow-stem (4.25-inch inside diameter) auger that bores into the soil to just above the desired sampling depth. Each sample will be field-screened by headspace analysis using a photoionization detector calibrated to PCE. Sampling will continue until two successive samples show headspace readings at background levels.

All soil samples will be analyzed for volatile organic compounds in accordance with NYSDEC ASP Category B 95-1. All samples will be containerized and stored in accordance with NYSDEC sampling protocols. Each container will be properly sealed, labeled, and placed in a refrigeration unit for transport to the laboratory. A record of each sample, including notation of any odors, color, or sample matrix, will be kept in the sampler's field log book. A chain of custody will be maintained throughout the field sampling, transport of samples to the laboratory, and during lab analysis.

3.2 Conceptual Design

Based on previous groundwater and soil sampling and soil boring logs performed on the site, the soil permeability and the aerial extent of plume contamination in the groundwater was approximated. From this information, a preliminary layout for the SVE and air sparging system was prepared and is shown on Figure 5. The results from the pilot study will be used to determine the actual number and spacing of SVE and air sparging wells, the location of the wells, the size of the pumps and motors, and the type and size of the off-gas treatment. The appropriate vacuum and vapor treatment technologies can then be selected, and a conceptual layout design and specifications for the SVE system and air sparging system can then be prepared. A pilot test report and draft/conceptual design will be submitted to the DEC prior to the project going out to bid.

In this system air will be pumped into the saturated zone through a series of air injection

wells in the approximate locations as shown on the plan. Dissolved, sorbed, and free phase PCE will volatilize and be transported by the buoyancy effect into the vadose zone. Vapor extraction wells, also in the approximate locations as shown on the plan, will collect the vapors for treatment.

At this time, it is anticipated that the SVE wells will be constructed of two-inch O.D. PVC casing with a five-foot screen. The bottom of the screen will be placed about five feet above the groundwater table to accommodate possible variations in the groundwater level, including the possible rise in the groundwater level resulting from reducing the pressure in the vadose zone. To prevent atmospheric air from leaking into the well, the area above the filter pack will be sealed with about four feet of bentonite, and then grouted up to the ground surface.

It is anticipated that the air injection wells will be constructed of two-inch O.D. PVC casing with a two-foot screen. The depth of the screen will be determined from the pilot test since it will include soil sampling in the saturated zone to determine the vertical profile of PCE contamination. The screen will be located at a depth sufficient to provide a maximum dispersion of air in the contaminated area. To prevent injected air from "short circuiting" up the well casing, the area above the filter pack will be sealed with about four feet of bentonite, and then grouted up to the ground surface. A spacing of 30 feet between injection wells is planned. See Figure 6 for a cross-sectional view of an air sparging well.

3.3 Preparation of Specifications and Bid Package

AKRF will develop a set of specifications to be combined with the conceptual design plan. The design plan will contain the number and location of wells, the piping distribution layout, the vacuum and air sparging system arrangement and footprints, location and specifications for available utilities such as electric power, lighting, and telephone if necessary.

Generic specifications for material categories such as piping, valves, instrumentation and controls, wiring, motors, pumps, off-gas treatment, moisture separator, electrical power, etc. will be written and attached to a bid package. The bid packages will be sent to vendors for quotations. Vendors will furnish their bids with engineering drawings that will show general arrangement of equipment including description, size and location of all connections and footprints, a bill of materials, list of recommended spare parts, electrical requirements, diagram of major process components, interconnecting piping, and instrumentation and controls, dimensions of all components. Also, vendors will include costs of the parts and installation/delivery charges. Operation and maintenance manuals shall also be provided.

3.4 Final Design Plan

After the vendor packages are received, AKRF will incorporate the necessary changes to complete the final design. The final Design Plan will contain the following information:

1. Detailed information regarding the pilot test
2. Engineering drawings and details
3. Finalized Engineering Specifications
4. Operation and Maintenance Plan for the system
5. Monitoring and recordkeeping
6. Project Schedule and Organization

The Design Plan will be reviewed, signed, and sealed by a New York Registered Professional Engineer. AKRF will meet with the NYSDEC to present and discuss the Design Plan. NYSDEC's review comments will be incorporated into the Plan.

3.5 System Installation, Start-up and Operation

After a vendor is selected and a contractor is selected for the installation and construction of the system, AKRF will oversee the installation, start-up, and operation of the remediation system. Conformance to specifications and performance criteria will be confirmed by AKRF. After installation is complete, the system shall be leak tested and any leaks will be repaired by the contractor. During start-up, the vendor and contractor will perform tests and train personnel on the operation and maintenance of the system. As-built drawings will be prepared.

3.6 Remediation Groundwater Monitoring

During the operation of the groundwater remediation system, groundwater monitoring will be performed in the existing upper glacial aquifer wells. Sampling will be performed at 30-day intervals after the start-up of the remediation system. All groundwater samples will be analyzed for volatile organic compounds (VOCs) by NYSDEC ASP Method 95-1 by a New York State Department of Health ELAP-certified laboratory. A report will be submitted to DEC every 30 days giving the results of the groundwater analyses and a report on the operation of the remediation system. If the month-to-month sampling results stabilize, DEC will be asked for permission to extend the sampling interval.

The remediation system will operate in a manner that maximizes the contaminant mass removal rate. This would include such actions as increasing the air injection volumes to areas where

lower contaminant mass removal rates are occurring. The remediation system will continue until asymptotic contaminant levels are reached in the groundwater (i.e. PCE levels in extracted air more than 90 percent below initial concentrations). At that point, the vapor extraction wells will be cleaned out, and the system will be reactivated. If monitoring at the end of 30 days indicates no increase in recovery, then the system will be "pulsed" by turning it off for two weeks and then back on for two weeks. Pulsing will be continued until asymptotic conditions are reached, and for a minimum of two four-week cycles. At that point, operation of the system will be terminated and post-remediation groundwater monitoring will begin as described below.

3.7 Post-Remediation Groundwater Monitoring

Groundwater will be sampled at all existing monitoring wells on the site immediately following the suspension of operations of the groundwater remediation system (as described in Section 3.6 above), and repeated on a semiannual basis for one and a half years. All groundwater samples will be analyzed for volatile organic compounds in accordance with NYSDEC ASP Category B 95-1.

If the concentrations of contaminants in the soil and groundwater can be demonstrated to be sufficiently protective of human health and the environment given the current and potential uses of the aquifer, then the remediation work will be concluded. This finding will be based on a demonstration that PCE levels at the downgradient boundary of the property approximate those in upgradient monitoring wells. If the PCE levels achieved after remediation are not sufficient, then a plan for further monitoring and/or resumption and possible expansion of the operation of the remediation system will be submitted.

3.8 Progress Reports

Progress reports will be submitted to the NYSDEC on a monthly basis. Report items will include:

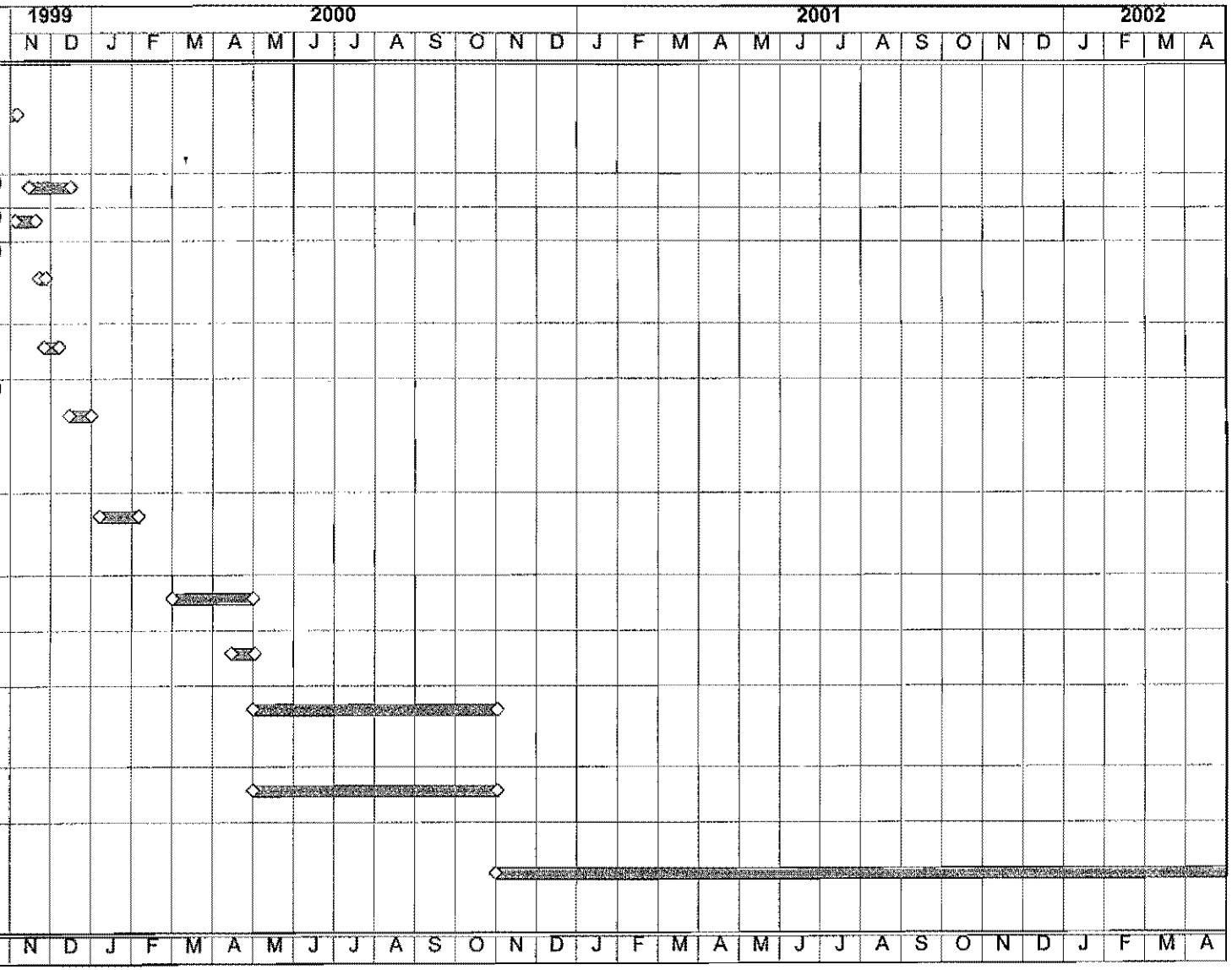
1. A narrative section describing all remedial activities on site
2. A copy of the daily activity log book
3. Copies of the laboratory data for all sample analyses
4. Hazardous waste material tracking and manifests
5. Non-hazardous waste material tracking and bills-of-lading
6. Tracking of mass removal of contaminants, both unit removal in a given time and cumulative.

3.9 Schedule

A proposed schedule for the remediation program is presented in Figure 9.

Figure 9: Proposed Remediation Schedule, 132-20 Merrick Boulevard, Queens, NY

Activity Name	Start Date	Finish Date
DEC review of voluntary cleanup agreement with work plan	10/25/99	11/5/99
Public comments	11/15/99	12/15/99
Pilot test	11/5/99	11/19/99
Pilot test/ remediation design report	11/22/99	11/26/99
DEC review of pilot test report	11/26/99	12/6/99
Final design specifications, as per DEC\public comments	12/15/99	12/31/99
Bidding/selection of remediation contractor	1/7/00	2/5/00
Installation of remediation system	3/1/00	4/30/00
Start up of remediation system	4/15/00	5/1/00
Operation of remediation system (see note 1)	5/1/00	11/1/00
Monthly Progress reports to DEC	5/1/00	11/1/00
Post remediation groundwater monitoring (semiannual basis)	11/1/00	5/19/02



Note 1: Actual duration will depend upon performance of remediation system.

Appendix A

Health & Safety Plan

TABLE OF CONTENTS

Page Number

1. INTRODUCTION

The site is located site is located at 132-20 Merrick Boulevard in Jamaica, Queens. The project site is bounded to north by Merrick Boulevard, to south by 137th Avenue, to the east by Belknap Street, and to the west by Long Island Railroad tracks.

Prior testing programs on the site have shown that Groundwater on portions of the site have been contaminated by tetrachloroethene (PCE). The shallow upper glacial unit (18-28 feet below the existing grade) has PCE levels exceeding Class GA standards at the northeast and east sides of the project side building. These areas approximately correspond to past spills and a former chemical bulk storage tank system.

The purpose of this Health and Safety Plan (HASP) is to protect field personnel and others during the implementation of the Remedial Work Plan. It is in conformance with the various Occupational Safety and Health Administration (OSHA) standards and other applicable regulations governing site investigation operations, and all AKRF, Inc. policies and procedures on health and safety. It has been prepared to establish practices and procedures to protect the health of AKRF personnel and others during implementation of all investigative and remedial work on the site.

2. HEALTH AND SAFETY GUIDELINES AND PROCEDURES

A. HAZARD EVALUATION

PCE levels ranging from non-detected to 870 parts per billion (ppb) were detected in the shallow upper glacial aquifer unit.

B. DESIGNATED PERSONNEL

AKRF will appoint one of its on-site personnel as the on-site Health and Safety Officer (HSO). This individual will be responsible for the implementation of the HASP. The HSO will have a 4-year college degree in occupational safety or a related science/engineering field, and 2 years of experience in implementation of air monitoring and hazardous materials sample programs. The HSO will have completed a 40-hour training course that meets OSHA requirements of 29 CFR Part 1910, Occupational Safety and Health Standards.

The HSO will be present on-site during the conduct of all field operations involving drilling or other subsurface disturbance, and will be responsible for all health and safety activities and the delegation of duties to the field crew. The HSO has stop-work authorization, which he/she will execute on his/her determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the HSO must be absent from the field, he/she will designate a replacement who is familiar with the health and safety plan, air monitoring, and protection equipment.

C. TRAINING

All those who enter the work area must recognize and understand the potential hazards to health and safety. All field personnel must attend a training program, whose purpose is to:

Make them aware of the potential hazards they may encounter;
Provide the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
Make them aware of the purpose and limitations of safety equipment; and
Ensure that they can safely avoid or escape from emergencies.

Each member of the field crew will be instructed in the above objectives before he/she goes onto the site. The HSO will be responsible for conducting the training program.

D. MEDICAL SURVEILLANCE PROCEDURE

All AKRF, Inc. and subcontractor personnel performing field work involving drilling or other subsurface disturbance at the site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). A physicians medical release for wok will be confirmed by the HSO before an employee can begin site activities. The medical examination will, at a minimum, be provided annually and upon termination of hazardous waste site work.

E. SITE WORK ZONES

During any activities involving drilling or other subsurface disturbance, the work area must be divided into various zones to prevent the spread of contamination, ensure that proper protective equipment is donned, and provide an area for decontamination.

The Exclusion Zone is defined as the area where PCE-contaminated materials are generated as the result of drilling, sampling, or similar activities. The Contamination Reduction Zone (CRZ) is the area where decontamination procedures take place and is located next to the Exclusion Zone. The Support Zone is the zone area where support-facilities-such as vehicles, a field phone, fire extinguisher, and first aid supplies-are located. The emergency staging area (part of the Support Zone) is the area where all workers on site would assemble in the event of an emergency. These zones shall be designated daily, depending on that day's activities. All field personnel will be informed of the location of these zones before work begins.

Control measures such as "Caution" tape and traffic cones will be placed around the perimeter of the work area when work is being done in the areas of concern to prevent entrance onto the area with exposed soil.

F. AIR MONITORING

An Organic Vapor Meter (OVM) will be used to perform air monitoring during all drilling activities and installation of the remediation system. The purpose of the air monitoring program is to avoid or minimize exposure of the field personnel and the public to potential environmental hazards in the soil and groundwater. Results of the air monitoring will be used to determine the appropriate response action, if needed. The OVM will be calibrated with isobutylene in accordance with the manufacturers recommendations.

Work Zone Air Monitoring

Real time air monitoring will be done, with the OVM, whenever drilling and well installation are being performed. Measurements will be taken prior to commencement of work and for at least 1 minute every 60 minutes during the work. These measurements will be made as close to the workers as practical and at the breathing height of the workers. The HSO shall set up the equipment and confirm that it is working properly. His/her designee may oversee the air measurements during the day. The initial measurement for the day will be performed before the start of work and will establish the background level for that day. The final measurement for the day will be performed after the end of work. The action levels and required responses are listed below.

ACTION LEVEL	RESPONSE ACTION
Less than 20 ppm above background	Continue work in Level D
Between 20 and 100 ppm above background	Upgrade to Level C Initiate perimeter air monitoring
More than 100 ppm above background*	Stop work. Resume work when source of vapors is abated and readings are less than 100 ppm above background

** OSHA's 8-hour time-weighted-average Permissible Exposure Limit (PEL) for PCE is 100 ppm*

Air Monitoring

During work, when air monitoring in the work zone indicates a need to conduct perimeter air monitoring, it will be performed as follows. Air quality will be monitored at two locations at the perimeter of the work area. One will be immediately upwind and the other will be downwind of the activity, half the distance between the perimeter of the work area and the closest potential public receptor (e.g., sidewalk, office worker etc.). Measurements will be taken for 1 minute every 60 minutes, with the OVM. The initial measurement will be performed when the action level listed above is triggered. Measurements will continue until the air monitoring in the work zone indicates that perimeter monitoring is no longer required, i.e., readings are less than 20 ppm above background in the work zone.

The action levels and required responses are listed below.

ACTION LEVEL	RESPONSE ACTION
Less than 10 ppm above background *	Continue work
More than 10 ppm above background	Stop work until source of vapors is abated and readings are less than 10 ppm above background

** The NYSDEC Short Term Guidance (SGC) concentration for PCE is 11.7 ppm*

Response Actions

AKRF will respond to the results of the air monitoring in accordance with the actions specified above. Compliance with the specified response action for the listed action levels will ensure the protection of the health and safety of AKRF personnel and others during site activities.

G. PERSONAL PROTECTION EQUIPMENT

The personal protection equipment required for various kinds of site investigation tasks are based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, Appendix B, "General Description and Discussion of the Levels of Protection and Protective Gear."

AKRF field personnel and other site personnel shall wear Level D personal protective equipment. During activities such as drilling, well installation, or sampling where is a chance of contact with contaminated materials modified Level D equipment will be worn. The protection will be upgraded to Level C if the results of the air monitoring indicates that Level C equipment is warranted.

Level D
Respiratory Protection: None
Protective Clothing: Coveralls, work shoes

Modified Level D
Respiratory Protection: None
Protective Clothing: Coveralls, work shoes, gloves

Level C
Respiratory Protection: Air purifying respirator with organic vapor cartridges.
Protective Clothing: Same as modified Level D

Location of Queens Gen
relative to Project Site

132-20 Merrick Boul
SpringfieldGardens,

H. GENERAL WORK PRACTICES

To protect the health and safety of the field personnel, all field personnel will adhere to the guidelines listed below during activities involving subsurface disturbance.

- -- Eating, drinking, chewing gum or tobacco, and smoking are prohibited, except in designated areas on the site. These areas will be designated by the HSO.
- -- Workers must wash their hands and face thoroughly on leaving the work area and before eating, drinking, or any other such activity. The workers should shower as soon as possible after leaving the site.
- -- Contact with contaminated or suspected surfaces should be avoided.
- -- Contact lenses should not be worn on-site.
- -- The buddy system should always he used; each buddy should watch for signs of fatigue, exposure, and heat stress.

I. EMERGENCY PROCEDURES AND EMERGENCY RESPONSE PLAN

The field crew will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the HSO will determine the nature of the emergency and he/she will have someone call for an ambulance, if needed. If the nature of the injury is not serious—i.e., the person can be moved without expert emergency medical personnel—he/she should bc drivcn to a hospital by on-site personnel. There will be an on-site field phone. The location of the nearest hospital with an emergency room, Queens Hospital Center, is 3.81 miles northwest of the site at 82-68 164th Strcct. Thc location and preferred route to this hospital is shown in Figure 1. The telephone number for the hospital is: (718)990-2425

2Ambulance 911
Police 113th Precinct ..... (718) 712-7733
Owners repreşentative ..... John Cournoyer (718) 722-3500
NYS DEC Project Manager ..... (718) 482-4905
NYS DEC Spill Hotline ..... (800) 457-7362

3. ACKNOWLEDGMENTS OF HASP

Below is an affidavit that must be signed by all workers who enter the site. A copy of the HASP must be on-site at all times and will be kept by the HSO.

AFFIDAVIT

I, _____ (name), of _____ (company name), have read the Health and Safety Plan (HASP) for 132-20 Merrick Boulevard in Jamaica, Queens, New York. I agree to conduct all on-site work in accordance with the requirements set forth in this HASP and understand that failure to comply with this HASP could lead to my removal from the site.

Signed: _____ Date: _____

Appendix B

Quantitative Exposure Assessment

Quantitative Exposure Assessment for Nearest Residential Receptor in Basement

Highest VOC concentration at a downgradient end of the site (MW-5S):

710 parts per billion (ppb)

Distance to nearest off-site residential receptor (SE of site, east side of Springfield Blvd):

1,160 feet

Concentration in groundwater at off-site receptor:

710 ppb x 503 (dilution factor) [1] = 1.41 ppb

Equation to evaluate risk posed by VOCs in groundwater[2]:

$\mathbf{RBSL_w = RBSL_a \div VF_{wesp}}$
where:
$\mathbf{RBSL_w}$ = Risk-based screening level in water (mg/L - H_2O),
$\mathbf{RBSL_a}$ = Risk-based screening level in air, which, as per New York State Department of Health, is 15 ppb per m^3 for residential receptors or 0.1335 mg/m^3
$\mathbf{VF_{wesp}}$ = Volatization factor from groundwater to ambient air ($mg/M^3 \div mg/l$ - H_2O), and accounts for volatization from groundwater to enclosed space and is calculated as:

Solve for $\mathbf{RBSL_w}$ as per equation in 4. Unknown term is $\mathbf{VF_{wesp}}$

$\mathbf{VF_{wesp} = (H * [D^{eff/ws}/L_{GW} \div ER * L_B] \div 1 + [D^{eff/ws}/L_{GW} \div ER * L_B] + [D^{eff/ws}/L_{GW} \div (D_{eff\ crack}/L_{crack})n]) * 10^3}$
H = Henry Law's constant for PERC = 0.5
$\mathbf{L_{GW}}$ = Depth to groundwater in a residential basement (18-10 feet) = 8 feet = 243.84 centimeters
$\mathbf{D^{eff/ws}}$ = Effective diffusion coefficient between groundwater and soil surface (Cm^2/s) : See Equation 5.1
ER = Enclosed space air exchange: 0.00014 [3]
$\mathbf{L_B}$ = Enclosed space volume/infiltration area ratio: 0.00014 [3]
$D_{eff\ crack}$ = Effective diffusion coefficient through foundation cracks: See equation 5.2
L_{crack} = Enclosed space foundation area/wall thickness: 15 [3]

Equation 5.1 $\mathbf{D}^{eff/ws} = (h_{cap} + h_v) * [hcap/D_{eff/cap} + hv/D_{eff/s}]^{-1}$ where:

$\mathbf{D}^{eff/ws}$ is effective diffusion coefficient between groundwater and soil surface,

h_{cap} = thickness of capillary fringe (cm):
24.6 centimeters [4]

h_v = thickness of vadose zone = 8 feet (18 feet to groundwater - 10 feet for basement):
243.84 centimeters

$D_{eff/cap}$= effective diffusion through capillary fringe (cm^2/s): $[D^a * \theta^{3.3}_{acap}/\theta T^2] + [D^w * 1/H * \theta^{3.33}_{wcap}/\theta T^2]$:
D^a = Diffusion coefficient in air (cm^2/s) for perc: 0.00720 [5]
θ_{acap} = Volumetric air content in capillary fringe soils: 0.038 [3]
θT = Total soil porosity (cm^3/cm^3-soil): 0.38 [3]
D^w = Diffusion coefficient in water for perc: 0.000000820 [5]
θ_{wcap} = Volumetric water content in capillary fringe soils: 0.342 [3]

$D_{eff/s}$ = effective diffusion through vadose zone (cm^2/s): $[D^a * \theta^{3.3}_{as}/\theta^{2.0}_{T}] + [D^w * 1/H * \theta^{3.33}_{ws}/\theta^{2.0}_{T}]$:
θ_{acap} = Volumetric air content in vadose zone soils: 0.26 [3]
θ_{ws} = Volumetric water content in vadose zone soils: 0.12 [3]

Based upon Equation 5.1 $\mathbf{D}^{eff/ws} = 1.21 \times 10^{-5}$

Equation 5.2 $\mathbf{D}^{eff\text{-}crack} = (Da \times (\theta acrack^{3.3}/\theta T^2) + (Dw*1/H*(\theta wcrack^{3.3}/\theta^{2.0}_{T})$, where

$\mathbf{D}^{eff\text{-}crack}$ is the effective diffusion coefficient through foundation cracks of residential building,

Da = Diffusion factor of perc in air = 0.0072 [5],
Dw = Diffusion factor of perc in water = 0.000000820 [5],
θacrack = volumetric air content in foundation wall cracks(cm^3-air/cm^3) = 0.038,
θwcrack = volumeteric water content in foundation wall cracks (cm^3-water/cm^3 = 0.12
H = Henry's Law Constant for Perc = 0.5

Based upon Equation 5.2 $\mathbf{D}^{eff\text{-}crack} = 5.62 \times 10^{-4}$

Solving for $\mathbf{VF}_{wesp} = 5.3 \times 10^{-5}$

Solving for **RBSLw** = 131 ppm of Perc

Predicted levels of Perc in groundwater at residential receptor is 1.41 ppb
Highest levels of Perc in groundwater at downgradient end of site is 710 ppb.

References:

[1] Dilution factor based upon DEC steady-state dilution attenuation factors in the saturate zone assuming no chemical decay, as presented in the Department's Interim Procedures for

Inactivation of Petroleum-impacted Sites and The Emergency Standard Guide for Risk-Based Corrective Action (RBCA) issued by the American Society of Testing and Materials (ASTM)

[2] Equation is based upon Department's Interim Procedures for Inactivation of Petroleum-impacted Sites and The Emergency Standard Guide for Risk-Based Corrective Action (RBCA) issued by the American Society of Testing and Materials (ASTM).

[3] Tier 1 Default Fate and Transport Parameters, as per DEC Interim Procedures for Inactivation of Petroleum-impacted Sites.

[4] Thickness of capillary fringe for site based upon published data in C.W. Fetter for the average grain size of the site soil (medium sand), Contaminant Hydrogeology, 1993, pg 218.

[5] Diffusion coefficients in air and water for perc were obtained from the US EPA publication titled *Soil Screening Guidance: User's Guide*, Second Edition, 1996

Appendix C
Soil Sampling Results
AKRF's Supplemental Investigation

Committed To *Your* Success

September 28, 1999

Severn Trent Laboratories
200 Monroe Turnpike
Monroe, Connecticut 06468

Tel: (203) 261-4458
Fax: (203) 261-5346
www.stl-inc.com

Mr. William Silveri
AKRF, INC.- NYC
117 East 29Th Street
New York, NY 10016

Dear Mr. Silveri :

Please find enclosed the analytical results of 7 sample(s) received at our laboratory on September 13, 1999. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

STL Report #7099-2297A	
Project ID: UPS-Merrick Boulevard	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC

7099-2297A

AKRF, INC. - NYC

Case Narrative

Volatile Organics - Volatile organics were determined by purge and trap GC/MS using guidance provided in Method 5030B/8260B. The instrumentation used was a Tekmar Model 2000/2016 Concentrator interfaced with a Hewlett-Packard Model 5970A GC/MS/DS.

No problems were encountered.

TABLE VO-1.0
7099-2297A
AKRF, INC.- NYC
TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

Client Sample I.D.	Method Blank	TB	FB	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKKT	992297A-06	992297A-07	
Method Blank I.D.	VBLKKT	VBLKKT	VBLKKT	
Quant. Factor	1.00	1.00	1.00	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	U	U	5.0
Acetone	U	U	U	10
Carbon Disulfide	U	U	U	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
cis-1,2-Dichloroethene	U	U	U	5.0
trans-1,2-Dichloroethene	U	U	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	U	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		09/13/99	09/13/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	09/14/99	09/15/99	09/15/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.1 Soil
7099-2297A
AKRF, INC.- NYC
TCL VOLATILE ORGANICS

All values are ug/Kg dry weight basis.

Client Sample I.D.	Method Blank	S-1	S-3	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKKR	992297A-01	992297A-02	
Method Blank I.D.	VBLKKR	VBLKKR	VBLKKR	
Quant. Factor	1.00	1.14	1.03	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	1J	1J	5.0
Acetone	2J	10JB	6JB	10
Carbon Disulfide	U	3J	.4J	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
cis-1,2-Dichloroethene	U	U	U	5.0
trans-1,2-Dichloroethene	U	U	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	3J	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	U	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	U	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		09/13/99	09/13/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	09/13/99	09/13/99	09/13/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.2
7099-2297A
AKRF, INC.- NYC
TCL VOLATILE ORGANICS

Soil

All values are ug/Kg dry weight basis.

Client Sample I.D.	Method Blank	S-7	S-9	Quant. Limits with no Dilution
Lab Sample I.D.	VBLKKS	992297A-04	992297A-05	
Method Blank I.D.	VBLKKS	VBLKKS	VBLKKS	
Quant. Factor	1.00	1.04	1.06	
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	U	.6J	.8J	5.0
Acetone	3J	6JB	2JB	10
Carbon Disulfide	U	U	.6J	5.0
Vinyl Acetate	U	U	U	10
1,1-Dichloroethene	U	U	U	5.0
1,1-Dichloroethane	U	U	U	5.0
cis-1,2-Dichloroethene	U	U	U	5.0
trans-1,2-Dichloroethene	U	U	U	5.0
Chloroform	U	U	U	5.0
1,2-Dichloroethane	U	U	U	5.0
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	U	5.0
Carbon Tetrachloride	U	U	U	5.0
Bromodichloromethane	U	U	U	5.0
1,2-Dichloropropane	U	U	U	5.0
cis-1,3-Dichloropropene	U	U	U	5.0
Trichloroethene	U	U	U	5.0
Dibromochloromethane	U	U	U	5.0
1,1,2-Trichloroethane	U	U	U	5.0
Benzene	U	U	U	5.0
trans-1,3-Dichloropropene	U	U	U	5.0
Bromoform	U	U	.5J	5.0
4-Methyl-2-Pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5.0
Toluene	U	U	U	5.0
1,1,2,2-Tetrachloroethane	U	U	U	5.0
Chlorobenzene	U	U	U	5.0
Ethylbenzene	U	U	U	5.0
Styrene	U	U	U	5.0
Xylene (total)	U	U	U	5.0
Date Received		09/13/99	09/13/99	
Date Extracted	N/A	N/A	N/A	
Date Analyzed	09/14/99	09/14/99	09/14/99	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE VO-1.3 Soil
7099-2297A
AKRF, INC.- NYC
TCL VOLATILE ORGANICS

All values are ug/Kg dry weight basis.

Client Sample I.D.	Method Blank	S-5		Quant. Limits with no Dilution
Lab Sample I.D.	VBLKKX	992297A-03		
Method Blank I.D.	VBLKKX	VBLKKX		
Quant. Factor	1.00	1.10		
Chloromethane	U	U		10
Bromomethane	U	U		10
Vinyl Chloride	U	U		10
Chloroethane	U	U		10
Methylene Chloride	.4J	.8JB		5.0
Acetone	3J	8JB		10
Carbon Disulfide	U	.5J		5.0
Vinyl Acetate	U	U		10
1,1-Dichloroethene	U	U		5.0
1,1-Dichloroethane	U	U		5.0
cis-1,2-Dichloroethene	U	U		5.0
trans-1,2-Dichloroethene	U	U		5.0
Chloroform	U	U		5.0
1,2-Dichloroethane	U	U		5.0
2-Butanone	U	2J		10
1,1,1-Trichloroethane	U	U		5.0
Carbon Tetrachloride	U	U		5.0
Bromodichloromethane	U	U		5.0
1,2-Dichloropropane	U	U		5.0
cis-1,3-Dichloropropene	U	U		5.0
Trichloroethene	U	U		5.0
Dibromochloromethane	U	U		5.0
1,1,2-Trichloroethane	U	U		5.0
Benzene	U	U		5.0
trans-1,3-Dichloropropene	U	U		5.0
Bromoform	U	.6J		5.0
4-Methyl-2-Pentanone	U	U		10
2-Hexanone	U	U		10
Tetrachloroethene	U	U		5.0
Toluene	U	U		5.0
1,1,2,2-Tetrachloroethane	U	U		5.0
Chlorobenzene	U	U		5.0
Ethylbenzene	U	U		5.0
Styrene	U	U		5.0
Xylene (total)	U	U		5.0
Date Received		09/13/99		
Date Extracted	N/A	N/A		
Date Analyzed	09/16/99	09/16/99		

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for Severn Trent Laboratories-Connecticut are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

Severn Trent-Connecticut
Certification Summary (as of March 1999)

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Kansas	Department of Health and Environment	Drinking Water, Wastewater/Solid, Hazardous Waste	E-10210
Maine	Department of Human Services	Wastewater	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	2528
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater Hazardous Waste	388
Oklahoma	Department of Environmental Quality	General Water Quality/ Sludge Testing	9614
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Wastewater/ Hazardous Waste	C231
Wisconsin	Department of Natural Resources	Wastewater/ Hazardous Waste	998357111

7099-2297A
AKRF, INC.- NYC
SAMPLE SUMMARY

CLIENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
S-1	992297A-01	SOIL	09/10/99	09/13/99
S-3	992297A-02	SOIL	09/10/99	09/13/99
S-5	992297A-03	SOIL	09/10/99	09/13/99
S-7	992297A-04	SOIL	09/10/99	09/13/99
S-9	992297A-05	SOIL	09/10/99	09/13/99
TB	992297A-06	WATER	09/10/99	09/13/99
FB	992297A-07	WATER	09/10/99	09/13/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : AS-01
PAI Sample ID : P9901801-001

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : 09/10/99
Date Received : 09/13/99
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = -1.1
Pf 1 = 3.5

D.F. = 1.34

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
74-87-3	Chloromethane	2.5	1.0	1.2	0.49
75-01-4	Vinyl Chloride	ND	1.0	ND	0.39
75-00-3	Chloroethane	ND	1.0	ND	0.38
74-83-9	Bromomethane	ND	1.0	ND	0.26
67-64-1	Acetone	6.6	1.0	2.8	0.42
75-69-4	Trichlorofluoromethane	5.5	1.0	1.00	0.18
75-35-4	1,1-Dichloroethene	ND	1.0	ND	0.25
75-09-2	Methylene chloride	1.2	1.0	0.36	0.29
75-15-0	Carbon Disulfide	1.1	1.0	0.37	0.32
76-13-1	Trichlorotrifluoroethane	1.5	1.0	0.20	0.13
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ND	0.25
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ND	0.25
75-34-3	1,1-Dichloroethane	ND	1.0	ND	0.25
1634-04-4	Methyl tert-Butyl Ether	6.0	1.0	1.7	0.28
108-05-4	Vinyl Acetate	ND	1.0	ND	0.28
78-93-3	2-Butanone	2.3	1.0	0.77	0.34
67-66-3	Chloroform	ND	1.0	ND	0.21
107-06-2	1,2-Dichloroethane	ND	1.0	ND	0.25
71-55-6	1,1,1-Trichloroethane	1.1	1.0	0.20	0.19
71-43-2	Benzene	2.1	1.0	0.66	0.31
56-23-5	Carbon Tetrachloride	0.90 TR	1.0	0.14 TR	0.16
78-87-5	1,2-Dichloropropane	0.72 TR	1.0	0.16 TR	0.22

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RC

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : AS-01
PAI Sample ID : P9901801-001

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : 09/10/99
Date Received : 09/13/99
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = -1.1
Pf 1 = 3.5
D.F. = 1.34

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
75-27-4	Bromodichloromethane	ND	1.0	ND	0.15
79-01-6	Trichloroethene	2.9	1.0	0.55	0.19
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ND	0.22
108-10-1	4-Methyl-2-pentanone	ND	1.0	ND	0.24
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ND	0.22
79-00-5	1,1,2-Trichloroethane	ND	1.0	ND	0.19
108-88-3	Toluene	7.0	1.0	1.9	0.27
124-48-1	Dibromochloromethane	ND	1.0	ND	0.12
591-78-6	2-Hexanone	ND	1.0	ND	0.24
106-93-4	1,2-Dibromoethane	ND	1.0	ND	0.13
127-18-4	Tetrachloroethene	2.9	1.0	0.44	0.15
108-90-7	Chlorobenzene	ND	1.0	ND	0.22
100-41-4	Ethylbenzene	1.3	1.0	0.29	0.23
75-25-2	Bromoform	ND	1.0	ND	0.10
100-42-5	Styrene	ND	1.0	ND	0.24
1330-20-7	m,p-Xylenes	4.1	1.0	0.95	0.23
95-47-6	o-Xylene	1.7	1.0	0.39	0.23
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ND	0.15
541-73-1	1,3-Dichlorobenzene	ND	1.0	ND	0.17
106-46-7	1,4-Dichlorobenzene	0.71 TR	1.0	0.12 TR	0.17
95-50-1	1,2-Dichlorobenzene	ND	1.0	ND	0.17

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : DC

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : AS-02
PAI Sample ID : P9901801-002

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : 09/10/99
Date Received : 09/13/99
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = -3.7
Pf 1 = 3.5

D.F. = 1.65

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
75-27-4	Bromodichloromethane	ND	1.0	ND	0.15
79-01-6	Trichloroethene	4.1	1.0	0.77	0.19
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ND	0.22
108-10-1	4-Methyl-2-pentanone	ND	1.0	ND	0.24
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ND	0.22
79-00-5	1,1,2-Trichloroethane	ND	1.0	ND	0.19
108-88-3	Toluene	6.5	1.0	1.7	0.27
124-48-1	Dibromochloromethane	ND	1.0	ND	0.12
591-78-6	2-Hexanone	ND	1.0	ND	0.24
106-93-4	1,2-Dibromoethane	ND	1.0	ND	0.13
127-18-4	Tetrachloroethene	3.4	1.0	0.51	0.15
108-90-7	Chlorobenzene	ND	1.0	ND	0.22
100-41-4	Ethylbenzene	1.2	1.0	0.27	0.23
75-25-2	Bromoform	ND	1.0	ND	0.10
100-42-5	Styrene	ND	1.0	ND	0.24
1330-20-7	m,p-Xylenes	4.1	1.0	0.94	0.23
95-47-6	o-Xylene	1.7	1.0	0.40	0.23
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ND	0.15
541-73-1	1,3-Dichlorobenzene	ND	1.0	ND	0.17
106-46-7	1,4-Dichlorobenzene	ND	1.0	ND	0.17
95-50-1	1,2-Dichlorobenzene	ND	1.0	ND	0.17

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RG

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : AS-03
PAI Sample ID : P9901801-001

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : 09/10/99
Date Received : 09/13/99
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = -2.5
Pf 1 = 3.5
D.F. = 1.49

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
74-87-3	Chloromethane	3.0	1.0	1.5	0.49
75-01-4	Vinyl Chloride	ND	1.0	ND	0.39
75-00-3	Chloroethane	ND	1.0	ND	0.38
74-83-9	Bromomethane	ND	1.0	ND	0.26
67-64-1	Acetone	7.4	1.0	3.1	0.42
75-69-4	Trichlorofluoromethane	5.2	1.0	0.93	0.18
75-35-4	1,1-Dichloroethene	ND	1.0	ND	0.25
75-09-2	Methylene chloride	1.5	1.0	0.43	0.29
75-15-0	Carbon Disulfide	ND	1.0	ND	0.32
76-13-1	Trichlorotrifluoroethane	1.6	1.0	0.22	0.13
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ND	0.25
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ND	0.25
75-34-3	1,1-Dichloroethane	ND	1.0	ND	0.25
1634-04-4	Methyl tert-Butyl Ether	7.0	1.0	1.9	0.28
108-05-4	Vinyl Acetate	ND	1.0	ND	0.28
78-93-3	2-Butanone	1.4	1.0	0.49	0.34
67-66-3	Chloroform	ND	1.0	ND	0.21
107-06-2	1,2-Dichloroethane	ND	1.0	ND	0.25
71-55-6	1,1,1-Trichloroethane	1.5	1.0	0.27	0.19
71-43-2	Benzene	2.1	1.0	0.67	0.31
56-23-5	Carbon Tetrachloride	ND	1.0	ND	0.16
78-87-5	1,2-Dichloropropane	1.1	1.0	0.24	0.22

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RC

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : AS-03
PAI Sample ID : P9901801-001

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : 09/10/99
Date Received : 09/13/99
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = -2.5
Pf 1 = 3.5

D.F. = 1.49

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
75-27-4	Bromodichloromethane	ND	1.0	ND	0.15
79-01-6	Trichloroethene	3.8	1.0	0.72	0.19
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ND	0.22
108-10-1	4-Methyl-2-pentanone	1.1	1.0	0.26	0.24
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ND	0.22
79-00-5	1,1,2-Trichloroethane	ND	1.0	ND	0.19
108-88-3	Toluene	5.9	1.0	1.6	0.27
124-48-1	Dibromochloromethane	ND	1.0	ND	0.12
591-78-6	2-Hexanone	ND	1.0	ND	0.24
106-93-4	1,2-Dibromoethane	ND	1.0	ND	0.13
127-18-4	Tetrachloroethene	4.8	1.0	0.72	0.15
108-90-7	Chlorobenzene	ND	1.0	ND	0.22
100-41-4	Ethylbenzene	1.2	1.0	0.29	0.23
75-25-2	Bromoform	ND	1.0	ND	0.10
100-42-5	Styrene	ND	1.0	ND	0.24
1330-20-7	m,p-Xylenes	4.3	1.0	0.99	0.23
95-47-6	o-Xylene	2.0	1.0	0.47	0.23
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ND	0.15
541-73-1	1,3-Dichlorobenzene	ND	1.0	ND	0.17
106-46-7	1,4-Dichlorobenzene	0.85 TR	1.0	0.14 TR	0.17
95-50-1	1,2-Dichlorobenzene	ND	1.0	ND	0.17

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RG

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : AS-04
PAI Sample ID : P9901801-004

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : 09/10/99
Date Received : 09/13/99
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = -2.9
Pf 1 = 3.5
D.F. = 1.54

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
74-87-3	Chloromethane	3.0	1.0	1.5	0.49
75-01-4	Vinyl Chloride	ND	1.0	ND	0.39
75-00-3	Chloroethane	ND	1.0	ND	0.38
74-83-9	Bromomethane	ND	1.0	ND	0.26
67-64-1	Acetone	13	1.0	5.5	0.42
75-69-4	Trichlorofluoromethane	2.1	1.0	0.37	0.18
75-35-4	1,1-Dichloroethene	ND	1.0	ND	0.25
75-09-2	Methylene chloride	1.8	1.0	0.52	0.29
75-15-0	Carbon Disulfide	1.5	1.0	0.47	0.32
76-13-1	Trichlorotrifluoroethane	1.5	1.0	0.20	0.13
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ND	0.25
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ND	0.25
75-34-3	1,1-Dichloroethane	ND	1.0	ND	0.25
1634-04-4	Methyl tert-Butyl Ether	7.2	1.0	2.0	0.28
108-05-4	Vinyl Acetate	ND	1.0	ND	0.28
78-93-3	2-Butanone	3.7	1.0	1.3	0.34
67-66-3	Chloroform	ND	1.0	ND	0.21
107-06-2	1,2-Dichloroethane	ND	1.0	ND	0.25
71-55-6	1,1,1-Trichloroethane	ND	1.0	ND	0.19
71-43-2	Benzene	2.0	1.0	0.64	0.31
56-23-5	Carbon Tetrachloride	0.85 TR	1.0	0.14 TR	0.16
78-87-5	1,2-Dichloropropane	ND	1.0	ND	0.22

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RC

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : AS-04
PAI Sample ID : P9901801-004

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : 09/10/99
Date Received : 09/13/99
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = -2.9
Pf 1 = 3.5
D.F. = 1.54

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
75-27-4	Bromodichloromethane	ND	1.0	ND	0.15
79-01-6	Trichloroethene	ND	1.0	ND	0.19
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ND	0.22
108-10-1	4-Methyl-2-pentanone	ND	1.0	ND	0.24
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ND	0.22
79-00-5	1,1,2-Trichloroethane	ND	1.0	ND	0.19
108-88-3	Toluene	7.3	1.0	1.9	0.27
124-48-1	Dibromochloromethane	ND	1.0	ND	0.12
591-78-6	2-Hexanone	ND	1.0	ND	0.24
106-93-4	1,2-Dibromoethane	ND	1.0	ND	0.13
127-18-4	Tetrachloroethene	1.9	1.0	0.28	0.15
108-90-7	Chlorobenzene	ND	1.0	ND	0.22
100-41-4	Ethylbenzene	1.2	1.0	0.27	0.23
75-25-2	Bromoform	ND	1.0	ND	0.10
100-42-5	Styrene	ND	1.0	ND	0.24
1330-20-7	m,p-Xylenes	3.9	1.0	0.91	0.23
95-47-6	o-Xylene	1.3	1.0	0.31	0.23
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ND	0.15
541-73-1	1,3-Dichlorobenzene	ND	1.0	ND	0.17
106-46-7	1,4-Dichlorobenzene	ND	1.0	ND	0.17
95-50-1	1,2-Dichlorobenzene	0.99 TR	1.0	0.17 TR	0.17

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RC

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : AS-04
PAI Sample ID : P9901801-004 Dup

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : 09/10/99
Date Received : 09/13/99
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = -2.9
Pf 1 = 3.5
D.F. = 1.54

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
74-87-3	Chloromethane	3.1	1.0	1.5	0.49
75-01-4	Vinyl Chloride	ND	1.0	ND	0.39
75-00-3	Chloroethane	ND	1.0	ND	0.38
74-83-9	Bromomethane	ND	1.0	ND	0.26
67-64-1	Acetone	13	1.0	5.6	0.42
75-69-4	Trichlorofluoromethane	2.2	1.0	0.40	0.18
75-35-4	1,1-Dichloroethene	ND	1.0	ND	0.25
75-09-2	Methylene chloride	1.8	1.0	0.54	0.29
75-15-0	Carbon Disulfide	1.5	1.0	0.50	0.32
76-13-1	Trichlorotrifluoroethane	1.7	1.0	0.23	0.13
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ND	0.25
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ND	0.25
75-34-3	1,1-Dichloroethane	ND	1.0	ND	0.25
1634-04-4	Methyl tert-Butyl Ether	7.1	1.0	2.0	0.28
108-05-4	Vinyl Acetate	ND	1.0	ND	0.28
78-93-3	2-Butanone	3.8	1.0	1.3	0.34
67-66-3	Chloroform	ND	1.0	ND	0.21
107-06-2	1,2-Dichloroethane	ND	1.0	ND	0.25
71-55-6	1,1,1-Trichloroethane	ND	1.0	ND	0.19
71-43-2	Benzene	2.0	1.0	0.64	0.31
56-23-5	Carbon Tetrachloride	0.92 TR	1.0	0.15 TR	0.16
78-87-5	1,2-Dichloropropane	ND	1.0	ND	0.22

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RC

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : AS-04
PAI Sample ID : P9901801-004 Dup

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : 09/10/99
Date Received : 09/13/99
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = -2.9
Pf 1 = 3.5
D.F. = 1.54

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
75-27-4	Bromodichloromethane	ND	1.0	ND	0.15
79-01-6	Trichloroethene	ND	1.0	ND	0.19
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ND	0.22
108-10-1	4-Methyl-2-pentanone	ND	1.0	ND	0.24
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ND	0.22
79-00-5	1,1,2-Trichloroethane	ND	1.0	ND	0.19
108-88-3	Toluene	7.1	1.0	1.9	0.27
124-48-1	Dibromochloromethane	ND	1.0	ND	0.12
591-78-6	2-Hexanone	ND	1.0	ND	0.24
106-93-4	1,2-Dibromoethane	ND	1.0	ND	0.13
127-18-4	Tetrachloroethene	1.8	1.0	0.28	0.15
108-90-7	Chlorobenzene	ND	1.0	ND	0.22
100-41-4	Ethylbenzene	1.2	1.0	0.28	0.23
75-25-2	Bromoform	ND	1.0	ND	0.10
100-42-5	Styrene	ND	1.0	ND	0.24
1330-20-7	m,p-Xylenes	4.0	1.0	0.93	0.23
95-47-6	o-Xylene	1.4	1.0	0.32	0.23
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ND	0.15
541-73-1	1,3-Dichlorobenzene	ND	1.0	ND	0.17
106-46-7	1,4-Dichlorobenzene	ND	1.0	ND	0.17
95-50-1	1,2-Dichlorobenzene	0.92 TR	1.0	0.15 TR	0.17

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RCS

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : N/A
PAI Sample ID : Method Blank

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : N/A
Date Received : N/A
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = 0.0
Pf 1 = 0.0

D.F. = 1.00

CAS #	COMPOUND	RESULT µg/M³	REPORTING LIMIT µg/M³	RESULT ppb	REPORTING LIMIT ppb
74-87-3	Chloromethane	ND	1.0	ND	0.49
75-01-4	Vinyl Chloride	ND	1.0	ND	0.39
75-00-3	Chloroethane	ND	1.0	ND	0.38
74-83-9	Bromomethane	ND	1.0	ND	0.26
67-64-1	Acetone	ND	1.0	ND	0.42
75-69-4	Trichlorofluoromethane	ND	1.0	ND	0.18
75-35-4	1,1-Dichloroethene	ND	1.0	ND	0.25
75-09-2	Methylene chloride	ND	1.0	ND	0.29
75-15-0	Carbon Disulfide	ND	1.0	ND	0.32
76-13-1	Trichlorotrifluoroethane	ND	1.0	ND	0.13
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ND	0.25
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ND	0.25
75-34-3	1,1-Dichloroethane	ND	1.0	ND	0.25
1634-04-4	Methyl tert-Butyl Ether	ND	1.0	ND	0.28
108-05-4	Vinyl Acetate	ND	1.0	ND	0.28
78-93-3	2-Butanone	ND	1.0	ND	0.34
67-66-3	Chloroform	ND	1.0	ND	0.21
107-06-2	1,2-Dichloroethane	ND	1.0	ND	0.25
71-55-6	1,1,1-Trichloroethane	ND	1.0	ND	0.19
71-43-2	Benzene	ND	1.0	ND	0.31
56-23-5	Carbon Tetrachloride	ND	1.0	ND	0.16
78-87-5	1,2-Dichloropropane	ND	1.0	ND	0.22

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RG

Date : 9/14/99

Performance Analytical Inc.
Air Quality Laboratory
A Division of Columbia Analytical Services, Inc.
An Employee Owned Company

RESULTS OF ANALYSIS

Client : AKRF, Inc.

Client Sample ID : N/A
PAI Sample ID : Method Blank

Test Code : GC/MS EPA TO-14
Analyst : Chris Casteel
Instrument : HP 5973/Entech 7000
Matrix : Summa Canister

Date Sampled : N/A
Date Received : N/A
Date Analyzed : 09/13/99
Volume(s) Analyzed : 1.000 Liter(s)

Pi 1 = 0.0
Pf 1 = 0.0

D.F. = 1.00

CAS #	COMPOUND	RESULT $\mu g/M^3$	REPORTING LIMIT $\mu g/M^3$	RESULT ppb	REPORTING LIMIT ppb
75-27-4	Bromodichloromethane	ND	1.0	ND	0.15
79-01-6	Trichloroethene	ND	1.0	ND	0.19
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ND	0.22
108-10-1	4-Methyl-2-pentanone	ND	1.0	ND	0.24
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ND	0.22
79-00-5	1,1,2-Trichloroethane	ND	1.0	ND	0.19
108-88-3	Toluene	ND	1.0	ND	0.27
124-48-1	Dibromochloromethane	ND	1.0	ND	0.12
591-78-6	2-Hexanone	ND	1.0	ND	0.24
106-93-4	1,2-Dibromoethane	ND	1.0	ND	0.13
127-18-4	Tetrachloroethene	ND	1.0	ND	0.15
108-90-7	Chlorobenzene	ND	1.0	ND	0.22
100-41-4	Ethylbenzene	ND	1.0	ND	0.23
75-25-2	Bromoform	ND	1.0	ND	0.10
100-42-5	Styrene	ND	1.0	ND	0.24
1330-20-7	m,p-Xylenes	ND	1.0	ND	0.23
95-47-6	o-Xylene	ND	1.0	ND	0.23
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ND	0.15
541-73-1	1,3-Dichlorobenzene	ND	1.0	ND	0.17
106-46-7	1,4-Dichlorobenzene	ND	1.0	ND	0.17
95-50-1	1,2-Dichlorobenzene	ND	1.0	ND	0.17

TR = Detected Below Indicated Reporting Limit
ND = Not Detected

Verified by : RG

Date : 9/14/99

APPENDIX E

Construction Health and Safety Plan and Community Air Monitoring Plan

132-20 Merrick Boulevard

Tax Block 12999, a portion of Lot 44

SPRINGFIELD GARDENS, QUEENS, NEW YORK

Construction Health and Safety Plan

AKRF Project Number: 80022

NYSDEC VCP Site No.: V00304

Prepared by:

AKRF Engineering, P.C.
440 Park Avenue South
New York, NY 10016
Phone: (212) 696-0670

Prepared for:

HD Development of Maryland, Inc.
and
Home Depot U.S.A., Inc.
2455 Paces Ferry Road, N.W.
Atlanta, GA 30339

SEPTEMBER 2010

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FIGURES

TABLES

In Text

APPENDICES

1.0 INTRODUCTION

This Construction Health and Safety Plan (CHASP) has been prepared for the 132-20 Merrick Boulevard site (Site) located in Springfield Gardens, Queens, New York. The Site occupies 8.56 acres, as shown on Figure 1. The Site was remediated in accordance with a New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Agreement (VCA) Index #D2-0010-99-11, Site #V00304, which was issued on December 11, 1999.

1.1 Purpose

This CHASP was prepared as part of the 132-20 Merrick Boulevard Site Management Plan (SMP) that addresses the management of known or potential residual contamination upon following completion of the remedial actions taken under the New York State (NYS) Voluntary Cleanup Program (VCP) administered by NYSDEC. The SMP consists of an Engineering and Institutional Control Plan, a Monitoring Plan, a Maintenance Plan, and a Site Management Reporting Plan. A Soil Management Plan (SoMP), which includes provisions for managing excavated soil, is also included in the SMP.

The purpose of this CHASP is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise. The CHASP includes a Community Air Monitoring Plan (CAMP) that will be followed to protect the health of community residents who have the potential to be exposed to on-site contaminants that could potentially be released as a result of fugitive discharge of dust or vapors.

The CHASP is intended to minimize health and safety risks resulting from the known and potential presence of contamination on the Site. It is not designed to address potential geotechnical, mechanical or structural safety concerns, nor to supersede or replace any Occupational Safety and Health Administration (OSHA) regulations and/or local and state construction codes or regulations.

1.2 Applicability

This CHASP is applicable to all soil disturbance at the Site after remediation is complete. Examples of soil disturbance would include the potential construction of additional buildings and repairs or renovation of subgrade utilities. Although the SMP addresses residual contamination as contamination remaining on the Site having the potential to exceed the Soil Cleanup Objectives (SCOs) for Commercial Use or Protection of Groundwater contained in 6 NYCRR Part 375, for simplicity and for the purposes of the CHASP, the residual management zone (RMZ) will be considered all materials beneath the site cover. Ongoing exposure to residual contamination is prevented by the Site's engineered composite site cover comprising asphalt-paved roads and parking areas, concrete sidewalks, and concrete building slabs.

Should any future construction of buildings be proposed, their development would be in conformance with the Site Management Plan (SMP) developed for the Site, including this CHASP. Any deviations from these requirements would require specific approval of NYSDEC.

Contractors and subcontractors involved in work in the RMZ (i.e., all material beneath the Site cover) will provide a copy of this CHASP for review to all of their employees or other personnel under their direction whose work involves any potential exposure to the residual contamination area.

This CHASP does not discuss routine health and safety issues common to construction/excavation, including, but not limited to, slips, trips, falls, shoring, and other physical hazards. This CHASP does not address Permit Required Confined Spaces (as defined by OSHA). For these and other issues unrelated to contaminated materials, employees are bound by

all applicable OSHA and state/local regulations and any more stringent requirements specified by their employer in their corporate Health and Safety Plan (HASP) or otherwise.

2.0 SITE DESCRIPTION

2.1 Property Location and History

The VCA listed the Site as comprising an 8.56-acre property on Block 12999 in Springfield Gardens, Country of Queens, New York and including former Lots 44 (a portion of the current Lot 44 boundaries), 54, 74, and 94. Beginning with tax year 2002, the former lots in Block 12999 were consolidated into one 9.066-acre lot, currently known as Lot 44, of which the VCA Site comprises Parcel A; an 8.56-acre portion of current Lot 44. The VCA Site is described as Parcel A of the metes and bounds, documented on the current ASTM/ALTA Site survey which is included in Appendix E of the SMP. The VCA listed the Site as a parcel bounded by Merrick Boulevard to the north, 137th Avenue to the south, Belknap Street to the west, and Long Island Railroad tracks to the east. A United States Geological Survey (USGS) topographical quadrangle, included as Figure 1, shows the Site location. The Site Plan shown on a 2004 aerial photograph is included as Figure 2.

This summary of the Site history is based on two Phase I Environmental Site Assessment (ESA) Reports (Eder Associates, July 1998 and EMCON, March 1997). A detailed description of manufacturing processes of the previous Site occupant, Knomark, Inc., is included in Roux Associates, Inc. (Roux) report, titled "Environmental Audit", dated March 1988.

Prior to 1957

Historical Sanborn maps for 1926 and 1949 showed no industrial use at the Site for this period. According to the 1926 map, only a private residence occupied the northwestern corner of the Site, with the remainder of the Site being undeveloped. By 1949, the Site was labeled "Sherwood Oval" and appeared to be playing fields.

1957-1988

Knomark, Inc. constructed a building on the Site in 1957. This firm manufactured various products, including fabric softeners, toilet bowl cleaners, fabric dyes and shoe polish from 1957 to 1988. In the 1960s, Arden-Esquire Realty Company purchased the property from Knomark, which continued to occupy the Site until 1988 as a tenant.

Knomark's manufacturing process used the solvent tetrachloroethene (PCE) and mineral spirits. The company stored these chemicals in two 5,000-gallon underground storage tanks (USTs) on the Site. Other chemicals used by Knomark included 1,1,1-trichloroethene, methylene chloride, and methyl ethyl ketone. The key manufacturing process involved the use of batch mixing tanks (for mixing of volatile chemicals) and kettles (for nonvolatile chemicals). Sludge from Knomark's manufacturing process settled out into an above ground catch basin and the remaining sludge was disposed of off-site by a private waste contractor. After the sludge had settled out into the catch basin, the wastewater from the facility was discharged into New York City's sewer system. One 20,000-gallon and one 10,000-gallon fuel oil USTs were located on-site, on the northern side of the former building.

1988-1999

After Knomark vacated the Site, United Parcel Service (UPS) leased the property between 1988 and 1998 as a processing and distribution center for shipped packages and used the four 4,000-

gallon gasoline USTs for fueling vehicles. UPS vacated the Site in 1995, the tanks were removed, and the Site remained unoccupied from 1995 to 1999.

Forest City Ratner purchased the property in 1999 and demolished the Site buildings in 2000. The property was purchased by The Home Depot in 2000 and construction of the current retail building commenced in mid-2000. The Site has been operated as The Home Depot retail store since August 2001.

2.2 Geology

The hydrogeologic units in Queens County, New York consist of unconsolidated sediments underlain by crystalline bedrock. The aquifer system underlying the Site is designated by the U.S. Environmental Protection Agency (USEPA) as a "sole source aquifer" for drinking water supply.

The principal hydrological units on the Site are upper Pleistocene glacial deposits (shallow upper glacial unit), the Gardiners Clay (deep upper glacial unit), and the Magothy Formation-Matawan Group (Magothy aquifer). On-site monitoring wells revealed an approximate depth to groundwater of 17 feet in the shallow upper Pleistocene glacial deposits. Based upon surveyed groundwater elevations, the direction of current groundwater flow is to the southeast for the upper glacial aquifer units.

Water wells belonging to the New York City Department of Environmental Protection (NYCDEP), formerly of the Jamaica Water Company, are situated approximately 3,000 feet to the northeast, at 90-42 Springfield Boulevard, and 4,000 feet to the east, at 222nd Street and 134th Road. Prior to 1986, the regional groundwater flow in the area had been to the north, towards the former Jamaica Water Company well field.

2.3 Site Investigations and Results

Details regarding the investigation activities that were conducted as the Site are provided in the following reports:

- *Environmental Audit of Toxic and Hazardous Waste Management and Disposal at Knomark, Inc.*, Roux Associates Inc., March 1988.
- *Environmental Investigation of Subsurface Conditions at the Knomark Site, Jamaica, New York*, TRC Environmental Consultants, July 1988.
- *Results of Building Decontamination*, Roux Associates Inc., March 1989.
- *Evaluation of Soil and Ground-Water Quality*, Roux Associates, Inc., May 1989.
- *Removal of Underground Fuel Oil Tanks*, Roux Associates, Inc., revised May 1990.
- *Results of the April 1990 Ground-Water Sampling*, Roux Associates, Inc., June 1990.
- *Phase II Study: Analytical Results Only*, Malcolm Pirnie, Inc., 1998.
- *Phase I Environmental Site Assessment Report*, EMCON, March 1997.
- *Phase I Environmental Site Assessment Report*, Eder Associates, July 1998.
- *Underground Storage Tank Closure*, Leggette, Brashears & Graham, Inc., July 1998.
- *Phase II Environmental Assessment*, AKRF, Inc., revised March 1999.
- *Supplemental Soil/Groundwater Sampling*, AKRF, Inc., September 1999 included in Remedial Work Plan, 132-20 Merrick Boulevard, Springfield Gardens, Queens, New York, AKRF, Inc., Revised October 1999.

- *Supplemental Indoor Air Quality Study,* AKRF, Inc., September 1999 included in Remedial Work Plan, 132-20 Merrick Boulevard, Springfield Gardens, Queens, New York, AKRF, Inc., Revised October 1999.

The results of these reports are summarized in the sections below.

2.3.1 Groundwater

Based on the results of extensive testing, PCE levels in groundwater in the shallow upper glacial unit represented the only environmental contamination requiring further remediation beyond the removal action performed between 1988 and 1998. The groundwater data indicated that low levels of solvent contamination in the deeper Magothy Formation were attributable to off-site sources.

The shallow upper glacial unit contained PCE levels exceeding Class GA standards in the northeastern and eastern areas of the Site building. These areas correspond approximately to the locations of the former chemical USTs, chemical drum storage area, and drywells.

Based on the Site investigations conducted by AKRF and other consultants between 1988 and 1999, groundwater was contaminated by PCE in some areas of the Site. As shown in Figure 6, the shallow upper glacial unit had PCE levels exceeding Class GA standards in the northeastern and eastern areas of the Site building. These areas correspond approximately to the locations of the former chemical USTs and chemical drum storage area. The groundwater data indicated that low levels of solvent contamination in the deeper Magothy Formation were attributable to off-site sources.

PCE levels in the original source area (near MW-3 and to a lesser extent, MW-14S) declined considerably since the beginning of remedial activities and the December 2008 sampling event indicated PCE concentrations less than five percent (5%)s of pre-remediation levels.

2.3.2 Soil Vapor

Subsurface investigations by Roux (1989) and AKRF (1999) evaluated volatile organic compounds (VOC) levels in the soil vapor. The method used to measure VOC levels in the soil vapor consisted of collecting soil samples, then taking head-space readings with field instrumentation (organic vapor meter). Headspace readings showed VOC levels in the soil vapor ranging from undetected to 10 ppm; however, elevated VOC levels were also found within the immediate vicinity of a former fuel oil tank. As documented by Roux (1990), the petroleum contaminated soil was removed from the Site as part of the tank removal activities.

Total VOC concentrations in soil headspace coincided with the soil sampling results of previous investigations, as discussed in Section 1.3.1, which showed VOC levels in the soil to be well below New York State Technical and Administrative Guidance Memorandum (TAGM) #4046 Recommended Soil Cleanup Objectives (RSCOs) and documentation associated with the removal of contaminated soil above the groundwater table.

2.3.3 Identification of Standards, Criteria and Guidance (SCG)

Applicable NYSDEC SCGs for the protection of human health and the environment, considering the contemplated use and anticipated institutional and engineering controls include TAGM #4046 RSCOs or SCOs for Commercial Use or Protection of

Groundwater contained in 6 NYCRR Part 375 for soil and Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values Class GA (Drinking Water) Standards for groundwater.

2.4 Remedial Activities

Remedial actions were performed at the Site in accordance with the Remedial Work Plan (RWP) prepared for the site under the Voluntary Cleanup Program and under the supervision of the NYSDEC, as summarized in the SMP and fully described in the Final Engineering Report (FER). In order to eliminate potential exposure pathways to residual contamination, a composite cover system was installed. The engineering control (EC) for the Site consist of a composite cover system comprising asphalt paved roads and parking areas, concrete sidewalks, and concrete building slabs (also referred to as the "Site Cover").

2.5 Hazard Potential

The remediation has been completed; however, some residual soil may contain concentrations above Part 375 SCOs for Commercial Use. During future excavation into the RMZ, there is the potential to encounter residual contamination. The potential also exists to encounter unanticipated underground storage tanks or other buried structures. If these or other hazards are identified during any future subsurface soil disturbance, remedial measures will be implemented using the contingencies summarized in Section 5.0 of this CHASP.

2.6 Hazard Evaluation

Any residual contamination beneath the Site has been capped, and the Site includes engineering controls including a composite cover system. Thus, absent excavation, no complete pathways of exposure to any remaining contaminated soil remain. During RMZ disturbance the most likely routes of exposure would be inhalation of volatile and semi-volatile chemicals or particulate-containing air, dermal contact, and accidental ingestion. For specific health effects from on-Site chemicals that may potentially be encountered in soil or groundwater, please see Appendix A of this CHASP. The remaining sections of this CHASP address procedures (including training, air monitoring, work practices, and emergency response) to minimize potential exposure to residual contaminants.

3.0 AREAS OF POTENTIAL CONTAMINATION

Any soil excavated from the RMZ may contain residual contamination, and disturbance of such soil will require oversight and monitoring by a Qualified Environmental Professional (QEP), or person under their supervision.

All excavation on the Site will be monitored for the presence of buried tanks, drums or similar containers, sludges, or soil or groundwater that show evidence of contamination, such as discoloration, staining, or odors. If such buried tanks, drums or similar containers, or other evidence of contamination are noted in the field as described in Section 5.0, excavation will be suspended, the area should be cordoned off, and the contingencies outlined in Section 5.0 shall be implemented, as appropriate.

Work zone and community air monitoring will be performed in accordance with Section 4.5. To prevent the potential generation and off-site transport of dust, dust control measures will be implemented as outlined in the SMP.

All those who enter the work area while intrusive activities are being performed within the RMZ must recognize and understand the potential hazards to health and safety. Upon entering the work zone, all

construction personnel must be made aware of the potential hazards they may encounter, and the procedures to follow in the event that evidence of contamination is noted.

The health and safety procedures to be implemented during disturbance of the RMZ are outlined in Section 4.0. Additional contingencies are addressed in Section 5.0. Soil management procedures are detailed in Section 2.3.2 of the SMP.

4.0 HEALTH AND SAFETY PROCEDURES

Health and safety protocols for contaminated work areas are described in the following subsections.

4.1 Site Safety Personnel

A Qualified Environmental Professional (QEP) or person under their supervision will oversee RMZ disturbance. The QEP will have completed either the 24-hour training course for an Occasional Hazardous Waste Site Worker or the 40-hour Hazardous Waste Operations Worker that meet OSHA requirements 29 CFR Part 1910.120(e). The QEP will be a competent person responsible for the implementation of this plan. The QEP has stop-work authorization, which the QEP will execute upon determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the QEP must be absent from the Site, the QEP will designate a suitably qualified replacement that is familiar with the CHASP.

It will be the responsibility of the designated remedial engineer to provide the QEP or person under their supervision with a copy of this CHASP and to review its contents with him/her. The QEP will make sure that all individuals involved in RMZ disturbance are made aware of the potential hazards to health and safety and will require them to sign the affidavit included in Section 7.0 of this CHASP.

4.1.1 Worker Training

All personnel who enter a work area while RMZ-intrusive activities are being performed will have completed a 40-hour training course that meets OSHA requirements of 29 CFR Part 1910, Occupational Safety and Health Standards. All personnel shall also have up to date 8-hour refresher training.

Each such person will be provided site safety training before entering the work area. A site safety meeting shall be conducted at the start of the project. Additional meetings will be conducted, as necessary, for new personnel or to provide updates regarding changing conditions. The site-specific training will include the following:

- General requirements of this CHASP;
- Review of the scope of work;
- Names of personnel responsible for safety and health;
- Potential hazards and effects of compounds present at the Site;
- Air monitoring procedures;
- Proper use of personal protective equipment;
- Safe use of engineering controls and equipment;
- Decontamination procedures; and

- Work practices to minimize hazards. This may also include a review of equipment safety, safety during inclement weather, escape rendezvous points, site security measures, and/or other site-specific issues that need to be addressed before work begins.

4.2 General Work Practices

To protect health and safety, all field personnel will adhere to the guidelines listed below during activities involving disturbance of the RMZ:

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited, except in designated areas on the site. These areas will be designated by the QEP.
- Workers must wash their hands and face thoroughly on leaving the work area and before eating, drinking, or any other such activity. Workers should shower as soon as possible after leaving the site.
- Contact with contaminated or suspected soils/surfaces will be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat stress.

4.3 Personal Protection Equipment

The Personal Protection Equipment (PPE) required for various kinds of tasks that disturb known or suspected contaminated soil and groundwater are based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, Appendix B, "General Description and Discussion of the Levels of Protection and Protective Gear."

Contractors and other on-site personnel shall wear, at a minimum, Level D personal protective equipment. Table 1 defines the various levels of PPE. The QEP may require additional PPE based on the results of air monitoring described in Section 4.4 of this CHASP or other known or potential hazards.

Table 1
Personal Protection Equipment

LEVEL OF PROTECTION and PPE		Tasks
Level D		Potential direct contact with the RMZ
(x) Steel Toe Shoes	(x) Safety Glasses	
(x) Hard Hat (within 25 ft of excavator)	( ) Face Shield (x) Ear Plugs (within 25 ft of excavator)	
(x) Work Gloves	(x) Nitrile Gloves	
Level D – Modified ***(in addition to Level D)***		Visual signs of contamination such as discoloration, staining, or odors.
(x) Tyvek Coveralls	(x) Nitrile Gloves	
( ) Saranex Coveralls	( ) Overboots	
Level C ***(in addition to Level D – Modified)***		If PID* > 20 ppm or particulate > 5 mg/m^3 in breathing zone
( ) Half-Face Respirator	( ) Particulate Cartridge	
(x) Full Face Respirator	( ) Organic Cartridge	
( ) Full-Face PAPR	(x) Dual Organic/Particulate Cartridge	
Notes: Cartridges to be changed out at least once per shift unless warranted beforehand (e.g., more difficult to breathe, any odors detected, etc.). * Photoionization detector (PID) readings		

4.4 Work Zone Air Monitoring

The purpose of the work zone air monitoring program is to identify (and thereby minimize) any potential exposure of the workers (or the public) to environmental hazards associated with exposed soil or groundwater. Results of the air monitoring will be used to determine appropriate response actions, if any are needed. Air monitoring will be conducted during all excavation/disturbance of the RMZ.

Work zone air monitoring measurements will be taken prior to commencement of the work and continuously during the work. Measurements will be made as close to the workers as practicable and at the breathing height of the workers. The QEP or their designated site representative will set up the equipment and confirm that it is working properly. His/her appropriately trained designee may oversee the air measurements during the day. The initial measurement for the day will be performed before the start of work to establish the initial background level. The final measurement for the day will be performed after the end of work. The action levels and required responses are listed in Section 4.4.4. All readings, including any readings that trigger response actions, will be recorded in the project logbook or data sheets, which will be available on-site for NYSDEC or the NYSDOH review and summarized in the Annual Site Management Report.

If exceedances of action levels occur, the prescribed control measures, outlined in the Odor, Dust and Nuisance Control Plan in Section 2.3.2.13 of the SMP and in Section 4.4.1 to 4.4.3 below, will be implemented promptly and until the exceedance is corrected and air monitoring levels are re-established below the action levels. Any exceedances of work zone action levels and the corrective actions taken will be detailed in an email to the project managers for NYSDEC and NYSDOH no later than the next business day.

4.4.1 Volatile Organic Compounds

Air monitoring will be performed with a PID capable of calculating 15-minute time-weighted average concentrations and equipped with an audible alarm to indicate the exceedance of an action level. The PID will be calibrated in accordance with the manufacturer's specifications. The VOC work zone action levels and required responses are listed in Table 2 of Section 4.4.3.

If the work zone or community air monitoring reveal persistent elevated VOC levels, or if nuisance odors are present, the odor control plan will be implemented to control emissions of nuisance odors off-site and on-site. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Property owner's designated remedial engineer, who is responsible for certifying the Annual Site Management Report associated with the SMP.

All appropriate means will be employed to prevent on- and off-site nuisances. Odors will be controlled by minimizing, to the extent practicable, the exposure of contaminated soil to the atmosphere. Specific measures that will be implemented are: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) hauling soil only in covered trucks.

If odors develop and cannot be otherwise controlled, additional means to eliminate odors will include: (a) direct loading of soil to trucks for off-Site disposal to the extent feasible; (b) using water or foams to cover exposed odorous soil; (c) use of chemical odorants in spray or misting systems.

4.4.2 Dust Particulates

Air monitoring will be performed with equipment measuring levels of particulates less than 10 microns in size (PM_{10}). The equipment will be capable of calculating 15-minute time-weighted average concentrations and equipped with an audible alarm to indicate exceedance of action levels. The particulate monitor will be zeroed daily and used in accordance with the manufacturer's specifications. The particulate action levels and required responses are listed in Table 2 of Section 4.4.3.

A dust suppression plan that addresses dust management during invasive on-Site work that disturbs the Site Cover will include, at a minimum, the following:

- The excavation size and/or number of excavations will be minimized as practicable.
- Excavated areas and stockpiled material will be covered with polyethylene sheeting after activity ceases.
- Dust suppression will be achieved though the use of a dedicated on-Site water truck or appropriate wetting/misting device to reach the full extent of the area of the soil disturbance, stockpiles, and on-site haul roads. If excavation activities are generating dust, the work area, including equipment and excavation faces, will be wetted.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soil vulnerable to dust production.
- Gravel will be used on unpaved roadways to provide a clean and dust-free road surface.
- Unpaved on-site roads will be limited in total area to minimize the area required for wetting.
- Vehicle speeds will be restricted to minimize dust production.

4.4.3 Work Zone Action Levels and Response Actions

Table 2
Work Zone Air Monitoring Action Levels and Response Actions

Instrument	Task to be monitored	Action Level (Note 1)	Response Action
PID	RMZ disturbance	Less than 20 ppm above background	None
		Between 20 and 100 ppm	Upgrade to Level C, initiate perimeter air monitoring
		More than 100 ppm	**Stop work**. Resume work when source of vapors are abated and readings are less than 100 ppm above background.
Particulate monitor	RMZ disturbance	Less than 5 µg/m^3	None
		Between 5 µg/m^3 and 125 mg/m^3	Level C. Apply dust suppression measures. If < 5 µg/m^3, resume work using Level D. Otherwise, use Level C.
		Above 125 µg/m^3	**Stop work.** Apply additional dust suppression measures. Resume work when less than 125 µg/m^3.

Notes: 1: fifteen-minute time-weighted averages
ppm – parts per million
µg/m^3 – micrgrams per cubic meter

4.5 Community Air Monitoring Plan

Community air monitoring for VOCs and dust particulates (PM_{10}) (with equipment per Section 4.0 above) will be conducted at the perimeter of the exclusion zone during ground intrusive activities into the RMZ. At the start of work, air monitoring locations will be established upwind and at the downwind perimeter of the work zone. Monitoring for VOCs and PM_{10} will be performed at the upwind and downwind locations and every time the wind direction changes. Monitoring will focus on the downwind work zone perimeter; however, if exceedances of the action levels occur, monitoring will be conducted at the location(s) of any potential sensitive receptors.

The action levels and required responses are listed in Table 3 included in Section 4.5.2. If exceedances of the action levels occur at the work zone perimeter, control measures will be implemented, and monitoring at the work zone perimeter exceedance location will be conducted until air monitoring levels are below the action levels. All readings will be recorded in the project logbook, which will be available on-Site for NYSDEC or NYSDOH review. Any exceedances of community air monitoring action levels and the corrective actions taken will be detailed in an e-mail to the project managers for NYSDEC and NYSDOH no later than the next business day.

4.5.1 Major Vapor Emissions

If VOC levels greater that 10 ppm over background are identified at any area of the work zone perimeter, all work activities will be halted until the source of the vapors can be abated. If efforts to abate the emissions source are unsuccessful and if the organic vapor

levels exceed 10 ppm above background for more than 30 minutes, then NYSDEC and NYSDOH will be contacted promptly and advised of the identified condition.

4.5.2 Community Action Levels and Response Actions

Table 3
Community Air Monitoring Action Levels and Responses

Instrument	Task to be Monitored	Action Level	Response Action
PID	RMZ disturbance	Less than 10 ppm above background at downwind perimeter.	None
		More than 10 ppm above background at downwind perimeter.	**Stop work.** Resume work when source of vapors is abated and readings are less than 10 ppm above background.
Particulate monitor	RMZ disturbance	Less than 100 µg/m^3 above background at downwind perimeter.	None
		Between 100 µg/m^3 and 150 µg/m^3 above background at downwind perimeter.	Apply dust suppression measures. Work may continue provided levels do not exceed 150 µg/m^3 above background levels at the work zone perimeter and no visible dust is migrating from the work area.
		Greater than 150 µg/m^3 above background at downwind perimeter.	**Stop work**. Apply additional dust suppression measures. Resume work when less than 150 µg/m^3 above background levels at the work zone perimeter and no visible dust is migrating from the work area.
Notes: ppm – parts per million µg/m^3 – micrograms per cubic meter			

4.6 Contingency Community Air Monitoring and Vapor Control

If the community air monitoring and action level response measures describe in Section 4.4 are not adequate to prevent repeated exceedances of perimeter monitoring action levels, or to prevent community nuisance odor impacts, the following measures will be implemented:

- The invasive activities that resulted in the repeated exceedances will be suspended.
- The NYSDEC and NYSDOH will be notified.
- The suspended activities will not resume until a revised plan for dust, vapor, or odor control with alternative work practices and control measures has been submitted and approved by the NYSDEC and NYSDOH and the alternative work practices and control measures have been implemented.

5.0 CONTAMINATED MATERIALS CONTINGENCIES

The protocols and contingencies outlined in this section will be implemented if any of the following conditions are encountered: sludge, soil or groundwater with chemical or petroleum odors; visual chemical or petroleum staining; sheen or light non-aqueous phase liquid (LNAPL) on groundwater; or continuous elevated PID readings or other conditions at the discretion of the designated remedial engineer, QEP, or person under their supervision.

5.1 Contaminated Materials Contingency Response

There is a potential for the discovery of additional contaminated materials in the RMZ. All excavation will be monitored for the presence of tanks, drums or other containers, sludges, or soil that shows evidence of suspected contamination, such as discoloration, staining, or odors. If any of the conditions described in Section 5.0 are observed, or tanks, drums, or similar containers are discovered, excavation in the area will be halted, and the QEP or person under their supervision will notify the designated remedial engineer promptly.

No further work will be performed at that location until the appropriate contingency actions described below are implemented.

5.2 Site Work Zones for Contaminated Areas

If evidence of contamination is noted, at the direction of the QEP, the work area will be divided into various zones as necessary to prevent the spread of contamination, ensure that proper protective equipment is donned, and provide an area for decontamination. The Exclusion Zone is defined as the area where suspected contaminated materials are located. The Contamination Reduction Zone is the area where decontamination procedures take place and is located next to the Exclusion Zone. The Support Zone is the area where support facilities such as vehicles, a field phone, fire extinguisher, and first aid supplies are located. The emergency staging area (part of the Support Zone) is the area where all workers on-site would assemble in the event of an emergency. These zones shall be designated by the QEP or their designated site representative and modified as necessary. All field personnel will be informed of the location of these zones before work begins.

As necessary, control measures such as “Caution” tape and traffic cones will be placed around the perimeter of the work area when work is being done in the various areas to control access.

5.3 Drum, Container and Storage Tank Contingency Plan

Any buried drums, tanks or similar containers encountered will be tested to confirm their contents and properly removed in accordance with all applicable regulations. Any petroleum storage tanks unexpectedly encountered, and any associated contaminated soil, will be removed in accordance with the following:

1. Minimize the chance of inhaling petroleum vapors. Symptoms of intoxication may result if high concentrations of petroleum hydrocarbon vapors are inhaled. Breathing fresh air or oxygen will result in rapid recovery for minor effects of exposure.
2. Keep petroleum liquids away from eyes, skin, and mouth. They are harmful if ingested.
3. Use soap and water, or waterless hand cleaner, to remove any petroleum product from the skin. Do not use gasoline or similar solvent to remove oil or grease from the skin.
4. Avoid using petroleum-soaked leather goods.
5. All disposable PPE, if required, will be properly disposed of by the contractor.
6. Keep working area clean and well ventilated.
7. Spills/contamination will be reported to NYSDEC and/or other agencies, if required by regulation.
8. Clean up spills promptly using oil sorbent materials. These materials will be drummed and properly disposed of.

When dealing with flammable products, the concentration of vapors in the tank and/or the work area may reach the flammable (explosive) range before venting is completed. Air monitoring will be conducted during tank removal in the vicinity of the tank in accordance with Section 4.4 of this CHASP. Precautions will be taken to:

1. Eliminate all potential sources of ignition from the area, i.e., smoking materials, non-explosion proof electrical and internal combustion equipment.
2. Prevent discharge of static electricity during venting of flammable vapors.
3. Prevent accumulation of vapors at the ground level and in the tank vault.

A combustible gas indicator (CGI) and oxygen meter will be used to check for hazardous vapor concentrations. Open flame and spark-generating equipment will not be used in the vapor hazard area. Smoking will be strictly prohibited.

After any product in the tank has been pumped into a vacuum truck for disposal, the tank will be removed in accordance with the following procedures:

1. The top of the tank will be accessed via the manhole or other methods. The fill, gauge, and product lines will be disconnected and flushed with water. All accessible piping and tank accessories at grade level or within the building will be removed. The vent line will remain connected until the tank is purged. Remaining piping that cannot be removed will be permanently capped or plugged.
2. The tank interior will be cleaned using as little water as possible to remove loose scale, corrosion and residual product. All safety precautions should be taken in cleaning the tank, and the wastes recovered will be containerized for proper disposal.
3. The tank will be purged of flammable vapors using either dry ice or nitrogen.
4. As the soil surrounding the tank is removed, it will be field screened for evidence of contamination both visually and with a PID.
5. The vent line will then be disconnected and removed.
6. Removal of the top portion of the tank will commence by cutting the tank.
7. Following removal of the top portion of the tank (10:00 – 2:00 region), the general condition of the interior of the tank will be noted for evidence of corrosion and/or pitting.
8. Following inspection, the remaining portion of the tank will be removed.

Following tank removal, the cut-up sections of tank will be transported to a metal recycling facility.

6.0 EMERGENCY RESPONSE

Crews will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the QEP or their designated site representative will assess the nature of the emergency and he/she will have someone call for an ambulance, if needed. If the nature of the injury is not serious (e.g., the person can be moved without expert emergency medical personnel) he/she should be driven to a hospital by on-site personnel. Field personnel will have cellular phones on-site.

6.1 Emergency Phone Numbers

Table 4
Emergency Contact Numbers*

Agency	Phone Number
Medical, Fire, and Police	911
One Call Center	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center [Local]	(800) 222-1222 or (212) POISONS
Pollution Toxic Chemical Oil Spills	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
NYCDEP Hotline	(718) DEP-HELP (337-4357)
Notes: * Contact number subject to change and should be updated as necessary.	

6.2 Hospital Directions

A map to the hospital is attached as Figure 1.

Table 5
Hospital Directions

Hospital Name:	Queens Hospital Center
Phone Number:	(718) 883-3000
Address/Location:	82-68 164th Street, Queens, NY 11433
Directions:	1. From parking lot of The Home Depot at 132-20 Merrick Boulevard, head **WEST** (or **LEFT** out of the parking lot at the signaled intersection) onto Merrick Boulevard for 2.4 miles. 2. **CONTINUE** on 168th Street for 1.1 miles 3. Turn **LEFT** at Grand Central Pkwy/Grand Central Pkwy S Road for 0.2 miles. 4. Turn **RIGHT** at 164th Place for 0.1 miles. 5. Turn **LEFT** at 82nd Road for 404 feet. 6. Turn **LEFT** at 164th Street for 194 feet and the destination will be on the right.
Distance from Site:	4.0 miles (approximately 12 minutes)

6.3 Other Contacts

Table 6
Other Contact Numbers

Contact, Company	Title	Phone Number
Brett D. Soloway – Home Depot U.S.A., Inc.	Owner's Representative	(630) 635-9629
Michelle Lapin – AKRF	Remedial Engineer	(646) 388-9520
Kathleen Brunner – AKRF	Project Manager	(646) 388-9525
Bryan Wong – NYSDEC	Project Manager	(718) 482-4905
Chris Doroski – NYSDOH	Project Manager	(800) 458-1158 Ext. 27860

Notes: * Contact number subject to change and should be updated as necessary.

7.0 APPROVAL & ACKNOWLEDGMENT OF CHASP

This affidavit must be signed by all workers who enter the site. A copy of the CHASP must be on-site at all times during construction work and will be kept by the QEP or their designated site representative.

AFFIDAVIT

I _________________________________ (name), of _____________________________ (company name), have read the Construction Health and Safety Plan (CHASP) for the 132-20 Merrick Boulevard Site in Springfield Gardens, Queens, NY. I agree to conduct all on-site work in accordance with the requirements set forth in this CHASP and understand that failure to comply with this CHASP could lead to my removal from the Site.

Signed:	Company:	Date:
Signed:	Company:	Date:
Signed:	Company:	Date:
Signed:	Company:	Date:
Signed:	Company:	Date:
Signed:	Company:	Date:
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AFFIDAVIT, Continued

I _________________________________ (name), of _____________________________ (company name), have read the Construction Health and Safety Plan (CHASP) for the 132-20 Merrick Boulevard Site in Springfield Gardens, Queens, NY. I agree to conduct all on-site work in accordance with the requirements set forth in this CHASP and understand that failure to comply with this CHASP could lead to my removal from the Site.

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AFFIDAVIT, Continued

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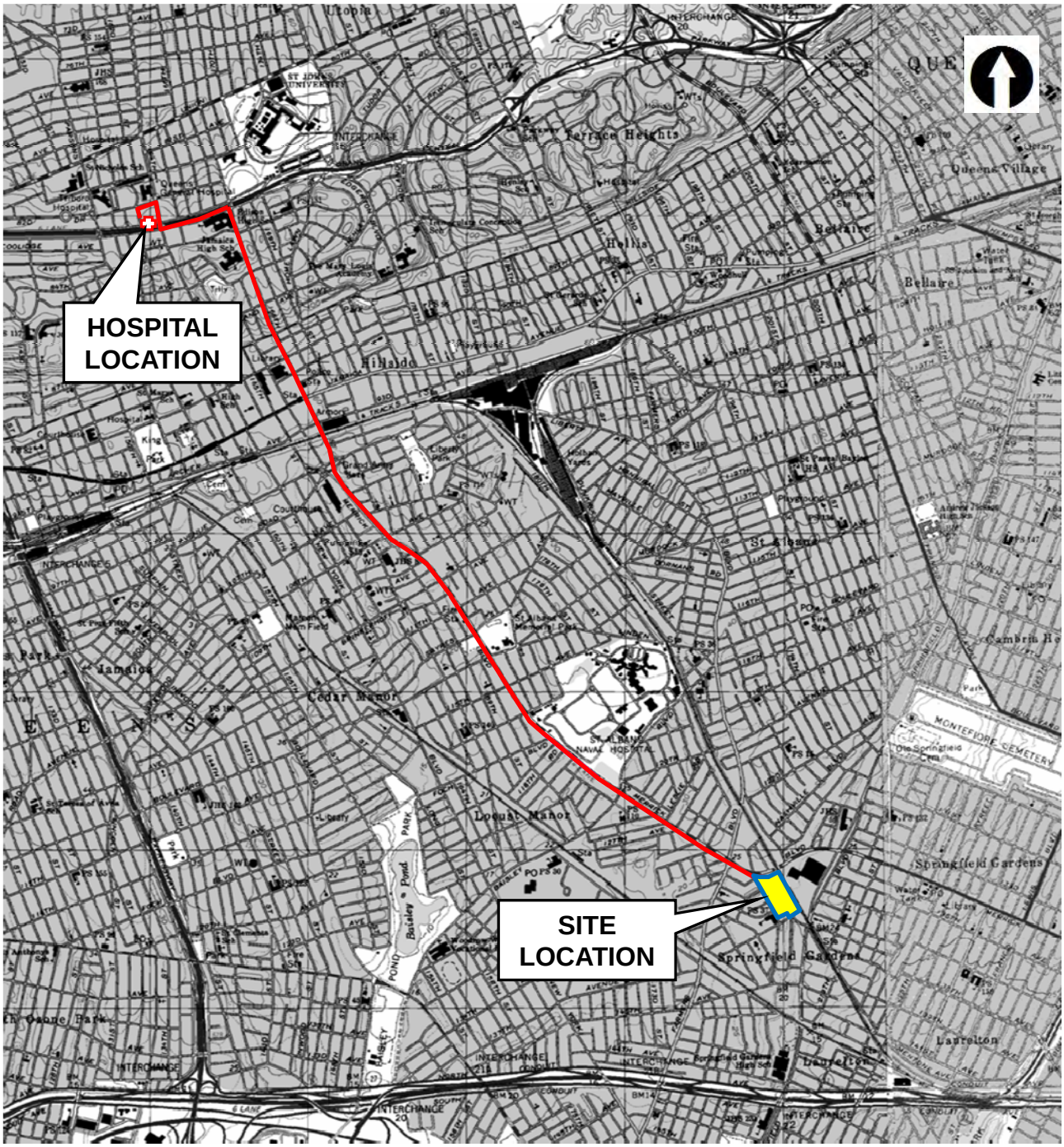
CHASP FIGURE



Queens General Hospital
82-68 164th Street,
Jamaica, NY 11432

HOME DEPOT 132-20 MERRICK BLVD.
SPRINGFIELD GARDENS, NEW YORK

HOSPITAL LOCATION MAP

AKRF
Environmental Consultants
440 Park Avenue South, New York, New York 10016

DATE	9.8.10
SCALE.	1"=2,000'
PROJECT No.	80022
FIGURE	1

CHASP APPENDIX A

POTENTIAL HEALTH EFFECTS FROM ON-SITE CONTAMINANTS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TETRACHLOROETHYLENE
CAS # 127-18-4

Agency for Toxic Substances and Disease Registry ToxFAQs **September 1997**

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tĕt′rə-klôr′ ō-ĕth′ə-lēn′)

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TRICHLOROETHYLENE

CAS # 79-01-6

Division of Toxicology ToxFAQs™ **July 2003**

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene dissolves a little in water, but it can remain in ground water for a long time.
- Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- Trichloroethylene evaporates less easily from the soil than from surface water. It may stick to particles and remain for a long time.
- Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- Trichloroethylene does not build up significantly in plants and animals.

How might I be exposed to trichloroethylene?

- Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid.
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene.
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site.
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment.

How can trichloroethylene affect my health?

Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

Drinking large amounts of trichloroethylene may cause nausea, liver damage, unconsciousness, impaired heart function, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

How likely is trichloroethylene to cause cancer?

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver, kidney, or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. Although, there are some concerns about the studies of people who were exposed to trichloroethylene, some of the effects found in people were similar to effects in animals.

In its 9th Report on Carcinogens, the National Toxicology Program (NTP) determined that trichloroethylene is "reasonably anticipated to be a human carcinogen." The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is "probably carcinogenic to humans."

Is there a medical test to show whether I've been exposed to trichloroethylene?

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L) or 5 parts of TCE per billion parts water.

The EPA has also developed regulations for the handling and disposal of trichloroethylene.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 100 parts of trichloroethylene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: The ability of a substance to cause cancer.
CAS: Chemical Abstracts Service.
Evaporate: To change into a vapor or gas.
Milligram (mg): One thousandth of a gram.
Nonflammable: Will not burn.
ppm: Parts per million.
Sediment: Mud and debris that have settled to the bottom of a body of water.
Solvent: A chemical that dissolves other substances.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Trichloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

VINYL CHLORIDE

CAS # 75-01-4

Division of Toxicology and Environmental Medicine ToxFAQs™ **July 2006**

This fact sheet answers the most frequently asked health questions (FAQs) about vinyl chloride. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to vinyl chloride occurs mainly in the workplace. Breathing high levels of vinyl chloride for short periods of time can cause dizziness, sleepiness, unconsciousness, and at extremely high levels can cause death. Breathing vinyl chloride for long periods of time can result in permanent liver damage, immune reactions, nerve damage, and liver cancer. This substance has been found in at least 616 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is vinyl chloride?

Vinyl chloride is a colorless gas. It burns easily and it is not stable at high temperatures. It has a mild, sweet odor. It is a manufactured substance that does not occur naturally. It can be formed when other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC). PVC is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Vinyl chloride is also known as chloroethene, chloroethylene, and ethylene monochloride.

What happens to vinyl chloride when it enters the environment?

❑ Liquid vinyl chloride evaporates easily. Vinyl chloride in water or soil evaporates rapidly if it is near the surface.
❑ Vinyl chloride in the air breaks down in a few days to other substances, some of which can be harmful.
❑ Small amounts of vinyl chloride can dissolve in water.
❑ Vinyl chloride is unlikely to build up in plants or animals that you might eat.

How might I be exposed to vinyl chloride?

❑ Breathing vinyl chloride that has been released from plastics industries, hazardous waste sites, and landfills.
❑ Breathing vinyl chloride in air or during contact with your skin or eyes in the workplace.
❑ Drinking water from contaminated wells.

How can vinyl chloride affect my health?

Breathing high levels of vinyl chloride can cause you to feel dizzy or sleepy. Breathing very high levels can cause you to pass out, and breathing extremely high levels can cause death.

Some people who have breathed vinyl chloride for several years have changes in the structure of their livers. People are more likely to develop these changes if they breathe high levels of vinyl chloride. Some people who work with vinyl chloride have nerve damage and develop immune reactions. The lowest levels that produce liver changes, nerve damage, and immune reaction in people are not known. Some workers exposed to very high levels of vinyl chloride have problems with the blood flow in their hands. Their fingers turn white and hurt when they go into the cold.

The effects of drinking high levels of vinyl chloride are unknown. If you spill vinyl chloride on your skin, it will cause numbness, redness, and blisters.

Animal studies have shown that long-term exposure to vinyl chloride can damage the sperm and testes.

How likely is vinyl chloride to cause cancer?

The U.S. Department of Health and Human Services has determined that vinyl chloride is a known carcinogen. Studies in workers who have breathed vinyl chloride over many years showed an increased risk of liver, brain, lung cancer, and some cancers of the blood have also been observed in workers.

How can vinyl chloride affect children?

It has not been proven that vinyl chloride causes birth defects in humans, but studies in animals suggest that vinyl chloride might affect growth and development. Animal studies also suggest that infants and young children might be more susceptible than adults to vinyl chloride-induced cancer.

How can families reduce the risk of exposure to vinyl chloride?

Tobacco smoke contains low levels of vinyl chloride, so limiting your family's exposure to cigarette or cigar smoke may help reduce their exposure to vinyl chloride.

Is there a medical test to show whether I've been exposed to vinyl chloride?

The results of several tests can sometimes show if you have been exposed to vinyl chloride. Vinyl chloride can be measured in your breath, but the test must be done shortly after exposure. This is not helpful for measuring very low levels of vinyl chloride.

The amount of the major breakdown product of vinyl chloride, thiodiglycolic acid, in the urine may give some information about exposure. However, this test must be done shortly after exposure and does not reliably indicate the level of exposure.

Has the federal government made recommendations to protect human health?

Vinyl chloride is regulated in drinking water, food, and air. The EPA requires that the amount of vinyl chloride in drinking water not exceed 0.002 milligrams per liter (mg/L) of water.

The Occupational Safety and Health Administration (OSHA) has set a limit of 1 part vinyl chloride per 1 million parts of air (1 ppm) in the workplace.

The Food and Drug Administration (FDA) regulates the vinyl chloride content of various plastics. These include plastics that carry liquids and plastics that contact food. The limits for vinyl chloride content vary depending on the nature of the plastic and its use.

Reference

Agency for Toxic Substances and Disease Registry (ATSDR). 2006. Toxicological Profile for Vinyl Chloride (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

1,2-DICHLOROETHENE
CAS # 540-59-0, 156-59-2, and 156-60-5

This fact sheet answers the most frequently asked health questions (FAQs) about 1,2-dichloroethene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to 1,2-dichloroethene occurs mainly in workplaces where it is made or used. Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired. *cis*-1,2-Dichloroethene has been found in at least 146 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA). *trans*-1,2-Dichloroethene was found in at least 563 NPL sites. 1,2-Dichloroethene was found at 336 sites, but the isomer (*cis*- or *trans*-) was not specified.

What is 1,2-dichloroethene?

(Pronounced 1,2-dī-klôrʹ ō-ĕthʹēn)

1,2-Dichloroethene, also called 1,2-dichloroethylene, is a highly flammable, colorless liquid with a sharp, harsh odor. It is used to produce solvents and in chemical mixtures. You can smell very small amounts of 1,2-dichloroethene in air (about 17 parts of 1,2-dichloroethene per million parts of air [17 ppm]).

There are two forms of 1,2-dichloroethene; one is called *cis*-1,2-dichloroethene and the other is called *trans*-1,2-dichloroethene. Sometimes both forms are present as a mixture.

What happens to 1,2-dichloroethene when it enters the environment?

- 1,2-Dichloroethene evaporates rapidly into air.
- In the air, it takes about 5-12 days for half of it to break down.
- Most 1,2-dichloroethene in the soil surface or bodies of water will evaporate into air.
- 1,2-Dichloroethene can travel through soil or dissolve in water in the soil. It is possible that it can contaminate groundwater.
- In groundwater, it takes about 13-48 weeks to break down.
- There is a slight chance that 1,2-dichloroethene will break down into vinyl chloride, a different chemical which is believed to be more toxic than 1,2-dichloroethene.

How might I be exposed to 1,2-dichloroethene?

- Breathing 1,2-dichloroethene that has leaked from hazardous waste sites and landfills.
- Drinking contaminated tap water or breathing vapors from contaminated water while cooking, bathing, or washing dishes.
- Breathing 1,2-dichloroethene, touching it, or touching contaminated materials in the workplace.

How can 1,2-dichloroethene affect my health?

Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired; breathing very high levels can kill you.

When animals breathed high levels of *trans*-1,2-dichloroethene for short or longer periods of time, their livers and lungs were damaged and the effects were more severe with longer exposure times. Animals that breathed very high

levels of *trans*-1,2-dichloroethene had damaged hearts.

Animals that ingested extremely high doses of *cis*- or *trans*-1,2-dichloroethene died.

Lower doses of *cis*-1,2-dichloroethene caused effects on the blood, such as decreased numbers of red blood cells, and also effects on the liver.

The long-term (365 days or longer) human health effects after exposure to low concentrations of 1,2-dichloroethene aren't known. One animal study suggested that an exposed fetus may not grow as quickly as one that hasn't been exposed.

Exposure to 1,2-dichloroethene hasn't been shown to affect fertility in people or animals.

How likely is 1,2-dichloroethene to cause cancer?

The EPA has determined that *cis*-1,2-dichloroethene is not classifiable as to its human carcinogenicity.

No EPA cancer classification is available for *trans*-1,2-dichloroethene.

Is there a medical test to show whether I've been exposed to 1,2-dichloroethene?

Tests are available to measure concentrations of the breakdown products of 1,2-dichloroethene in blood, urine, and tissues. However, these tests aren't used routinely to determine whether a person has been exposed to this compound. This is because after you are exposed to 1,2-dichloroethene, the breakdown products in your body that are detected with these tests may be the same as those that come from exposure to other chemicals. These tests aren't available in most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum allowable level of *cis*-1,2-dichloroethene in drinking water at 0.07 milligrams per liter of water (0.07 mg/L) and *trans*-1,2-dichloroethene at 0.1 mg/L.

The EPA requires that any spills or accidental release of 1,000 pounds or more of 1,2-dichloroethene must be reported to the EPA.

The Occupational Health Safety and Health Administration (OSHA) has set the maximum allowable amount of 1,2-dichloroethene in workroom air during an 8-hour workday in a 40-hour workweek at 200 parts of 1,2-dichloroethene per million parts of air (200 ppm).

Glossary

Carcinogenicity: Ability of a substance to cause cancer.

CAS: Chemical Abstracts Service.

Fertility: Ability to reproduce.

Ingest: To eat or drink something.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million.

Solvent: A chemical that can dissolve other substances.

References

This ToxFAQs information is taken from the 1996 Toxicological Profile for 1,2-Dichloroethene produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

APPENDIX F

Example Site Inspection and Certification Forms

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
INSTITUTIONAL AND ENGINEERING CONTROLS CERTIFICATION FORM

SITE DETAILS

SITE NO.	**V00304**
SITE NAME:	**132-20 Merrick Boulevard**
SITE ADDRESS:	132-20 Merrick Boulevard
ZIP CODE:	11434
CITY/TOWN:	Springfield Gardens
COUNTY:	Queens
CURRENT USE:	Commercial

CURRENT CERTIFICATION FREQUENCY: EVERY 1 YEAR

VERIFICATION OF SITE DETAILS

		YES	NO
1.	Are the SITE DETAILS above, correct?	☐	☐
	If NO, are changes handwritten above or included on a separate sheet?	☐	
2.	Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment since the initial/last certification?	☐	☐
	If YES, is documentation or evidence that documentation has been previously submitted included with this certification?	☐	
3.	Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property since the initial/last certification?	☐	☐
	If YES, is documentation or evidence that documentation has been previously submitted included with this certification?	☐	
4.	Has a change of use occurred since the initial/last certification?	☐	☐
	If YES, is documentation or evidence that documentation has been previously submitted included with this certification?	☐	
5.	Has any new information come to your attention to indicate that assumptions made in the qualitative exposure assessment for offsite contamination are no longer valid (applies to non-significant threat sites subject to ECL 27-1415.7(c)?	☐	☐
	If YES, is the new information or evidence that new information has been previously submitted included with this certification?	☐	
6.	Are the assumptions in the qualitative exposure assessment still valid (must be certified every five years for non-significant threat sites subject to ECL 27-1415.7(c)?	☐	☐
	If NO, are changes in the assessment included with this certification:	☐	☐

Description of Institutional/Engineering Control	Control Certification
	YES
DEED RESTRICTIONS	☐
OTHER CONTROLS	
COMPOSITE SITE COVER	☐

CONTROL CERTIFICATION STATEMENT

For each institutional or engineering control listed above, I certify by checking “Yes” that all of the following statements are true:

(a) the institutional control and/or engineering control employed at this site is unchanged from the date the control was put in-place, or last approved by the Department;’

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

(c) nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for this control; and

(d) access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control.

(e) if a financial assurance mechanism is required under the remedial work plan for the site, the mechanism remains valid and sufficient for their intended purpose under the work plan.

CONTROL CERTIFICATIONS
SITE NO. V00304

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ (print name), _____

(print business address), am certifying as _____ (Owner or Owner's Designated Site Representative if the site consists of multiple properties), I have been authorized and designated by all site owners to sign this certification for the Site named in the Site Details section of this form.

_____ _____

Signature of Site Owner or Representative Rendering Certification Date

PROFESSIONAL ENGINEER SIGNATURE

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ (print name), _____

(print business address), am certifying as a Professional Engineer for the _____

_____ (Owner or Owner's Representative) for the Site named in the Site Details section of this form.

Signature of Professional Engineer, for Site Owner or Representative, Rendering Certification | Stamp | Date

Certification of Institutional Controls/Engineering Controls (ICs/ECs)
Step-by-Step Instructions, Certification Requirements and Definitions

The Site owner, or Site owner's representative, and when necessary, a Professional Engineer (P.E.) must review and complete the IC/EC Certification Form, sign it, and return it, along with the Annual Site Management Report, within 45 days of the date of this notice.

Institutional Controls (defined below) are organized into 4 categories: Governmental Controls (e.g., groundwater-use restrictions), Proprietary Controls (e.g., Environmental Easements), Enforcement and Permit Tools (e.g., Consent Orders), and Information Devices (e.g., State Registries of Inactive Hazardous Waste Sites). The Certification Form shows the Control information the Department has for this Site. Please use the following instructions to complete the IC/EC Certification.

I. Verification of Site Details (First and Second Boxes):

1. Verify the accuracy of information in the **Site Details** section by answering the 6 questions. If necessary, you and/or your P.E. may handwrite changes and submit supporting documentation.

II. Verification of Institutional/Engineering Controls (Third and Fourth Boxes):

1. Review the listed Institutional/Engineering Controls and select "YES" or "NO" for **Control Certification** for each IC/EC, based on Sections (a)-(d) of the **Control Certification Statement.**

2. If you cannot certify "Yes" for each Control, please continue to complete the remainder of this **Control Certification** form. Attach supporting documentation that explains why the **Control Certification** cannot be rendered, as well as a statement of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Control Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is conducted.

   If the Department concurs with the explanation, the corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued. If the Department has any questions or concerns regarding the completion of the certification, the Project Manager will contact you.

III. Certification of Signature (Fifth and Sixth Boxes):

1. WHY IC/EC Certification is required:
   The Section of the New York Environmental Conservation Law that includes the requirement of a periodic certification of IC(s) and EC(s) is as follows:

   For Environmental Restoration Projects: N.Y. Envtl Conserv. Law Section 56-0503 (Environmental restoration projects; state assistance)

   For State Superfund Projects: Envtl Conserv. Law Section 27-1415. (Remedial program requirements)

   Voluntary Cleanup Program: Applicable program guidance.

2. To determine WHO signs the **Control Certification,** please use the following table:

Signature Requirements for IC/EC Certification Form		
Type of Control	**Example of IC/EC**	**Required Signatures**
IC	Environmental Easement Deed Restriction.	Site Owner or their designated representative, e.g., a Property Manager.
EC that includes treatment systems, or engineered caps.	Pump & Treat System providing hydraulic control of a plume, Part 360 Cap.	Site Owner or his designated representative, and P.E.

3. WHERE to mail the signed Certification Form within 45 days of the date of the notice:

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 2
47-40 21st Street
Long Island City, NY 11101-5407
Attn: Bryan Wong, Environmental Engineer

Please note that extra postage may be required.

IV. Definitions:

"Engineering Control" (EC), means any physical barrier or method employed to actively or passively contain, stabilize, or monitor any hazardous waste or petroleum waste to ensure the long-term effectiveness of an inactive site remedial program or brownfield site remedial program or environmental restoration project, or to eliminate potential exposure pathways to any such hazardous waste or petroleum waste. Engineering Controls include, but are not limited to: pavement, caps, covers, subsurface barriers and slurry walls; building ventilation systems; fences, other barriers and access controls; and provision of alternative water supplies via connection to an existing public water supply, addition of treatment technologies to an existing public water supply, and installation of filtration devices on an existing private water supply.

"Institutional Control" (IC), means any non-physical means of enforcing a restriction on the use of real property, that limits human or environmental exposure to any hazardous waste or petroleum waste, restricts the use of groundwater; provides notice to potential owners, operators, or members of the public; or prevents actions that would interfere with the effectiveness of an inactive site remedial program or brownfield site remedial program or environmental restoration project, or with the effectiveness and/or integrity of Site Management activities at or pertaining to any site.

"Professional Engineer" (P.E.) means a person, including a firm headed by such a person, who holds a current New York State Professional Engineering license or registration, and has the equivalent of three (3) years of full-time relevant experience in site investigation and remediation of the type detailed in this Control Certification.

"Property Owner" means, for purposes of an IC/EC certification, the actual owner of a property. If the site has multiple properties with different owners, the Department requires that the owners be represented by a single representative to sign the certification.

"Oversight Document" means any document the Department issues pursuant to each Remedial Program (see below) to define the role of a person participating in the investigation and/or remediation of a site or area(s) of concern. Examples for the various programs are as follows:

BCP (after approval of the BCP application by DEC) – Brownfield Site Cleanup Agreement.
ERP (after approval of the ERP application by DEC) – State Assistance Contract.
Federal Superfund Sites - Federal Consent Decrees, Administrative Orders on Consent or Unilateral Orders issued pursuant to CERCLA.
Oil Spill Program – Order on Consent, or Stipulation pursuant to Article 12 of the Navigation Law (and the New York Environmental Conservation Law).
State Superfund Program – Administrative Consent Order.
VCP (after approval of the VCP application by DEC) – Voluntary Cleanup Agreement.
RCRA Corrective Action Sites - Federal Consent Decrees, Administrative Orders on Consent or permit conditions issued pursuant to RCRA.

"Remedial Party" means any person or persons, as defined in 6NYCRR 375, who executes, or is otherwise subject to, an oversight document (State Superfund, BCP, ERP or VCP Program). For purposes of this guidance, remedial party also includes:

1. Any person or persons who is performing the investigation and/or remediation, or has control over the person (for example, contractor or consultant) who is performing the investigation and/or remediation, including, without limitation, an owner, operator or volunteer; and

2. The DER for State-funded investigation and/or remediation activities.

“Site Management” (SM) means the activities included in the last phase of the remediation of a site, in accordance with a Site Management Plan, which continue until the remedial action objectives for the project are met and the site can be closed-out. Site Management includes the management of the institutional and engineering controls required for a site, as well as the implementation of any necessary long-term monitoring and/or operation and maintenance of the remedy. (Formerly referred to as Operation and Maintenance (O&M)).
“Site Management Plan” (SMP) means a document which details the steps necessary to assure that the institutional and engineering controls required for a site are in-place, and any physical components of the remedy are operated, maintained and monitored to assure their continued effectiveness, developed pursuant to Section 6 (DER10 Technical Guide).

“Site Owner” means the actual owner of a site. If the site has multiple owners of multiple properties with ICs and/or ECs, the Department requires that the owners designate a single representative for IC/EC Certification activities.

“Site Owner’s Designated Representative” means a person, including a firm headed by such a person, who has been designated in writing by the Site Owner(s) to complete and sign the Institutional and Engineering Controls Certification Form.

Example Site-Wide Inspection Form
132-30 Merrick Boulevard, Springfield Gardens, NY
VCP Site No. V00304

Inspector: _____

Date: _____

1. Site Use Restrictions

No groundwater withdrawal for potable/non-potable use?

Commercial use maintained?

2. Site Cover

Note the date that the annual site cover inspection was performed:

Repairs made as noted during inspection?

3. Soil Management

Note the date(s) of any soil disturbance activities conducted during the past year:

Proper soil management procedures implemented (cite appropriate close-out reports)?

4. Groundwater Monitoring

Monitoring being conducted on a semi-annual basis (note the dates of sampling conducted)?

All on-site monitoring wells in working condition (note any repairs/replacement)?

5. Recordkeeping

Check that the following records/reports are being maintained/completed (note report/log dates as appropriate):

1) Annual site cover inspection log

2) Close-out report(s) for soil disburbance activities (including manifests for soil disposal)

3) Annual groundwater monitoring reports (including laboratory analytical data)

6. Comments

(Note any deficiencies and recommendations for corrective actions.)

Example Site Cover Inspection Form
132-20 Merrick Boulevard, Springfield Gardens, NY
VCP Site No. V00304

Inspector: _____

Date: _____

1. Landscaped areas:

Adequate soil cover present?

Signs of erosion?

Recommended corrective action:

2. Outdoor paving/sidewalks:

Note any signs of cracking or other damage:

Note any areas where greater than 25% of surface is cracked/damaged:

Recommended corrective action:

Comments (attach photos/sketches to illustrate any damage noted): _____