Home Depot – Rego Park

REGO PARK - GLENDALE, NEW YORK

Revised AS/SVE Expansion Work Plan

NYSDEC VCP Site No. V00095

AKRF Project Number: 03399

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1.0 INTRODUCTION

The Home Depot Rego Park, New York Voluntary Cleanup Program site is located at 75-09 Woodhaven Boulevard in the Rego Park–Glendale section of Queens, New York (Site). A Site location map is provided as Figure 1. The Site comprises the southern portion of The Home Depot (Home Depot) Store #1220 property and includes the Home Depot building and surrounding property to the west, south, and east, but excludes most of the parking area to the north. The Home Depot building is a single-story slab-on-grade structure with public access on the north side, a loading dock near the southwestern corner, and a garden center on the west side. The Site is bounded on the west by the Woodhaven Boulevard service road, on the south by active tracks of the Long Island Railroad, and on the east by an abandoned former railroad embankment, beyond which a school is currently under construction. Commercial properties are located north-adjacent to the Site. A baseball field with associated parking area and concession stand are located across the railroad tracks south of the Site; further to the south is a residential area.

Remedial work at the Site is being managed under the oversight of the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) under the Voluntary Cleanup Program (VCP) Site No. V00095.

The major contaminant of concern identified on the Site is tetrachloroethene (PCE). The objective of this Air Sparge/Soil Vapor Extraction (AS/SVE) Expansion Work Plan is to design an extension of the existing AS/SVE system along the downgradient boundary of the Site and to address deeper contamination in the source area in the southwestern corner of the Site. An AS/SVE pilot test was performed in January 2010 in general accordance with the Pilot Test Work Plan (PTWP) dated March 2009 and the AKRF correspondence dated December 30, 2009, amending the PTWP and responding to NYSDEC comments.

2.0 SITE DESCRIPTION

The Site is located in the Rego Park/Glendale neighborhood of the Borough of Queens, New York. The project Site lies at an elevation of approximately 65 feet above Queens Borough Datum, which is 2.725 feet above mean sea level (msl). The topography of the Site is relatively flat.

2.1 Site History

Before it was acquired by Home Depot U.S.A., Inc. in 1997, the Site comprised two parcels: the Allborough Distribution Inc. (ADI) parcel along the Woodhaven Boulevard service road on the western part of the Site, and the Glendale Properties parcel on the remainder of the Site.

The ADI parcel contained a warehouse building constructed between 1936 and 1950, with an addition annexed to the northern portion in 1960. Historic Sanborn maps show the building as a steel warehouse in 1950 and as a knitting mill in 1981, 1990, and 1993. Title search records indicate that the property was owned/leased by Standard Tube Sales Corp. during the late 1960s, Corum Knit Fabrics, Inc. and Bejan Knitting Mills, Inc. during the early 1970s, and ADI from the late 1970s until the property was acquired by Home Depot U.S.A., Inc. in 1997. ADI was a distributor of stationery and office supplies and utilized the building for office and warehouse purposes.

The Glendale Properties parcel contained a large one-story warehouse building constructed in 1952-53. Reportedly, the building was originally constructed for use by General Electric Co.'s - Lamp Division, which utilized the building for office and warehouse purposes until the late 1980s. Spiro-Wallach Co. Inc., the occupant of the building prior to its acquisition by Home

Depot U.S.A., Inc., took over the building in 1989. Spiro-Wallach was a distributor of office, food service, and janitorial products and used the building for office and warehouse purposes.

In performing due diligence studies prior to 1997, tetrachloroethene (PCE) was discovered in the soil and groundwater under the ADI warehouse and in adjacent areas to the east. When the warehouse was demolished, the area under the building was gridded and the soil screened to determine the extent of soil contamination. Two areas of soil contamination were found, one at the southern end of the building, close to the railroad tracks, and one further north, where the garden center is now located. Similar studies were performed after the demolition of the Glendale Properties building, but no further source areas were identified.

Remedial activities are being performed at the Site in accordance with a Voluntary Cleanup Agreement (#V00095) entered into in 1997. Remedial work is being performed in accordance with the NYSDEC-approved Remedial Work Plan, ADI and Glendale Properties, Rego Park, Queens, New York, dated May 1997 (RWP). Prior remedial activities conducted on the Site included:

- Excavation and removal of over 1,000 tons of PCE-contaminated soil from two source areas within the footprint of the former ADI building adjacent to Woodhaven Boulevard; and
- Construction and operation of an AS/SVE system covering the source areas, the area immediately downgradient of the source area, and the downgradient boundary of the Site. The equipment for the existing air sparge/soil vapor extraction system is in an enclosure near the southwestern corner of the Site, and the system extends to the north and east under the garden center, the southwestern corner of the building, and along the southern boundary of the Site. The system was designed to include 29 AS wells with 5-foot long screens installed to a total depth of 10 feet below the water table depth observed during drilling, and 21 SVE wells with 10-foot long screens installed to a depth of 10 feet above the water table. The AS blower provides air flow of 100 cubic feet per minute (cfm) at a pressure of 7 pounds per square inch (psi). The SVE blower provides air flow of 1,000 cfm at a vacuum of 100 inches of water.

2.2 Site Geology, Hydrogeology and Subsurface Characteristics

Subsurface investigations indicated that the Site is underlain by native glacial deposits containing sand with minor proportions of silt, gravel, and cobbles to depths ranging from about 135 to 150 feet below grade. The sand was underlain by a dark gray clay. Up to five feet of fill material has been noted beneath the surface cover material in some soil borings, including pieces of concrete and brick.

Depth to groundwater on the Site ranges between 50 feet and 56 feet below grade. The measurement of groundwater elevations indicates that groundwater flow is to the southeast with a gradient of about 0.006 feet per feet. Groundwater in Queens is not used as a source of potable water.

An Open File Report by the U.S. Geological Survey, titled “Reconnaissance of the Groundwater Resources of Kings and Queens Counties, New York” (Report Number 81-1186, 1981) describes general geologic and hydrogeologic conditions at the Site. In a general geologic section of Queens, crystalline bedrock of Precambrian age is overlain by the Cretaceous Raritan Formation, which consists of unconsolidated sands and clays. The Raritan Formation is overlain by the Magothy Formation, also Cretaceous in age; the Pleistocene Jameco Gravel; and the Pleistocene Gardiners Clay. It is likely that all of these units are present underlying the Site, although the Jameco Gravel and Gardiners Clay are somewhat patchy in this area. The crystalline bedrock probably lies more than 400 feet below the ground surface at the subject Site and the surface of the Gardiners Clay is about 150 feet below the ground surface. More recent deposits at the Site consist primarily of glacial moraine - unconsolidated sediments ranging from boulders to clay, but primarily gravel, sand and silt. The Raritan and Magothy Formations have proven aquifer properties, and the glacial moraines immediately underlying the Site form a part of the Upper Glacial Aquifer.

2.3 Nature and Extent of Contamination

Supplemental groundwater investigations were performed on the Site in 2003, 2004, 2008, and 2009. The purposes of the investigations were:

- To identify any previously undetected contaminant source areas on the Site;
- To determine the horizontal and vertical distribution of PCE in the groundwater at the southern boundary of the Site;
- To further evaluate concentrations at the downgradient perimeter (southeastern corner) of the Site; and
- To produce data to support the design of upgrades to the existing remediation system on the Site.

Groundwater sampling at varying depths found that the intermediate groundwater samples (collected 25 feet below the groundwater surface) typically contained higher levels of PCE than the corresponding shallow samples (collected at the groundwater surface). At one monitoring well within the source area in the southwestern corner of the Site, AMW-5, a high concentration of PCE was detected at 25 feet below the groundwater surface; PCE was present at lower levels in samples from 35 and 55 feet below the groundwater surface. In the southwestern corner, PCE has penetrated below the surface of the groundwater, but is still more concentrated in the upper and intermediate portions of the aquifer and concentrations decreased in the sample collected just above the clay layer, from approximately 90 feet below the groundwater surface.

Groundwater samples collected from the shallow wells at the downgradient end of the site (southeastern corner) had PCE concentrations below or slightly above the Class GA Standard; however, intermediate-depth PCE concentrations in the two wells screened 30 feet below the water table at these locations were higher than shallow concentrations. The concentrations of PCE in shallow groundwater at the downgradient end of the site were significantly less than those detected in shallow groundwater near the Site source area (southwestern portion of the Site).

The investigation concluded that additions to the existing AS/SVE system were prudent in two areas: the source area in the southwestern corner of the site and the eastern portion of the southern boundary of the site. The addition in the southwestern corner of the site is intended to provide additional remediation in this source area at the site perimeter, and to extend the sparging system deeper into the groundwater to treat contamination below the level of the existing sparging wells. The addition along the southern and southeastern boundaries is intended to intercept the portion of the contamination plume that extends further east than the existing remediation system. Expanding the AS/SVE system with well clusters further east of the existing system is intended to address potential off-site migration by treating the PCE identified in the intermediate groundwater (30 feet below the water table) and also remediate the shallow groundwater interval.

3.0 PILOT TEST ACTIVITIES

The pilot test was performed between January 11 and 15, 2010 in general accordance with the Pilot Test Work Plan (PTWP) dated March 2009 [including the Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HASP) provided as attachments to the PTWP] and the AKRF correspondence dated December 30, 2009 amending the PTWP and responding to NYSDEC comments. The objectives of the pilot test were to:

Evaluate effective radius of influence (ROI) for the SVE and AS wells at varying depths to determine the optimal spacing and quantity of wells;

Evaluate the potential for upwelling to ensure vapors and sparged air are controlled and to optimize system performance;

Evaluate capture of sparged air; and

Determine mass loading for design of full-scale vapor treatment of the SVE system.

3.1 Well Installation

The pilot test used existing monitoring wells to the extent feasible. One AS well, one SVE well and four observation point clusters (each consisting of two soil vapor points: a shallow point, installed with 6-inch screen at a depth of 2 feet below grade; and a deep point, installed with 6-inch screen at a depth of 45 feet below grade) were installed prior to the pilot test.

SVE well PT-SVE was installed to a depth of 50 feet below grade and was constructed of 4-inch, Schedule 40 polyvinyl chloride (PVC) casing with a 0.020-inch slotted screen. PT-AS was screened from 35 to 50 feet below grade to address soil vapors in the vadose zone immediately above the water table. Sand filter pack material (#1 filter sand) was placed between the casing/screen and the walls of the borehole. The screen size and sand pack correspond with the surrounding sandy soil, ensuring adequate air flow while restricting fines in the soil from clogging the filter sand or entering the well. The filter pack material extended 6 inches above the top of the well screen followed by a 4-foot bentonite seal. Grout was placed above the bentonite for the vertical portion of the well. The well was completed using a flush-mount gate box, with a concrete apron set around the gate box to prevent drainage of surface runoff toward the well.

Shallow AS well PT-AS was installed to a depth of 62 feet below grade using 2-inch diameter PVC casing with a 2-foot long, 0.020-inch slotted screen extending from 60 to 62 feet below grade. #1 filter sand was placed between the casing/screen and the walls of the borehole to a depth of 6 inches above the screened interval. The annular space around the well riser was sealed with bentonite extending one to two feet above the sand filter pack and completed with a non-shrinking cement mixture to the surface.

Shallow and deep pressure monitoring point clusters were installed at a depth of 2 feet below grade for the shallow points (PM-1S, PM-2S, PM-3S and PM-4S) and at a depth of 45 feet below grade for the deep points (PM-1D, PM-2D, PM-3D and PM-4D). The observation wells were installed using a Direct Push Probe (DPP) sampler equipped with a disposable tip and an internal 6-inch stainless steel screen sampling port connected to clean polyethylene sampling tubing. The sampling tubing extended from the top of the screen to grade. Sand filter pack was placed around the screen to a depth of 6 inches above the top of screen. A bentonite seal was placed above the sand for the vertical portion of the well. Each pressure monitoring point was completed using a flush-mount gate box.

Soil Boring and Well Construction Logs for the wells used during the pilot test are provided in Appendix A. The pilot test well locations are shown on Figure 2. The depths and screen intervals for the SVE and observation points are provided in Table 1.

Table 1
Pilot Test and Observation Point Details

Well ID	Total Depth (feet below TOC)	Screened Interval (feet below TOC)
PT-AS	62’	60-62’
PT-SVE	50	35-40’
PM-1S	2’	1.5-2’
PM-1D	45’	43-45’
PM-2S	2’	1.5-2’
PM-2D	45’	43-45’
PM-3S	2’	1.5-2’
PM-3D	45’	43-45’
PM-4S	2’	1.5-2’
PM-4D	45’	43-45’
P-5	62.20'	58-63’
P-13	84.73'	75-85’
P-14	59.25’	50-60’
P-15	84.98'	75-85’
P-16	59.40’	50-60’
P-17	110'	100-110'
P-18	137’	127-137’

Note: TOC – Top of casing

3.2 Baseline Monitoring

Baseline monitoring was conducted to provide data for static conditions prior to initiating the pilot test. The measurements from each of the SVE, AS, and observation points included the following:

- Depth to groundwater (DTW), as practicable;
- Dissolved oxygen (DO) (in groundwater) using a handheld DO meter;
- Vacuum/pressure of well headspace using magnehelic gauges;
- VOCs of well headspace using a photoionization detector (PID); and

- Oxygen (O_2) of well headspace using an O_2 meter.

Following installation of the SVE blower assembly, the blowers, gauges, and monitoring equipment were checked for functionality. Each observation point was fitted with a tightly-fitting slip cap pre-drilled with a hose fitting and connected to a section of sampling hose to allow for headspace readings (vacuum/pressure, VOCs and O_2) within the well. The pressure monitoring points consisted of tubing, which was plugged when not being monitored. Baseline monitoring results are presented as Appendix B.

3.3 Blower Calibration

A skid-mounted positive displacement blower (Roots 53 Universal RAI), with a maximum capacity of 335 cubic feet per minute (cfm) was utilized for the SVE test. The system was equipped with a flow meter, and vacuum gauge. The blower was attached to the extraction well with hoses and fittings, and a dilution valve was installed to adjust the flow rate and vacuum of the blower. This allowed the applied vacuum to be adjusted by bleeding in ambient air through a bypass valve.

A separate drive rotary vane blower (Gast Model 2567), with a maximum capacity of 13 cfm was utilized for the AS tests. The system was equipped with a flow meter and pressure gauge. The blower was attached to the extraction well with hoses and fittings. The air intake was adjusted to throttle the AS blower between step tests.

Prior to the start of each test, the blowers, gauges, and monitoring equipment were checked for functionality. Blower calibration details are discussed in Sections 3.4 and 3.5. In each case, the appropriate blower was connected to the specified well and operated with the dilution valve fully closed to determine the maximum operating conditions for the blower at that particular well. Step test conditions were determined as percentages of the maximum applied vacuum at PT-SVE and percentages of the maximum air flow rate for AS wells.

3.4 SVE Pilot Test Methodology

SVE pilot testing was conducted on January 12, 2010. Blower calibration was conducted to determine the maximum vacuum achievable at extraction well PT-SVE. The SVE blower's maximum applied vacuum was determined to be approximately 50 inches of water column (in. H_2O). Step tests were conducted at approximately 13, 25 and 50 in. H_2O (25%, 50% and 100% of the blower capacity, respectively). Each step test consisted of monitoring rounds at approximately 45-minute intervals for a minimum of 2 hours until steady state conditions were observed. Generally, steady state conditions during the SVE tests were achieved after approximately one hour. After the completion of the first step test, the SVE blower was throttled up to the appropriate conditions for the subsequent step test and allowed to run for approximately 30 minutes before the monitoring resumed.

The observation points and their distance from PT-SVE are provided in Table 2 and pilot test well locations are shown on Figure 2.

Table 2
SVE Pilot Test Observation Points

Well ID	Approximate Distance From PT-SVE (feet)
PT-SVE	NA
PM-3S and PM-3D	10’ West
PT-AS	15’ East
P-13	20’ East
P-14	20’ East
PM-4S and PM-4D	20’ West
P-18	22’ Northeast
P-17	25’ Northeast
PM-2S and PM-2D	25’ Northeast
PM-1S and PM-1D	30’ West
P-15	60’ North-northeast
P-16	65’ North-northeast
P-5	123’ North-northeast

3.4.1 Monitoring Parameters

Atmospheric conditions, including barometric pressure, humidity, wind direction and speed, were collected at the start of each day using a Kestrel 4200 Pocket Weather meter. During each step test, the extraction well and observation points were monitored on approximately 45-minute intervals for the parameters listed in Table 3. VOC concentrations were measured using a Thermo Environmental model 580B photoionization detector (PID). The PID was calibrated each day using 100 parts per million (ppm) isobutylene standard gas. O_2 levels were measured using a CES-Landtec GA90 landfill gas meter. The landfill gas meter was calibrated each day using multi-gas span gas. Applied and induced vacuum were measured using Magnehelic differential vacuum gauges (of varying ranges, as warranted by the observed vacuum). Air speed (in feet per minute) was measured with a Dwyer Model 471-1 thermo-anemometer within a 2-inch diameter segment of the SVE influent tubing. The speed was multiplied by the cross-sectional area of the tube to obtain the air flow rate.

Table 3
SVE Pilot Test Monitoring Parameters

Extraction Well	Observation Points
Applied vacuum Air flow VOC concentration (influent, intermediate, effluent) O_2 (influent)	Induced vacuum (well cap) VOCs (well cap) O_2 (well cap) (DO) (groundwater) *

* DO measurements were taken, at the applicable wells, during the final round of each step test, as DO values were variable throughout the test to take measurements more frequently.

The collected data was subsequently plotted graphically to aid in optimizing system design. Data sheets are provided as Appendix C and graphs of the data are provided as Appendix D.

3.4.2 Confirmatory Sampling

Influent and effluent VOC sampling was conducted at the end of the second step test to evaluate the mass loading for future vapor treatment requirements of the system. Sampling was conducted using 6-liter Summa canisters with 30-minute flow controllers. Samples were submitted to TestAmerica, Inc. of Burlington, Vermont, a NYSDOH ELAP-certified laboratory, for analysis of VOCs by EPA Method TO-15. Laboratory results are provided in Appendix E.

3.5 AS Pilot Test Methodology

AS pilot testing was conducted between January 13 and 15, 2010, beginning with the shallow sparge well (PT-AS), then the intermediate depth well (P-13), and concluding with the deep sparge well (P-17). Blower calibration was conducted at the beginning of each day to determine the maximum flow rate for the respective AS wells. The maximum air flow rate at each AS well was determined and three step tests were conducted at each AS well at varied flow rates. At P-13 and P-17, 25% of the maximum air flow rate could not be achieved, as these wells required a greater amount of corresponding pressure to be able to achieve any flow through the water column. In these cases, the range of air flow rates was divided in half and step tests were conducted at the minimum breakthrough air flow rate, the median air flow rate, and the maximum air flow rate. Step tests were conducted at approximately 2.5, 5, and 10 cfm at PT-AS; 4.5, 7, and 9 cfm at P-13; and 3, 5.5, and 8 cfm at P-17. The SVE system was operated during the AS tests at an applied vacuum of 25 inches of water (in. H_2O) (50% SVE capacity).

Each step test consisted of monitoring rounds at approximately 45-minute intervals for a minimum of 2 hours or until steady state conditions were observed. The observation points and their distance from the specified AS well are provided in Tables 4 through 6 and pilot test well locations are shown on Figure 2.

Table 4
Shallow AS Pilot Test Observation Points – Sparge Well PT-AS

Well ID	Approximate Distance From PT-AS (feet)
PT-AS	NA
PT-SVE	15’ West
P-14	5’ Northeast
P-13	5’ Southeast
P-17	17’ North
PM-2S and PM-2D	20’ North
PM-3S and PM-3D	25’ West
PM-4S and PM-4D	35’ West
PM-1S and PM-1D	45’ West

Table 5
Intermediate AS Pilot Test Observation Points – Sparge Well P-13

Well ID	Approximate Distance From P-13(feet)
P-13	NA
P-14	5’ North
PT-AS	5’ Northwest
P-17	19’ North
PM-2S and PM-2D	22’ North
PM-3S and PM-3D	28’ West
PM-4S and PM-4D	38’ West
PM-1S and PM-1D	48’ West

Table 6
Deep AS Pilot Test Observation Points – Sparge Well P-17

Well ID	Approximate Distance From P-17 (feet)
P-17	NA
P-18	5’ South
PM-2S and PM-2D	10’ Northwest
P-14	10’ South
PT-AS	12’ Southwest
P-13	15’ South
PM-3S and PM-3D	32’ West
PM-4S and PM-4D	42’ West
PM-1S and PM-1D	52’ Northwest

Generally, steady state conditions during the AS tests were achieved after approximately one hour. After the completion of the first step test, the AS blower was throttled up to the appropriate conditions for the subsequent step test and allowed to run for approximately 30 minutes before the monitoring resumed.

3.5.1 Monitoring Parameters

Atmospheric conditions, including barometric pressure, humidity, wind direction and speed, were collected at the start of each day using a Kestrel 4200 Pocket Weather meter. During each step test, the extraction well and observation points were monitored on approximate 45-minute intervals for the parameters listed in Table 7. VOC concentrations were measured using a Thermo Environmental model 580B PID. The PID was calibrated each day using 100 ppm isobutylene standard gas. O_2 levels were measured using a CES-Landtec GA90 landfill gas meter. The landfill gas meter was calibrated each day using multi-gas span gas. Applied and induced vacuum were measured using Magnehelic differential vacuum gauges (of varying ranges, as warranted by the observed vacuum). Air speed (in feet per minute) was measured with a Dwyer Model 471-1 thermo-anemometer within a 2-inch diameter segment of the SVE influent tubing. The speed was multiplied by the cross-sectional area of the tube to obtain the SVE air flow rate. AS air flow rate was measured using a dedicated flow meter.

Table 7
AS Pilot Test Monitoring Parameters

SVE Well	Observation points	AS Well
Applied vacuum Air flow VOC concentration (influent, intermediate, effluent) O_2 (influent)	Induced vacuum/pressure (well cap) VOCs (well cap) O_2 (well cap) DO (groundwater)	Applied pressure Temperature Air flow

The collected data was subsequently plotted graphically to aid in optimizing system design. Data sheets are provided in Appendix C and graphs of the data are presented in Appendix D.

3.5.2 Confirmatory Sampling

Influent VOC sampling was conducted at the end of the second step test at each AS well. A 6-liter, Summa canister with a 30-minute flow regulator was used to sample the influent SVE VOC concentration. Samples were submitted to TestAmerica, Inc. of Burlington, Vermont, a NYSDOH ELAP-certified laboratory, for analysis of VOCs by EPA Method TO-15.

3.5.3 Helium Tracer Test

Helium tracer testing was conducted during the final hour of the third step test at each AS well, by bleeding helium into the AS intake at a rate of approximately 3% of the applied flow. Helium monitoring was conducted with a Mark Products MGD-2002 handheld helium detector at all monitoring points during the final round of pilot test measurements, and a subsequent round of measurements was taken approximately one hour after shutting down the AS blower (at the end of pilot testing at each AS well).

4.0 PILOT TEST RESULTS

The pilot test results, including a table of the observation point monitoring parameters and corresponding graphs, are provided in Appendices C and D, respectively. The graphs plot the results of each step test based on distance from the test well evaluated with vacuum on a logarithmic scale.

4.1 SVE Test

Baseline monitoring conducted before the start of the pilot test indicated that some vacuum, ranging from 0.01 to 0.11 in. H_2O, was present within the subsurface. Based upon a decreasing trend in vacuum measurements in an easterly direction, the background negative pressure is likely attributable to the existing AS/SVE system.

The pilot test results for well PT-SVE are provided as Tables 1 to 12 of Appendix C. Net induced vacuum, determined by subtracting the baseline vacuum measurement from the induced vacuum readings at each well, was observed at the six wells screened at or just above the groundwater table and at the four shallow pressure monitoring points installed to a depth of two feet below grade. For the purpose of consistency while determining the radius of influence (ROI) for the proposed SVE system, only the six monitoring wells and pressure monitoring points screened at or just above the groundwater table were used as part of the vacuum data analysis.

Graphs of net induced vacuum change plotted against distance from SVE well PT-SVE during each step test are provided as Graphs 1 through 3 in Appendix D. Induced vacuum decreased with increasing distance from the SVE well, exhibiting a generally linear trend. The magnitude of the induced vacuum readings also increased as the applied vacuum was increased from step to step, while maintaining the linearly diminishing trend. The increase in magnitude of induced vacuum was proportionate to the increase in applied vacuum between the 25% and 50% step tests, but only increased incrementally from the 50% to 100% step tests.

Net increase in vacuum was observed at 65 feet away from PT-SVE, at P-16, during all three steps, with the induced vacuum ranging from 0.10 to 0.47 in. H_2O. Extrapolating the 50% blower capacity data depicted on Graph 2 in Appendix D, at an approximate distance of 115 feet from PT-SVE, there would be an induced vacuum of approximately 0.1 in. H_2O. The large radius of influence observed at PT-SVE is supported by the baseline vacuum detections influenced by the existing system. Although the closest leg of the existing SVE system is approximately 200 feet west of the pilot test wells, the results from the 50% SVE pilot test indicate that a 4-inch SVE well at 50% blower capacity would exhibit an induced vacuum of approximately 0.013 in. H_2O at 200 feet. This estimated value falls within the range of detected background values.

No VOCs were detected during field screening with a PID during the entirety of the SVE pilot testing, including the SVE well and all of the observation wells.

4.1.1 Influent and Effluent VOC Concentrations

The VOCs detected at PT-SVE Influent in the laboratory sample collected during the pilot test were Freon-22, Freon 11, 1,1-dichloroethene, methyl ethyl ketone (MEK), chloroform, 1,1,1-trichloroethane, toluene, TCE, and PCE, with a total VOC concentration of 227 micrograms per cubic meter ($\mu g/m^3$). Chlorinated volatile organic compounds (CVOCs) comprised 188 $\mu g/m^3$ of the total VOC concentration.

The VOCs detected at PT-SVE Effluent in the laboratory sample collected during the pilot test were Freon-22, MEK, cyclohexane, benzene, toluene, and xylenes, with a total VOC concentration of 52.9 $\mu g/m^3$. No CVOCs were detected, confirming the efficacy of the carbon treatment.

The non-chlorinated portion of the VOC detections in PT-SVE Effluent comprised aromatic hydrocarbons, which may be attributable to background sources and the generator used during the pilot test.

4.2 AS Tests

The pilot test results for the AS wells are provided in Appendices C and D. The objectives of the AS pilot tests were to determine the maximum distance at which sparged air exhibited influence (measured in either positive pressure or decrease in induced vacuum relative to background conditions) on subsurface conditions and to determine the optimum blower operating conditions at which a nominal decrease in observed vacuum, when concurrently operating the SVE system, could be achieved. The influence of sparged air on vacuum was expected to decrease linearly with increased distance from the sparge point.

Pilot test AS wells P-13 and P-17 have a 10-foot screen length. Though the expanded system design consists of AS wells with 2-foot screens, research shows that the screen length of the pilot test does not significantly alter the effective radius of influence. The sparged air tends to be released in the top portion of the screen, therefore, the longer screen length for the pilot test would not significantly alter the design basis for future AS wells, which would include a 2-foot long section of screen (e.g., Page VII-22, http://www.epa.gov/oust/pubs/tum_ch7.pdf).

4.2.1 Shallow AS Test – Well PT-AS

Results from the shallow AS well pilot test are provided in Tables 13 through 22 of Appendix C and Graphs 4 through 6 of Appendix D. The step tests at the shallow AS test well PT-AS (screened 60-62 feet below grade) were conducted at air flow rates of 2.5, 5, and 10 cfm (25%, 50% and 100% of the maximum blower capacity at PT-AS). After reaching steady state conditions for the 25% step test (2.5 cfm), no discernable trends in the changes to induced vacuum could be determined from measurements collected from wells screened at or just above the groundwater table. Data from wells with shallower screen depths (shallow pressure monitoring points, PM-2S, PM-3S, PM-4S, and PM-1S) was also inconclusive, although small decreases in induced vacuum were noted. Similarly, the 50% step test (5 cfm) indicated no discernable trends, as wells screened at or just above the groundwater table exhibited either no net change or an increase in net vacuum relative to the first step test, indicating a diminishing influence by the sparged air. Positive pressure was observed in well P-14 (5 feet from well PT-AS), indicating that the sparged air was able to entirely overcome the vacuum applied at PT-SVE, located 15 feet from PT-AS. Although steady state conditions were reached, there was no increase in influence from the 25% step test at any monitoring points except P-14.

The results from the 100% (10 cfm) step test indicated pronounced changes in the observed conditions in the nearby observation points. Net decrease in vacuum (ranging from 0.10 to 0.15 in. H_2O) was noted in the monitoring points screened at or just above the groundwater table, with values decreasing linearly with increased distance from PT-AS. A decrease in induced vacuum of approximately 0.1 in. H_2O was observed at PM-1D, located approximately 45 feet west of PT-AS.

Following helium injection, helium was detected in P-14 and shallow pressure monitoring points (PM-2S and PM-3S) as far as 25 feet from PT-AS. Helium concentrations ranged from 25 to 2,710 parts per million (ppm), decreasing with distance. Helium was not detected in any of the observation points installed deeper than 2 feet below grade. This was expected, as P-14, which is located 5 feet from PT-AS, exhibited positive pressure, showing a clear path for sparged air and helium to travel, while the other wells remained under considerable negative pressure (ranging from 0.02 to 1.25 in. H_2O). The helium detections were expected in the shallow monitoring points where the induced vacuum was much smaller in magnitude relative to deeper monitoring points. The helium detection at PM-3S, 25 feet from PT-AS, supports a radius of influence deduced from change in induced vacuum observed up to a distance of 25 feet from the AS well.

Depth to water (DTW) measurements, collected at three wells (P-13, P-14, and P-17) screened at or below the water table, indicated decreases of DTW ranging from 0.22 to 1.67 feet during pilot testing, indicating some mounding in close proximity to the shallow AS well. Dissolved oxygen (DO) increased by 4.69 milligrams per liter (mg/L) at P-14 (expected, as the observed positive pressure at P-14 would indicate a direct path for sparged air to follow), but decreased in the remaining two wells that exhibited decreased DTW.

No VOCs were detected in field screening throughout the pilot test at well PT-AS, including the SVE well and all of the observation wells.

The 100% step test (10 cfm) provided relatively consistent data, with a median influence (decrease in induced vacuum) of 0.15 in. H_2O, which occurred at a distance of approximately 25 feet from PT-AS. The pilot test data from the 25 and 50% step tests provided relatively inconsistent data and will not be used as a basis of design for the full scale system. Consequently, 10 cfm will be designated as the optimum flow rate for the shallow AS wells for full scale system design. A design radius of influence (ROI) of 20 feet and air flow rate of 10 cfm are justified by the change in induced vacuum and helium data observed during the 100% step test.

Influent VOC Concentrations

The VOCs detected at PT-AS Influent in the laboratory sample collected during the pilot test were Freon-22, n-butane, Freon 11, 1,1-dichloroethene, MEK, chloroform, 1,1,1-trichloroethane, cyclohexane, benzene, n-heptane, toluene, TCE, and PCE, with a total VOC concentration of 199 $\mu g/m^3$. CVOCs comprised 174 $\mu g/m^3$ of the total VOC concentration.

The non-chlorinated portion of the VOC detections comprised aromatic hydrocarbons, which may be attributable to background sources and the generator used during the pilot test.

4.2.2 Intermediate AS Test – Well P-13

Results from the intermediate AS well pilot test are provided as Tables 23 through 32 of Appendix C and Graphs 7 through 9 of Appendix D. The step tests at the intermediate AS test well, P-13 (screened 75-85 feet below grade), were conducted at air flow rates of 4.5, 7, and 9 cfm. Steady state conditions were achieved approximately one hour into the 4.5 cfm step test. All wells screened at or just above the groundwater table exhibited sparge influence except for PM-1D and PM-4D; no net decrease in vacuum was observed at PM-1D (48 feet from P-13) and an increase in vacuum was observed at PM-4D (38 feet from P-13) during the 25% step test at the intermediate AS well.

The 7 and 9 cfm step tests provided comparable results. Only two points, P-17 and PM-3S, which were located 5 and 28 feet, respectively, from the AS well, exhibited either an increase in vacuum or no net change, indicating a decrease in influence by the sparged air at those points. However, as P-17 is screened much deeper than P-13 (screened from 100 to 110 feet below grade) and PM-3S is screened shallower (screened from 1.5 to 2 feet below grade), data from these points were not expected to be consistent with the other data.

The remainder of the observation points all showed a decrease in net vacuum, exhibiting the influence of sparged air. Of these data points, the five observation points screened at or just above the groundwater table (PT-AS, PM-2D, PM-3D, PM-4D, and PM-1D) were considered for graphical interpretation of both the 50% and 100% step tests. PT-AS exhibited positive pressure, which was not only consistent with the trend of linearly diminishing sparge influence with increased distance, but also was proportionately consistent with the increases in applied air flow from step test to step test. Though P-14 exhibited positive pressure readings, the magnitude of the pressure readings were much higher than expected (7.45 and 14.55 in. H_2O during the second and third step tests, respectively). Though positive pressure is a clear indicator of sparge influence, the relatively high observed readings are atypical and were not considered consistent with the remaining data points.

The remainder of the vacuum readings contributed to the expected trend of linearly decreasing change in induced vacuum with increased distance. However, none of the change in induced vacuum at these locations increased proportionately with the increase in the air flow rate from the 50% to 100% step tests.

DTW measurements, collected at the three observation wells (P-13, P-14 and P-17) screened at or below the water table, indicated decreases of DTW ranging from 0.31 to 1.04 feet during pilot testing, indicating some mounding in the vicinity of the AS well P-13. Increases in DO, ranging from 0.27 to 1.44 mg/L, were noted in wells P-13, P-14 and P-17. Helium was detected during tracer testing in monitoring points P-14 and PM-2S (located 22 feet from P-13) at concentrations of 425 and 600 ppm, respectively.

No VOCs were detected in field screening with a PID during the test at well P-13, including the SVE well and all of the observation wells.

The decrease in net vacuum data from the 50% and 100% step tests indicate that there is generally a linear decrease in net vacuum as the distance from the well increases. As shown on both the 50% and 100% step test graphs, 0.1 in. H_2O of vacuum influence should occur at approximately 30 feet from the AS well. Although there is a noticeable increase in positive pressure at wells within 5 feet of P-13 (PT-AS and P-14) between the 50% and 100% step tests, there is nearly no change in influence in any other wells. Given the stability of conditions at the higher flow rate (approximately 10 cfm during the 100% step test), 10 cfm is the optimum flow rate for the AS design of the intermediate depth wells. Twenty feet will be designated as the design ROI for the purposes of AS well spacing, based on a change in induced vacuum well over 0.1 in. H_2O at all locations within 38 feet of P-13.

Influent VOC Concentrations

The VOCs detected at P-13 Influent in the laboratory sample collected during the pilot test were Freon-22, n-butane, Freon 11, 1,1-dichloroethene, acetone, MEK, chloroform, 1,1,1-trichloroethane, cyclohexane, benzene, n-heptane, toluene, ethylbenzene, xylenes, TCE, and PCE, with a total VOC concentration of 173 $\mu g/m^3$. CVOCs comprised 140 $\mu g/m^3$ of the total VOC concentration.

The non-chlorinated portion of the VOC detections comprise aromatic hydrocarbons, which may be attributable to background sources and the generator used during the pilot test.

4.2.3 Deep AS Test – Well P-17

Results from the deep AS well pilot test are provided as Tables 33 through 42 of Appendix C and Graphs 10 through 12 of Appendix D. The step tests at the deep AS test well P-17 (screened 100-110 feet below grade) were conducted at air flow rates of 3, 5.5, and 8 cfm. Observed decrease in net induced vacuum/positive pressure data from monitoring wells screened below the water table in close proximity to the AS well P-17 fluctuated during pilot testing.

An increase in the influence of sparged air during both the 25% and 50% step tests was noted at observation points at or just above the groundwater table, with the exceptions of P-14, PT-AS, P-13, and PM-4D, which exhibited either an increase in vacuum or no net change. Some of these increases were proportionate to the increase in flow rate, while the majority of the changes were relatively small. The increase in vacuum, which occurred at P-14, may be attributable to the deeper sparge depth. During the shallower AS tests, high positive pressure and helium readings indicated that a preferred pathway may have been created around the P-14 well screen. With air being sparged much deeper during the P-17 pilot test, vacuum applied at PT-SVE may have been able to overcome the sparge influence using the preferred pathway. As none of the remaining observation points exhibited this behavior, the increase in vacuum at P-14 is considered an anomaly.

The change in observed vacuum readings decreased at most observation points, with the exception of P-13 and PM-2D. Though the magnitude of the values had decreased, there was still a net decrease in induced vacuum relative to background conditions, particularly at P-13, PM-3D, and PM-1D, located 15, 32, and 52 feet from P-17. The sparge influence observed at these locations during the 50% and 100% step tests linearly decreased with increased distance. Furthermore, a consistent decrease in net vacuum greater or equal in magnitude to 0.1 in. H_2O was observed at PM-3D, at a distance of 28 feet from P-17. These results are consistent with those from the shallow and intermediate pilot tests.

DTW measurements, collected at four wells (P-18, P-14, PT-AS, and P-13) screened at or below the water table, indicated decreases of DTW ranging from 0.14 to 0.36 feet during pilot testing, indicating limited mounding in the vicinity of the AS well. Increases in DO ranged from 1.66 to 13.23 mg/L in wells P-18, P-14, PT-AS, and P-13. Helium was detected in monitoring points P-18, PM-2S and P-13 (located 5, 10 and 15 feet from P-17, respectively) at concentrations of 600, 850, and 425 ppm, respectively. The varying helium concentrations are caused in part by the varying screen depths; the 600 ppm detection at P-18 was unexpected, as P-18 is screened deeper (127-137 feet below grade) than the sparge well (100-110 feet below grade). Excluding this value, the remaining two detections decrease with increased distance from P-17, as expected.

No VOCs were detected in field screening throughout the test at well P-17, including the SVE well and all of the observation wells.

Although sparge influence changed unpredictably with each step test, data from P-17 indicate that sparge influence is comparable in many ways to that observed during the shallow and intermediate AS tests. Decreases in induced vacuum were noted at PM-1D, 52 feet from P-17. Also, the magnitude of the decrease in induced vacuum was at least 0.1 in. H_2O at PM-3D, 32 feet from P-17, during the 50% and 100% step tests.

Of the observation wells within 15 feet of P-17, P-14 exhibited increases in vacuum throughout the deep AS pilot test. P-14 is screened across the water table, where induced vacuum was expected to overcome any sparge influence. Though P-18 and PT-AS exhibited sparge influence in the form of positive pressure, the results were negligible. Positive pressure at P-18, ranging from 0.045 to 0.090 in. H_2O, was unexpected, as the screen interval at P-18 (127 to 137 feet below grade) is deeper than that at P-17. Positive pressure at PT-AS, ranging from 0.0 to 0.005 in. H_2O, was low in magnitude given the proximity of the well. Sparge influence observed at P-13, ranging from 0.0 to 6.8 in.

H_2O (positive pressure) increased throughout the pilot test at P-17 and is a reasonable indicator of sparge influence from the deep AS interval.

Although there was a large increase in the number of wells exhibiting influence during the 50% step test, many of those values did not follow a clear trend of diminishing sparge influence with increased distance. The 50% and 100% step tests (with the 100% step test at a flow rate of approximately 8 cfm) provided usable results at practical distances, with an observed sparge influence of 0.15 and 0.10 in. H_2O at PM-3D, located 32 feet from P-17, during the 50% and 100% step tests, respectively. Although there was an unexpected decrease in the magnitude of influence at most points between the two step tests, the observed sparge influence at those distances is considered acceptable for deep AS applications at the site. At a flow rate of approximately 8 cfm and 26 psi pressure (the conditions during the 100% step test), there was an increase in observed sparge influence at P-13 and PM-2D, both located within 15 feet of the deep AS point. Although the remaining monitoring points exhibited decreases in observed sparge influence of 0.005 to 0.20 in. H_2O from the 50% to the 100% step test, this is not expected to be the case site-wide, as increases in applied flow generally correspond to proportionate increases in observed influence at monitoring points. As such, it is reasonable to assume that operating the deep AS wells at the 100% step test (8 cfm) conditions would be effective in the system expansion. Notwithstanding, the system will be designed to allow for operating at a range of flow rates between 5 and 10 cfm, which will be adjusted based upon monitoring data following system start-up.

Influent VOC Concentrations

The VOCs detected at P-17 Influent in the laboratory sample collected during the pilot test were Freon-22, Freon 11, 1,1-dichloroethene, 1,2-dichloroethene, acetone, MEK, 1,1,1-trichloroethane, cyclohexane, benzene, toluene, ethylbenzene, xylenes, TCE, and PCE, with a total VOC concentration of 285 $\mu g/m^3$. CVOCs comprised 246 $\mu g/m^3$ of the total VOC concentration.

The non-chlorinated portion of the VOC detections comprise aromatic hydrocarbons, which may be attributable to background sources and the generator used during the pilot test.

5.0 EXPANDED AS/SVE DESIGN

The design for the remediation system expansion consists of extending the AS/SVE curtain along the southeastern boundary of the Site, and to provide additional treatment in the source areas in the southwestern and western portions of the site. A schematic of the AS/SVE system is provided in Figure 3.

This in situ remediation approach is being implemented to contain groundwater contamination along the downgradient property boundary. Additionally, the system is intended to treat both soil and groundwater contamination in source areas of the site. The use of a combined AS/SVE system is designed to remove volatile contaminants from both the saturated and unsaturated zones. The system design accounts for the accessibility issues associated with the retail operations and deep groundwater at the site. The system expansion will include spare conduit and design allowances to accommodate a potential additional future system expansion.

Air sparging consists of injecting air into the saturated zone via wells. The air is delivered to the saturated zone and "strips" VOCs from the groundwater as it passes through to the unsaturated zone, shifting them from the dissolved to vapor phase. Concurrently, the SVE system would apply a negative pressure (vacuum) to the subsurface for recovery of the volatile compounds generated from sparging and contaminants susceptible to volatilization in the vadose zone. Recovered vapors would be directed to an aboveground vapor treatment system and subsequently discharged to the atmosphere.

5.1 Site Preparation

Prior to trenching, existing concrete and asphalt pavement along the extents of the trenching will be saw cut. Erosion and sediment controls, including sewer catch basin protection, will be installed and maintained.

Work will be performed under the direction and oversight of AKRF personnel. Due to site access constraints, the excavation will be performed in phases. First, the western approximate 250 feet of the trench on the southern side of the building, up to the Manhole F on Figure 3, will be excavated, piping installed and tested, and backfilled and compacted. Then, the approximately 70 feet of the trench on the southwestern corner of the site will be excavated, piping installed and tested, and backfilled and compacted. Finally, the remaining approximately 310 feet on the southeastern side of the building will be completed (excavated, piping installed and tested, and backfilled and compacted) and the connections completed for system operation.

The excavations will be backfilled to grade and covered with steel road plates for several months until final paving can be completed.

5.2 Summary of System Design

The system expansion well layout comprises 26 AS wells and 8 SVE wells as shown on Figure 3. The expanded system will be designed to cycle operation in four zones based on the AS and SVE well clusters identified as Zones 7, 8, 9 and 10. The varying PCE concentrations across the site have been taken into consideration for the well layout in each zone of the expanded AS/SVE system.

Table 8
AS/SVE Zones

	Shallow AS Wells	**Intermediate AS Wells**	**Deep AS Wells**		**Shallow SVE Wells**	**Deep SVE Wells**
	(60–62 feet below grade)	(80–82 feet below grade)	(120–122 feet below grade)	(130–132 feet below grade)	(10–25 feet below grade)	(35–50 feet below grade)
Zone 7	2	2	1	1	1	1
Zone 8	4	4	NA	NA	NA	2
Zone 9	4	4	NA	NA	NA	2
Zone 10	2	2	NA	NA	1	1

Deep AS wells are limited to Zone 7 in the PCE source area in the southwestern corner of the site. As a source area, groundwater monitoring wells in Zone 7 have shown the highest PCE concentrations at the site. As shallow and intermediate AS wells, with one dedicated blower for both intervals, comprise the majority of the AS system, a second AS blower will be dedicated to the deep AS wells located in Zone 7. The deep AS wells will cycle on only when the Zone 7 shallow/intermediate AS wells are cycled on.

A shallow SVE well will also be installed in Zone 7, creating an SVE cluster. The shallow SVE well is intended as a measure for source area treatment (i.e., volatilization) and vapor removal in the shallow soil. A shallow SVE well is proposed for Zone 10 within the store building, which is being installed to provide negative pressure in shallow soil as a preventative measure to address potential vapor intrusion within this portion of the store.

Cycled operation of both the AS and SVE system will serve to reduce the size/capacity of the necessary equipment while also allowing for cost-effective expansion of the system in the future. Each zone will be operated for approximately two hours before the main AS and SVE blowers cycle to the following zone. Each zone will be operated for three cycles per day, or six hours. The cycle periods may be adjusted in the future based on operating data, monitoring well sampling, and future expansion of the system, if warranted. For a medium sandy soil and a site-specific hydraulic gradient of 0.006 feet per feet (feet/feet) in shallow groundwater, the groundwater seepage velocity is conservatively estimated to be less than 3 feet per day. At this rate, there would be minimal movement of the volume of groundwater within the ROI (20 feet) for each AS zone between cycling (on for 2 hours and off for 4 hours – 4 times per day).

As subsurface conditions could result in a nominal amount of off-gassing after the AS and SVE blowers have cycled to a different zone, the SVE system will default to a secondary blower, which will continue to vent vapors from the SVE lines until the primary SVE blower cycles back to the zone. This secondary SVE blower will operate continuously at a lower vacuum and flow rate.

The system will be operated using a control panel and alarm sensors to monitor minimum vacuum for the SVE blowers to shut off the AS blowers if minimum vacuum conditions are not being achieved. Water level sensors in the SVE water knock-out vessels will trigger pumping of water from the knock-out vessels to storage drums, also equipped with high-level alarm conditions. Telemetry will be provided to remotely monitor the system.

5.3 SVE Design Criteria

The SVE pilot test at 50% capacity represented optimum conditions based on the change in influence observed between steps. As such, SVE wells in the expanded system will be operated at the 50% step conditions of 25 in. H_2O applied vacuum per well and approximately 110 cfm flow rate per well. Although SVE influence was consistently measured during the pilot test at 65 feet from PT-SVE, SVE wells will be designed with a 50-foot ROI and spaced at 70-foot centers (30-foot overlap), decreasing the effective radius of any one SVE well to approximately 20 feet.

Although SVE pilot testing was not conducted at the intended depth of the shallow SVE wells in Zones 7 and 10, the geologic conditions between the shallow and deep intervals in the vadose zone are comparable. As such, the primary SVE blower (for the deeper SVE wells) will be connected to the shallow SVE well.

As the secondary blower is intended to extract from all inactive wells at a lower vacuum and flow rate, the inactive SVE wells will be maintained at an applied vacuum of 8 to 10 in. H_2O and 40 to 50 cfm, which is slightly below the 25% step test conditions.

Influent and effluent VOC sampling was conducted at the end of the second step test to evaluate the mass loading for future vapor treatment requirements of the system; laboratory results are provided in Appendix E. Total VOC and CVOC concentrations detected during pilot test sampling ranged from 173 to 285 µg/m^3 and 140 to 246 µg/m^3, respectively. The non-chlorinated portion of the VOCs detected in air samples are likely attributable to background conditions and the generator used for the pilot test. Nonetheless, the highest total VOC concentration was used during mass loading calculations provided in Appendix F. As a result, treatment units will be sized mostly to treat CVOCs, while taking into account the treatment of aromatic hydrocarbons at lower efficiency.

Although the highest observed total VOC concentration was 285 µg/m^3 detected at P-17, the pilot test was not conducted in a source area and, as such, the design will account for a higher loading factor. The mass loading factor was increased by an order of magnitude, using an assumed influent total VOC concentration of 3,000 µg/m^3.

5.3.1 SVE Wells and Piping

The SVE expansion will consist of six deep SVE wells installed to a depth of 50 feet below grade and two shallow SVE wells installed to a depth of 25 feet below grade. Wells will be constructed with 4-inch diameter Schedule 40 PVC, with 15-foot sections of 0.020-inch slotted PVC screen. SVE wells will be connected to the blower inside a system enclosure to be situated in the southwestern corner of the site using 4-inch diameter Schedule 40 PVC piping. Within the trenches, each SVE line will pitch towards a moisture sump within Manholes E and G, as shown on Figure 3. PVC risers will be installed to allow access for removal of accumulated moisture in the sumps, as detailed on Figure 4. Typical SVE well construction is also depicted on Figure 4.

5.3.2 SVE System Components

The SVE piping manifold inside the system enclosure is depicted on Figure 5. As a maximum of two deep SVE wells will each operate at an approximate flow rate of 110 cfm at any given time, the primary SVE blower will be able to operate at an applied vacuum of 25 in. H_2O and flow rate of approximately 300 cfm.

The secondary blower will extract from the six remaining wells continuously, each maintained at approximately 50 cfm. Therefore, the secondary SVE blower will be able to operate at a vacuum of 10 in. H_2O and 300 cfm.

Blower manufacturer and model numbers are being evaluated as part of the equipment procurement process. Selected blower specifications will be provided to NYSDEC prior to finalization of the equipment procurement process. The selected blowers will have sufficient capacity to operate at higher flow rates and overcome pressure losses from the piping, granular activated carbon (GAC) vapor treatment units, and ancillary equipment. SVE influent piping will be manifolded such that the deep SVE blower can be cycled to individual zones. Vacuum gauges, air flow meters, sampling ports, and throttling valves will be provided for each line to make all adjustments within the new equipment enclosure on each dedicated extraction lines.

Three-way solenoid valves, one per discreet zone, will control whether sparged vapors are being actively extracted by the primary SVE blower or the secondary backup blower.

Both the primary and secondary SVE systems will contain an inline moisture separator tank and particulate filter. The moisture separator tank will contain a float switch connected to the alarm system and a transfer pump for transfer of accumulated moisture to a 55-gallon drum. Thermometers will be provided on the influent and effluent of each SVE blower.

5.3.3 Treatment

Based on an estimated total VOC concentration of 3,000 µg/m^3 and design flow rates of 300 cfm for each of the SVE blowers, the primary and secondary SVE effluent lines will each require two 500-pound GAC units, operating in series. The GAC carbon manifold design is provided as Figure 6. GAC unit manufacturer and model numbers are being evaluated as part of the equipment procurement process. Selected GAC unit specifications will be provided to NYSDEC prior to finalization of the equipment procurement process.

Following treatment, the air will be discharged via a pipe (stack) at a minimum height of 12 feet above grade.

5.4 AS Design Criteria

The shallow and intermediate AS pilot test results indicated that sparge influence was noted as far as 45 feet from the sparge points at PM-1D. To design conservatively, the ROI for shallow and intermediate wells will be designated as 20 feet, with wells spaced on 35-foot centers (5-foot overlap).

Based on pilot test results at the shallow and intermediate AS wells, a 20-foot ROI with a minimum net change (decrease) in vacuum of 0.10 in. H_2O can be achieved with approximately 10 cfm of air flow with 15-20 pounds per square inch (psi) of pressure applied at the AS well head.

Based on the results from the pilot test of the deep AS well, the expanded system design for deep AS wells will be operated at a flow rate between 5 and 10 cfm at an applied pressure of approximately 40 psi.

The system flow rates and pressures may be adjusted based upon system monitoring data.

5.4.1 AS Wells and Piping

The expanded AS system comprises 26 wells—12 shallow AS wells installed to a depth of 62 feet below grade, 12 intermediate depth AS wells to a depth of 82 feet below grade, 1 deep AS well to a depth of 122 feet below grade, and 1 deep AS well to a depth of 132 feet below grade. Wells will be constructed with 2-inch diameter Schedule 40 PVC, with a 2-foot section of 0.020-inch slotted PVC screen. AS wells will be connected to the system enclosure using 1-inch diameter high-density polyethylene (HDPE) tubing, rated for a pressure of 125 psi. Typical AS well construction is depicted on Figure 7.

5.4.2 AS System Components

The AS piping manifold inside the system enclosure is shown on Figure 5. As a maximum of 4 shallow and 4 intermediate AS wells will operate in unison at any given time, the shallow/intermediate AS blower will be capable of operating at a minimum applied pressure of 20 psi at a flow rate of 80 cfm (design air flow rate of 10 cfm per well with 8 wells per zone). AS influent piping will be manifolded such that the blower can be cycled to individual zones.

As a maximum of 2 deep AS wells will operate in unison at any given time, the deep AS blower must be able to operate at a minimum applied pressure of 40 psi at a flow rate of 20 cfm. The deep AS blower will be programmed such that the deep AS wells in Zones 7 and 10 will cycle on and off in conjunction with the shallow/intermediate AS wells in the respective zones.

Blower manufacturer and model numbers are being evaluated as part of the equipment procurement process. Selected blower specifications will be provided to NYSDEC prior to finalization of the equipment procurement process. The selected blowers will have sufficient capacity to operate at higher flow rates and overcome pressure losses from the piping and fittings. AS piping inside the system enclosure will be manifolded with a solenoid valve for each zone to allow for cycling. Dedicated pressure gauges, flow meters, and throttling valves will be provided within the equipment enclosure for each AS well.

5.5 System Operation

The SVE blowers will be equipped with noise attenuators (mufflers). The new system enclosure will be constructed with soundproofing panels to reduce potential noise from the system. To release potential heat, the enclosure will be equipped with a ventilation fan and/or air conditioning unit.

5.6 Health and Safety Plan

All work described in this work plan will be performed in accordance with applicable local, state and federal regulations to protect worker health and safety. A site-specific health and safety plan (HASP), included in Appendix G, provides details of personnel protection, particulate and VOC work zone air monitoring and response levels, and other health and safety protocols, procedures and requirements.

The HASP includes a Community Air Monitoring Plan (CAMP). The CAMP establishes protocols for VOC and particulate air monitoring to be conducted at the site perimeter if work zone perimeter concentrations approach the applicable community action levels. Corresponding response actions are specified for the community action levels.

5.7 Quality Assurance/Quality Control

Measures will be taken to provide for Quality Assurance (QA) and maintain Quality Control (QC) of environmental sampling and remedial activities conducted. A QAPP that describes the QA/QC protocols and procedures that will be followed during implementation of this work plan is included in Appendix H. Adherence to the QAPP will ensure that defensible data will be obtained during the implementation of the work plan.

6.0 SYSTEM MONITORING

6.1 System Startup

Prior to backfilling, all piping will be tested for tightness. Each completed air sparge line will be pressure tested for a minimum of 30 minutes maintaining a pressure of 50 psi. Each completed extraction line will be pressure tested for a minimum of 30 minutes maintaining a pressure of 15 psi. During each test, the installer will soap test all test fittings and any other fittings and inspect for leaks. The installer will be responsible for repairing or replacing lines that do not meet the pressure requirements.

Upon completion of these tasks, system start-up will occur with all parties (i.e., AKRF, contractor, electrician, system vendor) present. System startup inspection will consist of monitoring flow and vacuum/pressure readings throughout the system to verify that design AS and SVE criteria are being met. The system will be monitored throughout the day to ensure that the system is being cycled as intended. Following system startup, system inspections will continue on a weekly basis for the first month and on a bi-weekly basis during the second and third months of operation. Long-term system monitoring objectives and activities will be prepared as part of the Operation, Maintenance & Monitoring (OM&M) Plan, as discussed in Section 7.2.

Startup testing will also include measurements of pressure/vacuum in existing monitoring wells to confirm the system is operating as an effective treatment curtain with appropriate radii of influence, as calculated from the pilot test results. The wells will be monitored for induced vacuum/pressure, VOCs (using a PID) and O_2 at the well cap, dissolved oxygen in the groundwater, and depth to groundwater. As the system is designed to cycle operation from zone to zone in 2-hour periods, startup testing parameters for any given zone will be measured while an adjacent zone is in operation. Baseline readings will be collected prior to system startup, and measurements will be collected the day of startup and two days after startup. Based on the startup testing, adjustments may be made to optimize system performance. The wells to be monitored during startup confirmation testing are listed in Table 9 and shown on Figure 2.

Table 9
Start-up Testing Well Details

Zone ID	Well ID (west to east)	Approx. Distance from Nearest AS Well (feet)	Screened Interval (feet below grade)
7	P-21	10’	120-130’
	P-22	10’	136-146’
	AMW-5	15’	68-78’
	AMW-1	15’	100-110’
	P-1	20’	54-64’
	P-2	50’	55-65’
10	P-9	40’	59-64’
	P-10	40’	52-57’
	P-11	80’	57-62’
	P-12	80’	47-52’
8	AMW-6	5’	70-80’
	P-4	5’	55-65’
	P-19	10’	95-105’
	P-20	15’	124-134’
8 and 9	P-13	25’	75-85’
	P-14	20’	50-60’
9	P-18	15’	127-137’
	P-17	10’	100-110’
	P-15	10’	75-85’
	P-16	15’	50-60’
	P-5	35’	58-63’

6.2 Influent and Effluent Startup Monitoring

Following initial system startup, influent, intermediate, and effluent SVE vapor samples will be collected to verify VOC mass loading calculations, confirmation of individual VOCs corresponding to the PID reading, and efficacy of the GAC treatment units. Six-liter SUMMA canisters with two- and six-hour flow controllers will be used to collect vapor samples at the specified locations on the SVE system, in accordance with sampling procedure detailed in the QAPP, provided as Appendix H. All samples will be submitted to a NYSDOH ELAP-certified laboratory for analysis of VOCs by EPA Method TO-15. Though the NYSDEC publication “Air Guide 1” uses short-term guideline concentrations (SGCs) based on one-hour long samples, the two-hour sample time has been requested by NYSDEC to collect an effluent sample that will reflect a full cycle of from each SVE zone. A list of vapor samples is provided in Table 10.

Table 10
Start-up Testing Vapor Samples

Primary SVE						Secondary SVE		
Well ID	Individual SVE lines (2-hour samples)	Zone ID	Zone-specific Influent (2-hour sample)	Zone-specific Intermediate (2-hour sample)	Zone-specific Effluent (2-hour sample)	Combined Influent (6-hour sample)	Combined Intermediate (6-hour sample)	Combined Effluent (6-hour sample)
SVE-7A	X	7	X	X	X	X	X	X
SVE-7B	X							
SVE-8A	X	8	X	X	X	X	X	X
SVE-8B	X							
SVE-9A	X	9	X	X	X	X	X	X
SVE-9B	X							
SVE-10A	NA	10	NA	NA	NA	NA	NA	NA
SVE-10B	NA							

Sampling locations are shown on Figures 5 and 6. As part of preparation of the OM&M Plan, the appropriateness of composite sampling will be evaluated based on concentrations in startup samples in each individual zone.

During system startup, 2-hour samples will be collected from individual SVE influent lines as each well becomes active during cycled system operation. In addition, the zone-specific influent, intermediate and effluent ports on the primary SVE system carbon manifold will be sampled during the 2-hour cycle for each respective zone. Six-hour, composite influent, intermediate, and effluent samples will be taken from the secondary SVE system carbon manifold sample ports. No individual line or individual zone samples are necessary for the secondary SVE system.

Following start-up of Zone 10 (scheduled for the last quarter of 2010), 2-hour individual line influent samples will be collected from SVE-10A and SVE-10B. If results are materially different from existing individual line influent results, 8-hour composite influent, intermediate, and effluent samples will be collected to determine the efficacy of the GAC units after the inclusion of Zone 10.

Routine checks, using a PID to confirm that the system is operating as designed, will be conducted weekly during the first month of operation and monthly thereafter. Long-term SVE influent/effluent monitoring objectives and inspection activities will be prepared as part of the OM&M Plan, as discussed in Section 7.2.

6.3 Groundwater Sampling

Groundwater in intermediate AS wells AS-10A and AS-10B will be sampled to assess intermediate depth groundwater beneath the store and evaluate the potential for deep AS well installation in future expansion in and around Zone 10. Groundwater sampling will be conducted using low-flow sampling techniques as detailed in the QAPP in Appendix H. CVOC concentrations will be used to determine whether treatment of deep contamination will be necessary.

The second 2010 quarterly groundwater sampling event will be scheduled to occur two weeks prior to system startup to provide baseline monitoring data, with the subsequent round scheduled for early to mid August 2010. Groundwater samples will be collected from all monitoring wells on the site to assess groundwater trends and the efficacy of the AS/SVE system expansion.

Monitoring wells in the southwestern corner of the site, in particular, will confirm that containment of the Site groundwater contamination is being achieved. The treatment zone of the AS/SVE system on the perimeter of the Site is representative of what is leaving the Site. These wells are slightly downgradient of the AS and SVE wells in the area and will be used to assess the groundwater conditions on the downgradient perimeter of the Site. The AS/SVE system in Zones 8 and 9 will be shut off for 1 day prior to groundwater sampling in each respective zone to allow the water table to stabilize for more representative groundwater quality results. Sampling will be conducted using low-flow groundwater sampling techniques as detailed in the QAPP in Appendix H. Samples will be submitted to a New York State-certified laboratory and analyzed for VOCs by EPA Test Method 8260.

7.0 REPORTING

7.1 AS/SVE System Expansion Report

Upon completion of site remediation, an AS/SVE System Expansion Report will be prepared and submitted to the NYSDEC and NYSDOH. The AS/SVE System Expansion Report will include:

- A description of field activities and any deviations from this AS/SVE System Expansion Work Plan;
- Tables summarizing laboratory data;
- Photographs of remedial activities;
- As-built drawings for the expanded AS/SVE system; and
- Documentation of expanded AS/SVE system start-up and associated monitoring data.

7.2 Operation, Maintenance, and Monitoring (OM&M) Plan

The OM&M Plan will outline the activities necessary for monitoring of the expanded AS/SVE system. The OM&M Plan will be prepared at the completion of the expansion and will include the following:

- As-built drawings and descriptions of all engineering controls implemented as part of the AS/SVE system;
- Operation and maintenance procedures, including an inspection protocol, to ensure proper functioning of the system;
- System monitoring, including AS and SVE cycle times, pressures, vacuum, flow rates, effluent sampling, and groundwater monitoring; and
- Defining criteria for termination of the AS/SVE operation.

7.3 Schedule

A tentative schedule for work plan implementation is provided below.

Table 11
Expansion Implementation Schedule

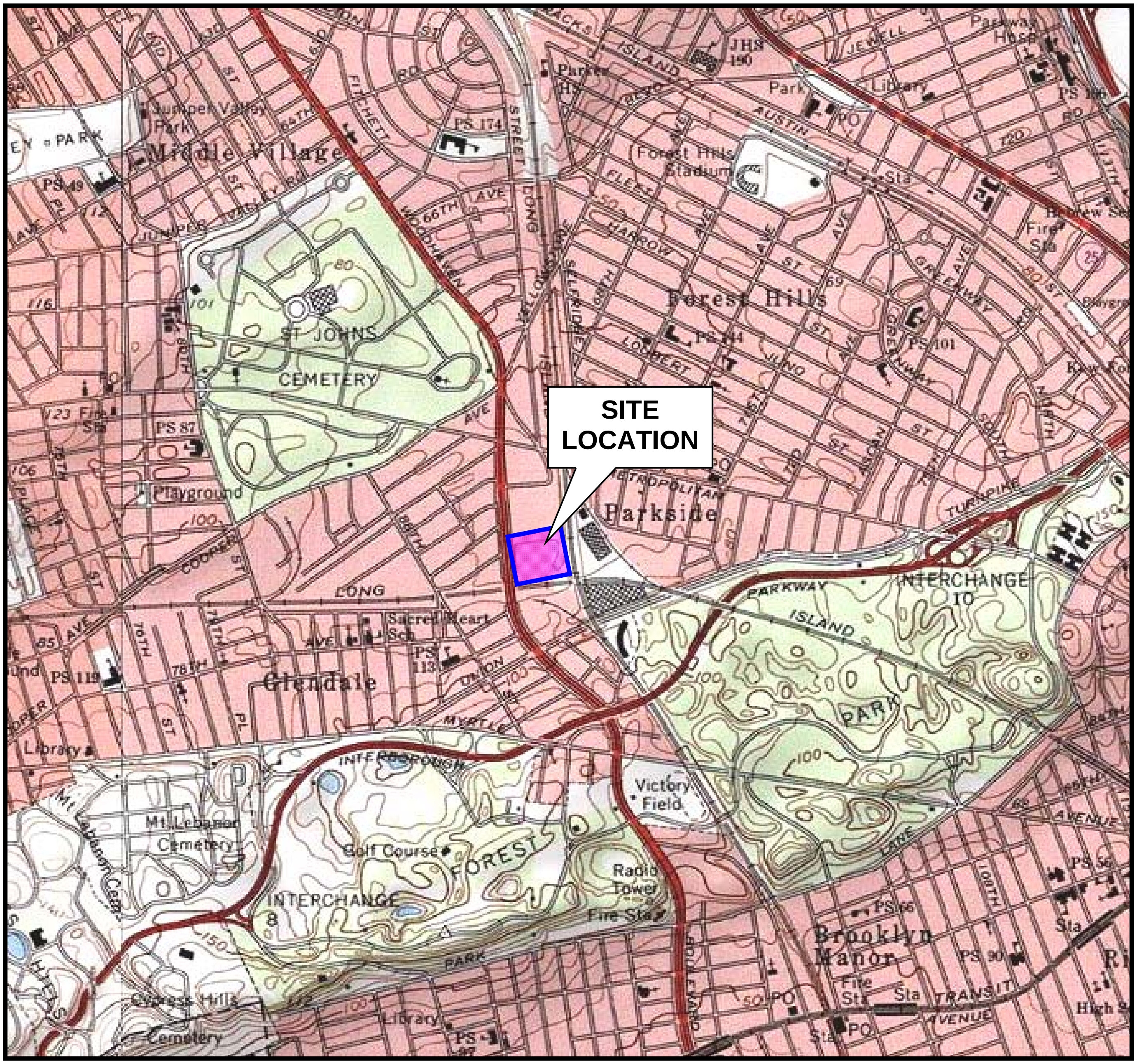
Schedule Task	Projected Completion Date
Submittal of AS/SVE System Expansion Work Plan to NYSDEC	2/16/10
Submittal of Revised AS/SVE System Expansion Work Plan to NYSDEC	4/15/10
Approval of AS/SVE System Expansion Work Plan by NYSDEC and NYSDOH (1 week)	4/23/10
Procurement and Fabrication of AS/SVE System (12 weeks)	3/22/10 6/10/10
AS and SVE Well Installation – Zones 7 to 9 (10 weeks)	2/24/10 5/7/10
Excavation – Zones 7 to 9 (6 weeks)	3/22/10 5/7/10
Baseline Groundwater Sampling	5/17 21/10
System Start-up Testing – Zones 7 to 9	6/15/10
Post Start-up Groundwater Sampling	8/16 20/10
AS and SVE Well Installation – Zone 10	Sept.-Oct. 2010 (exact time-frames to be coordinated with site occupant)
Excavation – Zone 10	Sept.-Nov. 2010
System Start-up – Zone 10	Nov. 2010

8.0 CERTIFICATION

I certify that this Work Plan was prepared in accordance with all applicable statutes, regulations and guidance documents.

Michelle Lapin, P.E.
No. 073934-1

FIGURES



SCALE IN FEET

0’ 1000’ 2000’ 4000’

SCALE: 1”=2000’

N

SOURCE:

7.5 MINUTE SERIES USGS TOPOGRAPHIC MAP
QUADRANGLE: JAMAICA, NY 1994

HOME DEPOT—REGO PARK
REGO PARK, NEW YORK

PROJECT SITE LOCATION

AKRF

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

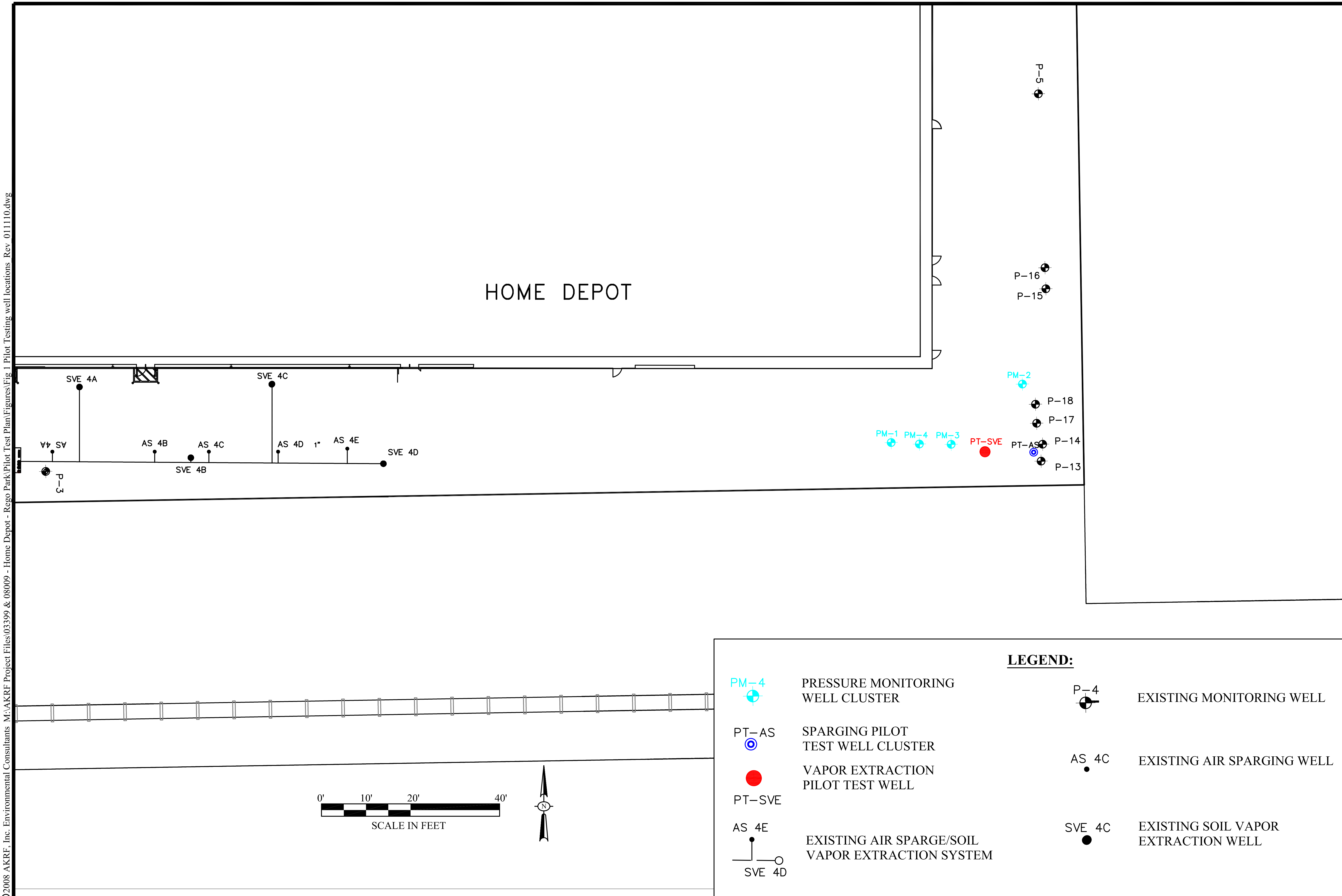
DATE
2.9.10

PROJECT No.
03399

SCALE
as shown

FIGURE
1

M:\AKRF Project Files\03399 & 08009 - Home Depot - Rego Park\Figures\03399 Fig 1 loc map.pub



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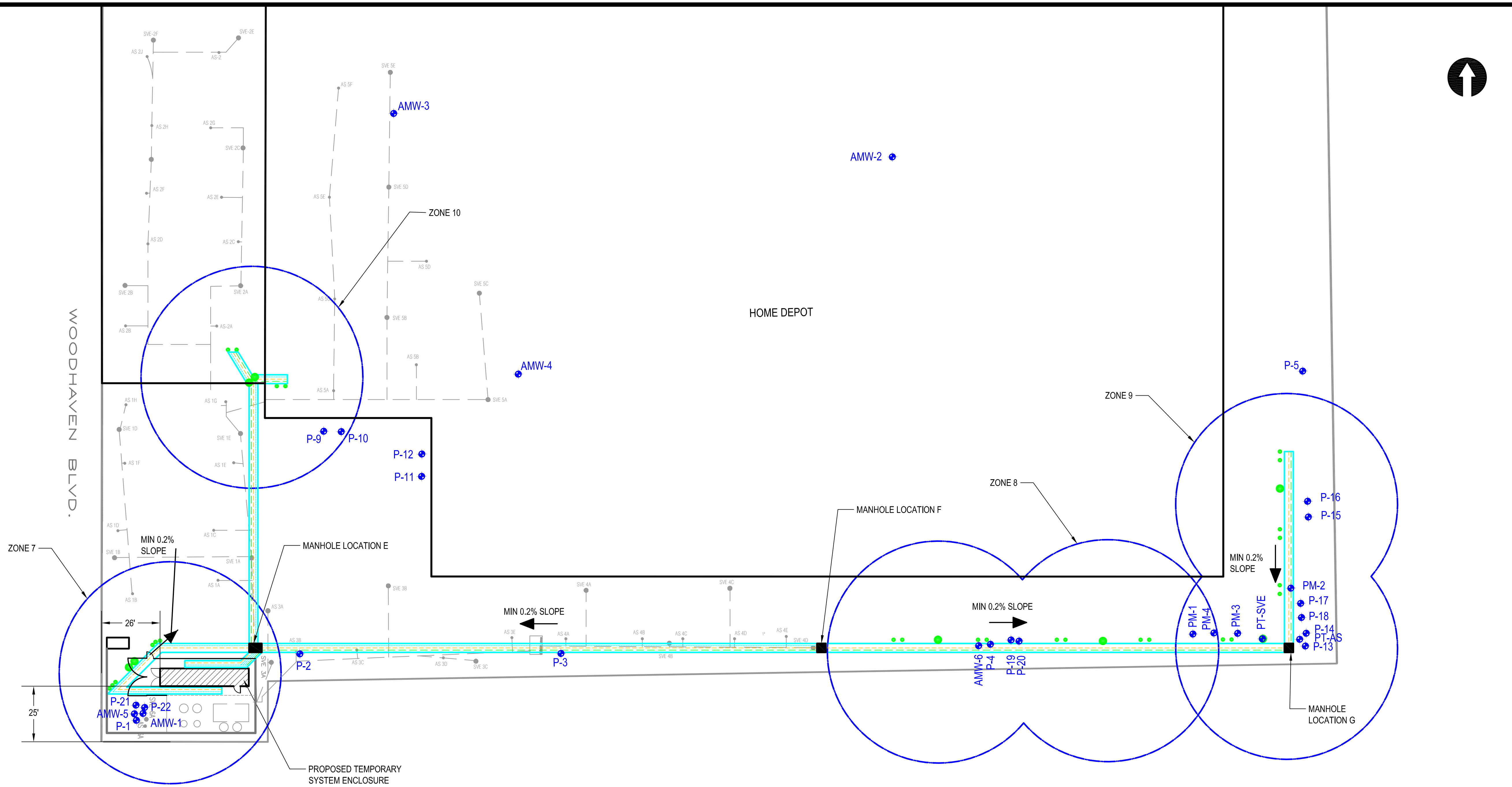
HOME DEPOT - REGO PARK

REGO PARK - GLENDALE, NEW YORK

PILOT TESTING WELL LOCATIONS

DATE	4.12.10
PROJECT NO.	03399
SCALE	as shown
FIGURE	2



0' 25' 50' 100'

SCALE IN FEET

LEGEND:

- SPARE 8" TO 12" CORRUGATED HDPE CONDUIT FOR FUTURE REPAIR & EXPANSION
- DEDICATED 1"AS HDPE TUBING AND DEDICATED SVE 4" PVC PIPING
- PROPOSED FENCE
- EXISTING FENCE TO REMAIN
- EXISTING FENCE TO BE REMOVED
- APPROXIMATE AIR SPARGE WELL LOCATION
- APPROXIMATE SOIL VAPOR EXTRACTION WELL LOCATION
- APPROXIMATE EXTENT OF TRENCH
- EXISTING MONITORING WELL
- AS 1C — EXISTING AIR SPARGING SYSTEM
- SVE 4C — EXISTING SOIL VAPOR EXTRACTION WELL

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HOME DEPOT-REGO PARK
REGO PARK - GLENDALE, NEW YORK

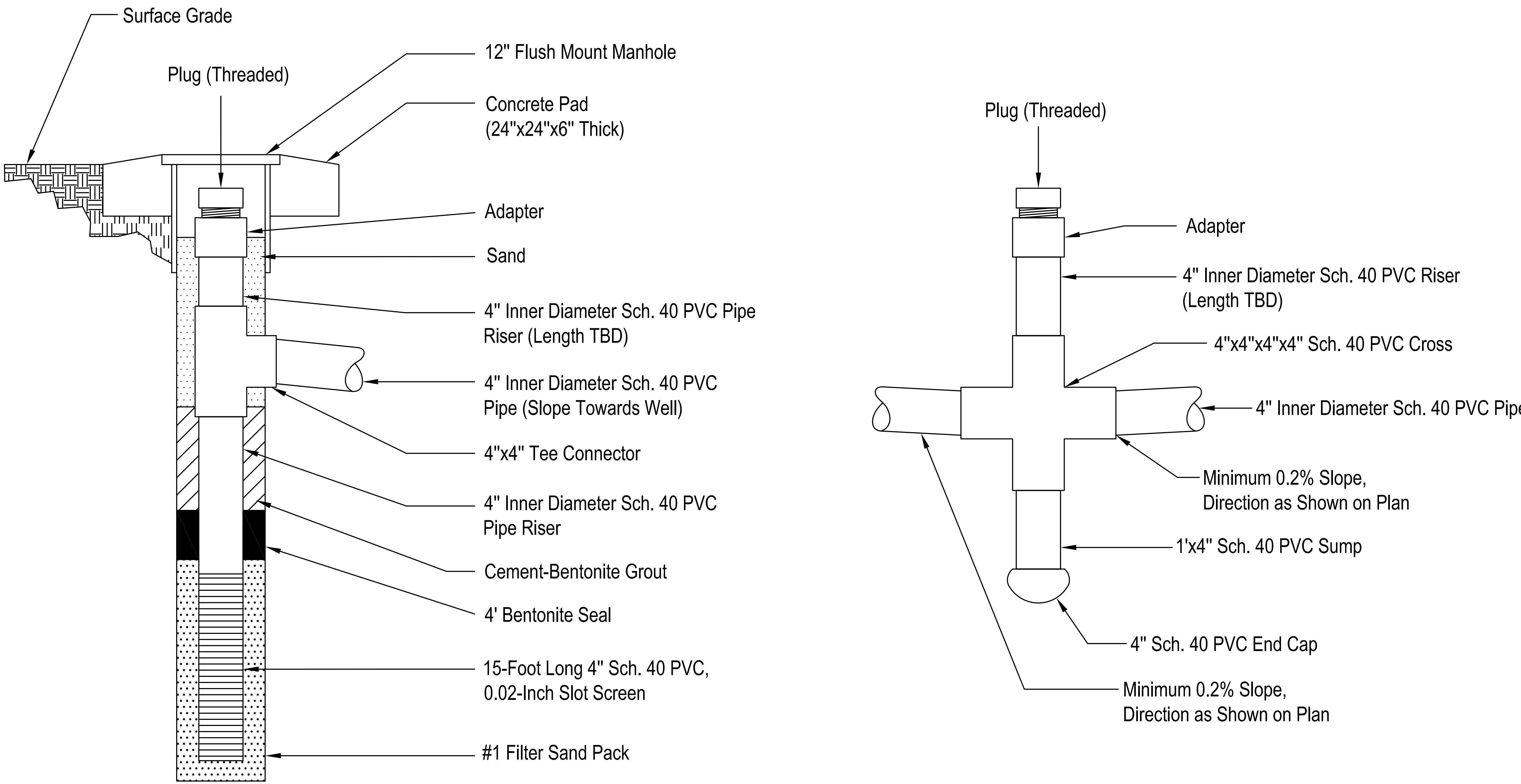
SITE PLAN WITH EXPANDED SYSTEM

DATE 4.13.10

PROJECT NO. 03399

SCALE as shown

FIGURE 3



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HOME DEPOT - REGO PARK

REGO PARK - GLENDALE, NEW YORK

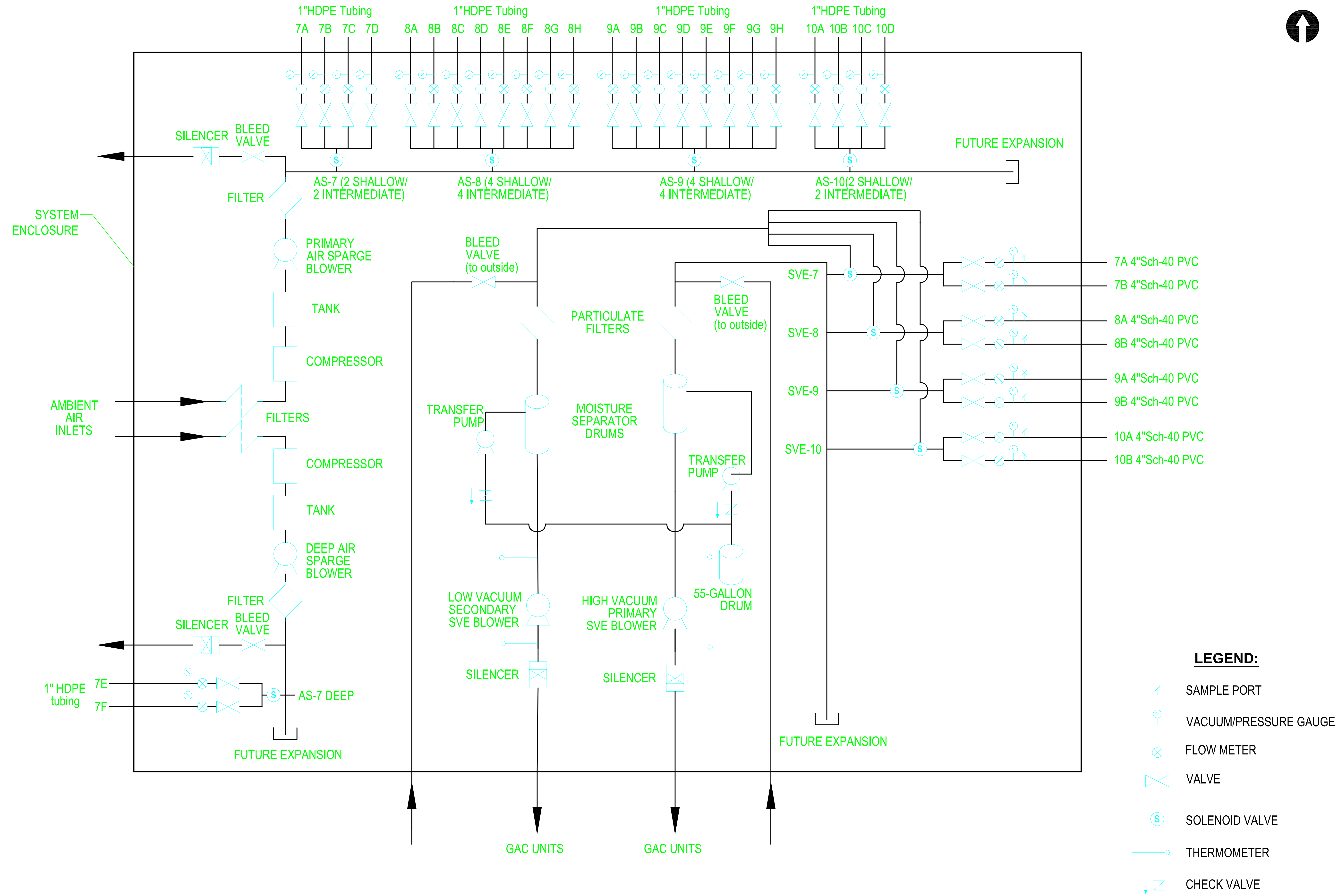
TYPICAL SVE WELL AND SVE SUMP CONSTRUCTION

DATE
4.12.10

PROJECT NO.
03399

SCALE
nts

FIGURE
4



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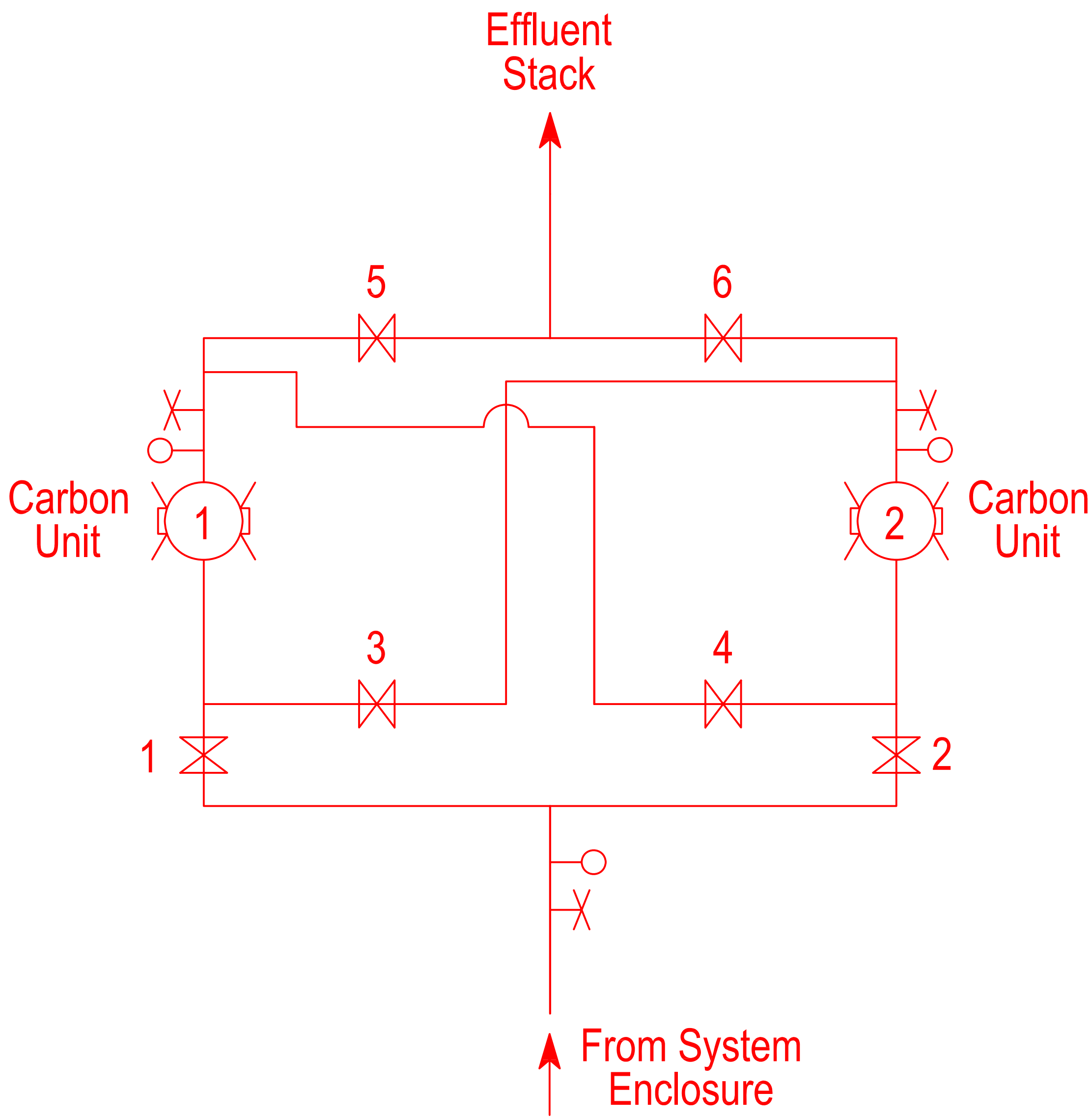
HOME DEPOT - REGO PARK
REGO PARK - GLENDALE, NEW YORK

CONCEPTUAL PROCESS AND INSTRUMENTATION DIAGRAM

DATE 2.25.10
PROJECT NO. 03399
SCALE NTS
FIGURE 5



VALVE CONFIGURATION

VALVE	GAC 1-2	GAC 2-1
1	O	C
2	C	O
3	C	O
4	O	C
5	C	O
6	O	C

LEGEND:

- BUTTERFLY VALVE
- MAGNEHELIC PRESSURE GAUGE
- BRASS SAMPLE PORT
- GRANULAR ACTIVATED CARBON UNIT

HOME DEPOT - REGO PARK

REGO PARK - GLENDALE, NEW YORK

CARBON UNIT MANIFOLD DESIGN

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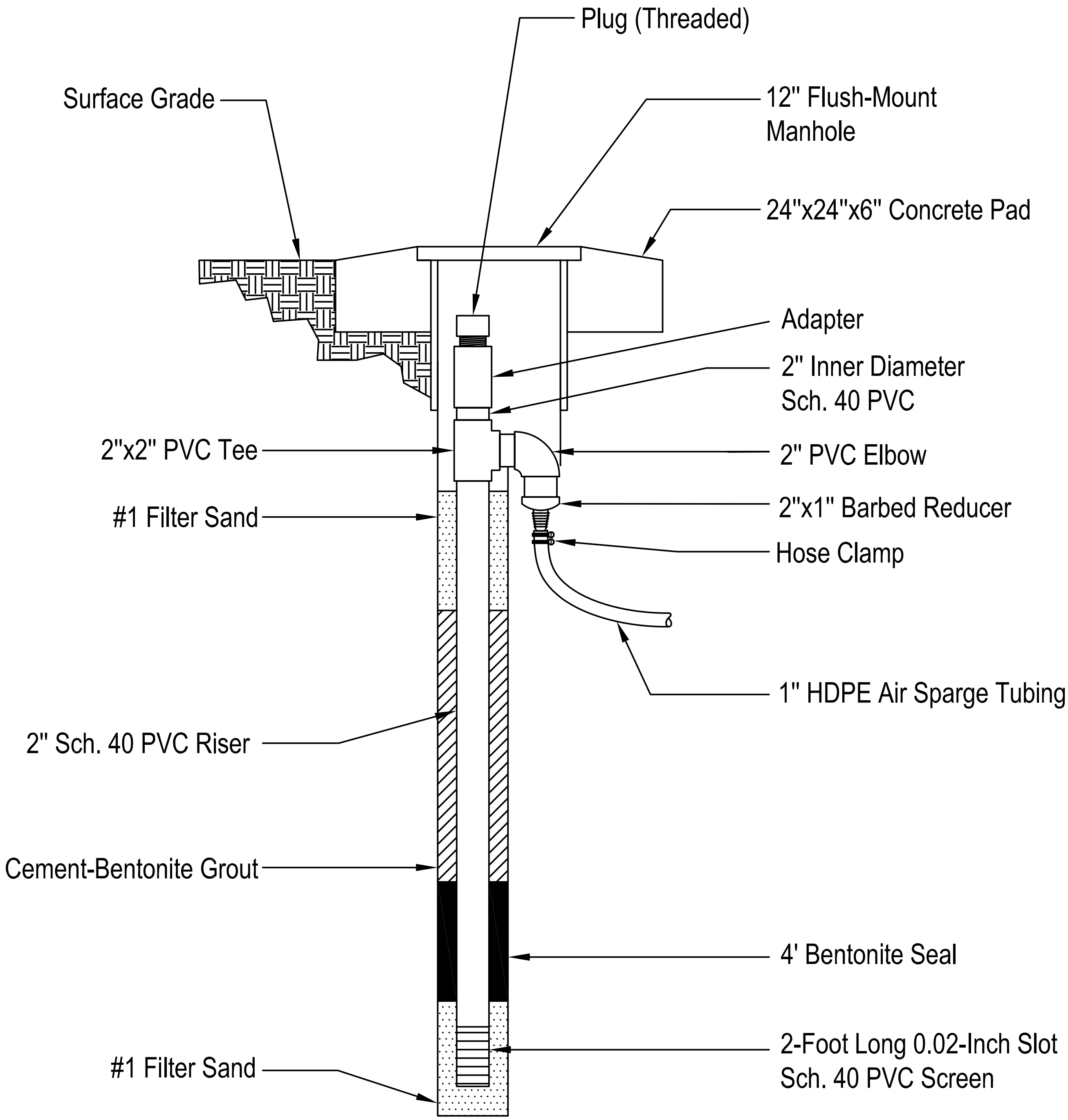
DATE 2.25.10

PROJECT No. 03399

SCALE nts

FIGURE 6



HOME DEPOT - REGO PARK

REGO PARK - GLENDALE, NEW YORK

TYPICAL AIR SPARGE WELL CONSTRUCTION

AKRF

Engineering, P.C.

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

DATE	**4.12.10**
PROJECT No.	**03399**
SCALE	**nts**
FIGURE	**7**

APPENDIX A
SOIL BORING AND WELL INSTALLATION LOGS – PILOT TEST WELLS

Soil Boring and Well Installation Log

Well No.			
P-13	**Job Number:** 03399	**Client:** Home Depot	**Sheet 1 of 5**
	Location: Home Depot Rego Park		**Drilling**
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon	**Start** / **Finish**
	Depth to Water: 50' below grade	**Logged By:** Mark Acceturi	**Date** 11/11/2008 / **Date** 11/12/2008
			Time 10:20 / **Time** 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
NA	1 2	NA	NA	Concrete / Concrete (0–1); Grout / Grout	1 2
NA	3 4	Drilling slowed as augers encountered railroad ballast.	NA	Grout / Grout	3 4
NA	5 6	NA	NA	Grout / Grout	5 6
NA	7 8	NA	NA	Grout / Grout	7 8
NA	9 10	NA	NA	Grout / Grout	9 10
NA	11 12	NA	NA	Grout / Grout	11 12
NA	13 14	NA	NA	Grout / Grout	13 14
NA	15 16	NA	NA	Grout / Grout	15 16
NA	17 18	NA	NA	Grout / Grout	17 18
NA	19 20	NA	NA	Grout / Grout	19 20

Notes: No soil samples collected for field screening until 50' below grade.

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Soil Boring and Well Installation Log

Well No.	Job Number: 03399	Client: Home Depot	Sheet 2 of 5	
	Location: Home Depot Rego Park		Drilling	
P-13	Drilling Method: Hollow Stem Auger	Driller: Paragon	Start	Finish
	Depth to Water: 50' below grade	Logged By: Mark Acceturi	Date 11/11/2008	Date 11/12/2008
			Time 10:20	Time 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction			Depth
NA	21	NA	NA	Grout		Grout	21
	22						22
NA	23	NA	NA				23
	24						24
NA	25	NA	NA				25
	26						26
NA	27	NA	NA				27
	28						28
NA	29	NA	NA				29
	30						30
NA	31	NA	NA				31
	32						32
NA	33	NA	NA				33
	34						34
NA	35	NA	NA				35
	36						36
NA	37	NA	NA				37
	38						38
NA	39	NA	NA				39
	40						40

Notes: No soil samples collected for field screening until 50' below grade.

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Soil Boring and Well Installation Log

Well No. P-13	**Job Number:** 03399	**Client:** Home Depot	**Sheet 3 of 5**
	Location: Home Depot Rego Park		**Drilling**
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon	**Start:** Date 11/11/2008, Time 10:20
	Depth to Water: 50' below grade	**Logged By:** Mark Acceturi	**Finish:** Date 11/12/2008, Time 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
NA	41 42	NA	NA	Grout	41 42
NA	43 44	NA	NA	Grout	43 44
NA	45 46	NA	NA	Grout	45 46
NA	47 48	NA	NA	Grout	47 48
NA	49 50	NA	NA	Grout	49 50
10 18 17 24	51 52	Dark brown fine SAND, some fine Gravel.	ND	Grout	51 52
NA	53 54	NA	NA	Grout	53 54
NA	55 56	NA	NA	Grout	55 56
NA	57 58	NA	NA	Grout	57 58
NA	59 60	NA	NA	Grout	59 60

Notes: Sample 1P13 collected at 50 and 52' below grade. All soil samples analyzed for Volatile Organic Compounds by EPA Method 8260, Total Organic Carbon by EPA Method 8060mod, and Chemical Oxygen Demand by EPA Method SM5220D.
ND - None Detected

Soil Boring and Well Installation Log

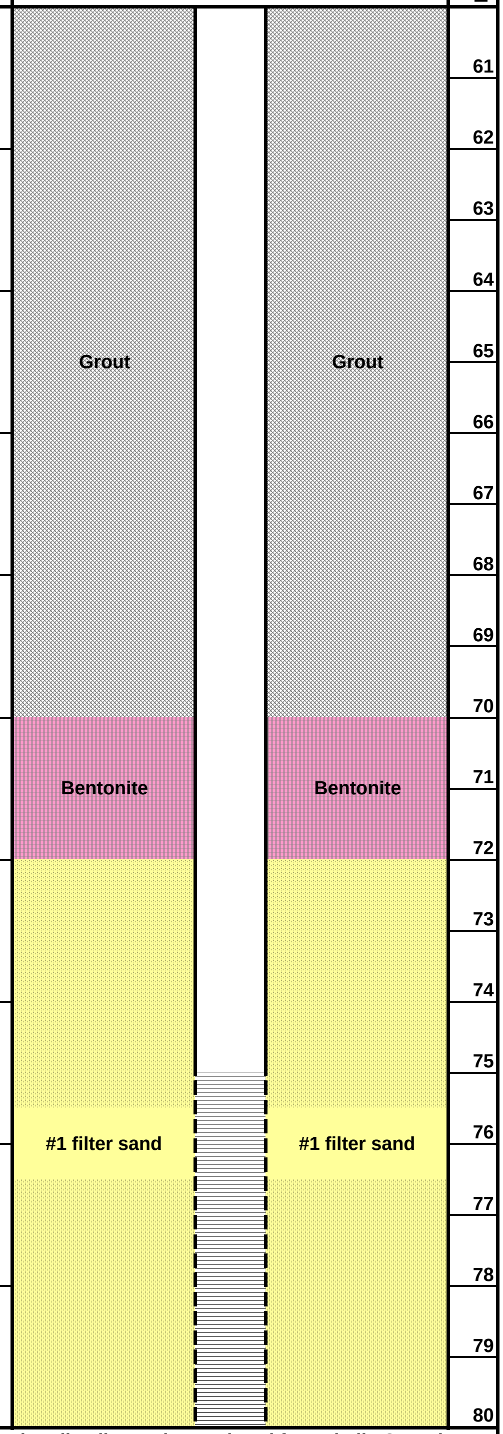
Well No.		
P-13	**Job Number:** 03399	**Client:** Home Depot
	Location: Home Depot Rego Park	
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon
	Depth to Water: 50' below grade	**Logged By:** Mark Acceturi

Sheet 4 of 5	
Drilling	
Start	**Finish**
Date 11/11/2008	**Date** 11/12/2008
Time 10:20	**Time** 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID
37 90	61 62	Brown fine SAND, some fine Gravel.	ND
NA	63 64	NA	NA
NA	65 66	NA	NA
NA	67 68	NA	NA
NA	69 70	NA	NA
NA	71 72	Top 12": Brown fine SAND. Bottom 3": Brown medium SAND, some fine Gravel	ND
NA	73 74	NA	NA
NA	75 76	NA	NA
NA	77 78	NA	NA
NA	79 80	NA	NA

Well Construction



Notes: Sample 2P13 collected at 60 and 62' below grade. Sample 3P13 collected at 70 and 72' below grade. All soil samples analyzed for Volatile Organic Compounds by EPA Method 8260, Total Organic Carbon by EPA Method 8060mod, and Chemical Oxygen Demand by EPA Method SM5220D.
ND - None detected

Soil Boring and Well Installation Log

Well No.			
P-13	**Job Number:** 03399	**Client:** Home Depot	**Sheet 5 of 5**
	Location: Home Depot Rego Park		**Drilling**
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon	Start: **Date** 11/11/2008 **Time** 10:20
	Depth to Water: 50' below grade	**Logged By:** Mark Acceturi	Finish: **Date** 11/12/2008 **Time** 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
NA	81	NA	ND		81
	82			#1 filter sand / #1 filter sand	82
NA	83	NA	ND		83
	84				84
	85				85
	86	End of Boring at 85' below grade			86
	87				87
	88				88
	89				89
	90				90
	91				91
	92				92
	93				93
	94				94
	95				95
	96				96
	97				97
	98				98
	99				99
	100				100

Notes: End of boring at 85' below grade. Well set at 85' below grade with 10' of 0.010 slot screen.

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Soil Boring and Well Installation Log

Well No.	Job Number: 03399	Client: Home Depot	Sheet 1 of 3	
	Location: Home Depot Rego Park	Weather: Light rain	Drilling	
P-14	Drilling Method: Hollow Stem Auger	Driller: Paragon	Start	Finish
	Depth to Water: 50' below grade	Logged By: Mark Acceturi	Date 11/13/2008	Date 11/14/2008
			Time 12:00	Time 10:15

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction			Depth
NA	1	NA	NA	Concrete		Concrete	1
	2			Grout		Grout	2
NA	3	NA	NA				3
	4						4
NA	5	NA	NA				5
	6						6
NA	7	NA	NA				7
	8						8
NA	9	NA	NA				9
	10						10
NA	11	NA	NA				11
	12						12
NA	13	NA	NA				13
	14						14
NA	15	NA	NA				15
	16						16
NA	17	NA	NA				17
	18						18
NA	19	NA	NA				19
	20						20

Notes: No soil samples collected from boring P-14.

Soil Boring and Well Installation Log

Well No.			
P-14	**Job Number:** 03399	**Client:** Home Depot	
	Location: Home Depot Rego Park	**Weather:** Light rain	**Drilling**
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon	**Start** / **Finish**
	Depth to Water: ‡50' below grade	**Logged By:** Mark Acceturi	**Date** 11/13/2008 / **Date** 11/14/2008
			Time 12:00 / **Time** 10:15

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction			Depth
NA	21	NA	NA	Grout		Grout	21
	22						22
NA	23	NA	NA				23
	24						24
NA	25	NA	NA				25
	26						26
NA	27	NA	NA				27
	28						28
NA	29	NA	NA				29
	30						30
NA	31	NA	NA				31
	32						32
NA	33	NA	NA				33
	34						34
NA	35	NA	NA				35
	36						36
NA	37	NA	NA				37
	38						38
NA	39	NA	NA				39
	40						40

Notes: No soil samples collected from boring P-14.

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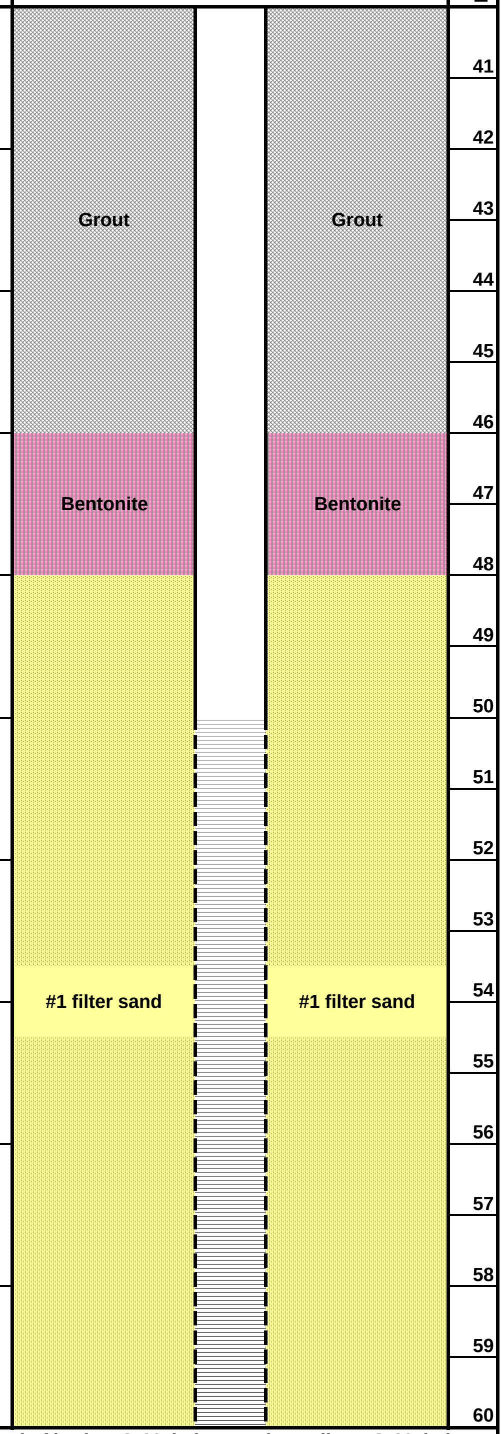
Soil Boring and Well Installation Log

Well No.			
P-14	**Job Number:** 03399	**Client:** Home Depot	**Sheet 3 of 3**
	Location: Home Depot Rego Park	**Weather:** Light rain	**Drilling**
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon	Start / Finish
	Depth to Water: ~50' below grade	**Logged By:** Mark Acceturi	**Date** 12/15/2008 / **Date** 12/16/2008
			Time 12:30 / **Time** 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID
NA	41	NA	NA
	42		
NA	43	NA	NA
	44		
NA	45	NA	NA
	46		
NA	47	NA	NA
	48		
NA	49	NA	NA
	50		
NA	51	NA	NA
	52		
NA	53	NA	NA
	54		
NA	55	NA	NA
	56		
NA	57	NA	NA
	58		
NA	59	NA	NA
	60		

Well Construction



Notes: * Logging drill cuttings down to 40' below grade. No soil samples collected from boring P-14. End of boring @ 60' below grade. Well set @ 60' below grade with 10' of 0.010 slot screen.

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Soil Boring and Well Installation Log

Well No.	Job Number: 03399	Client: Home Depot	Sheet 1 of 5	
P-15	Location: Home Depot Rego Park	Weather: Clear 60˚F	Drilling	
	Drilling Method: Hollow Stem Auger	Driller: Paragon	Start	Finish
	Depth to Water: ~50' below grade	Logged By: Eric Park	Date 12/15/2008	Date 12/16/2008
			Time 12:30	Time 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
NA	1	Dark brown fine SAND and SILT.	ND	Concrete / Concrete	1
	2				2
NA	3	Brown fine SAND, trace fine Gravel.	ND		3
	4				4
NA	5	Brown fine SAND, some medium Gravel. (Drilling slowed as auger hit ballast layer of historic rail lines)	ND		5
	6				6
NA	7	Brown fine SAND, some medium Gravel.	ND		7
	8				8
NA	9	Brown fine SAND, some medium Gravel.	ND		9
	10				10
NA	11	Brown fine SAND, some medium Gravel.	ND	Grout / Grout	11
	12				12
NA	13	Brown fine SAND, some medium Gravel.	ND		13
	14				14
NA	15	Light brown fine SAND.	ND		15
	16				16
NA	17	Light brown fine SAND.	ND		17
	18				18
NA	19	Light brown fine SAND.	ND		19
	20				20

Notes: Logged drill cuttings down to 40' below grade.
ND - None detected

Soil Boring and Well Installation Log

Well No.			
P-15	**Job Number:** 03399	**Client:** Home Depot	**Sheet 2 of 5**
	Location: Home Depot Rego Park	**Weather:** Clear 60˚F	**Drilling**
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon	**Start** / **Finish**
	Depth to Water: 50' below grade	**Logged By:** Eric Park	**Date** 12/15/2008 / **Date** 12/16/2008
			Time 12:30 / **Time** 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
NA	21–22	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	21–22
NA	23–24	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	23–24
NA	25–26	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	25–26
NA	27–28	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	27–28
NA	29–30	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	29–30
NA	31–32	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	31–32
NA	33–34	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	33–34
NA	35–36	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	35–36
NA	37–38	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	37–38
NA	39–40	Light brown fine SAND, trace fine Gravel.	ND	Grout / Grout	39–40

Notes: Logged drill cuttings down to 40' below grade.
ND - None detected

Soil Boring and Well Installation Log

Well No.	Job Number: 03399	Client: Home Depot	Sheet 3 of 5	
P-15	Location: Home Depot Rego Park	Weather: Clear 60˚F	Drilling	
	Drilling Method: Hollow Stem Auger	Driller: Paragon	Start	Finish
	Depth to Water: ~50' below grade	Logged By: Eric Park	Date 12/15/2008	Date 12/16/2008
			Time 12:30	Time 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
10 19 20 21	41 42	Light brown fine SAND, trace fine Gravel.	ND	Grout	41 42
31 42 48 49	43 44	Light brown fine SAND, trace fine Gravel.	ND	Grout	43 44
14 28 50/.4	45 46	Light brown fine SAND, trace fine Gravel.	ND	Grout	45 46
31 24 38 46	47 48	Light brown fine SAND, trace fine Gravel.	ND	Grout	47 48
14 26 29 32	49 50	Light brown fine SAND, trace fine Gravel.	ND	Grout	49 50
21 28 34 42	51 52	Light brown fine SAND, trace fine Gravel.	ND	Grout	51 52
25 50/.4	53 54	Top 6": Slough from above. Bottom 10": Light brown fine SAND, trace fine Gravel.	ND	Grout	53 54
10 18 31 34	55 56	Light brown fine SAND, trace fine Gravel.	ND	Grout	55 56
10 14 22 34	57 58	No Recovery	NA	Grout	57 58
16 21 28 40	59 60	Top 14": Light brown fine SAND, trace fine Gravel. Bottom 2": Brown fine SAND, some Gravel.	ND	Grout	59 60

Notes: ND - None detected

AKRF

Soil Boring and Well Installation Log

Well No.	Job Number: 03399	Client: Home Depot	Sheet 4 of 5	
P-15	Location: Home Depot Rego Park	Weather: Clear 60˚F	Drilling	
	Drilling Method: Hollow Stem Auger	Driller: Paragon	Start	Finish
	Depth to Water: 50' below grade	Logged By: Eric Park	Date 12/15/2008	Date 12/16/2008
			Time 12:30	Time 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
22, 31, 41, 48	61–62	Top 14": Brown fine SAND, trace fine Gravel. Bottom 2": Brown fine SAND, Some fine Gravel.	ND	Grout	61, 62
27, 33, 47, 50/.3	63–64	Brown fine SAND, Some fine Gravel.	ND	Grout	63, 64
15, 29, 31, 42	65–66	Brown fine SAND, trace fine Gravel.	ND	Grout	65, 66
17, 25, 29, 33	67–68	Brown fine SAND, trace fine Gravel.	ND	Grout	67, 68
22, 35, 42, 48	69–70	Brown fine SAND, trace fine Gravel.	ND	Grout	69, 70
25, 32, 41, 48	71–72	Brown fine SAND, trace fine Gravel.	ND	Bentonite	71, 72
21, 32, 42, 47	73–74	Brown fine SAND, trace fine Gravel.	ND	#1 filter sand	73, 74
17, 26, 37, 44	75–76	Brown fine SAND, trace fine Gravel.	ND	#1 filter sand	75, 76
18, 38, 35, 42	77–78	Brown fine SAND, trace fine Gravel.	ND	#1 filter sand	77, 78
31, 50/.4	79–80	No Recovery	NA	#1 filter sand	79, 80

Notes: ND - None detected

AKRF

Soil Boring and Well Installation Log

Well No.		
P-15	**Job Number:** 03399	**Client:** Home Depot
	Location: Home Depot Rego Park	**Weather:** Clear 60˚F
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon
	Depth to Water: 50' below grade	**Logged By:** Eric Park

Drilling

	Start	Finish
Date	12/15/2008	12/16/2008
Time	12:30	17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
24					
45	81	Brown fine SAND, trace fine Gravel.	ND		81
50					
50	82			#1 filter sand / #1 filter sand	82
27					
37	83	Brown fine SAND, trace fine Gravel.	ND		83
50					
50	84				84
		End of Boring at 84' below grade			
	85				85
	86				86
	87				87
	88				88
	89				89
	90				90
	91				91
	92				92
	93				93
	94				94
	95				95
	96				96
	97				97
	98				98
	99				99
	100				100

Notes: End of boring at 84' below grade. Well set at 84' below grade with 10' of 0.010 slot screen.
ND - None detected

Soil Boring and Well Installation Log

Well No.			
P-16	**Job Number:** 03399	**Client:** Home Depot	**Sheet 1 of 3**
	Location: Home Depot Rego Park	**Weather:** Coudy 30˚F	**Drilling**
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon	**Start:** Date 12/17/2008, Time 13:30
	Depth to Water: 50' below grade	**Logged By:** Eric Park	**Finish:** Date 12/17/2008, Time 17:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
NA	1–2	Dark brown fine SAND, trace fine Gravel.	ND	Concrete	1–2
NA	3–4	Brown fine SAND, trace fine Gravel.	NA	Grout	3–4
NA	5–6	Brown fine SAND, trace fine Gravel.	NA	Grout	5–6
NA	7–8	Brown fine SAND, trace fine Gravel.	NA	Grout	7–8
NA	9–10	Brown fine SAND, trace fine Gravel.	NA	Grout	9–10
NA	11–12	Brown fine SAND, trace fine Gravel.	ND	Grout	11–12
NA	13–14	Brown fine SAND, trace fine Gravel.	NA	Grout	13–14
NA	15–16	Brown fine SAND, trace fine Gravel.	NA	Grout	15–16
NA	17–18	Brown fine SAND, trace fine Gravel.	NA	Grout	17–18
NA	19–20	Brown fine SAND, trace fine Gravel.	NA	Grout	19–20

Notes: Logged drill cuttings down to end of boring. No soil samples collected from boring P-16.
ND - None detected

Soil Boring and Well Installation Log

Well No.	Job Number: 03399	Client: Home Depot	Sheet 2 of 3	
P-16	Location: Home Depot Rego Park	Weather: Cloudy 30˚F	Drilling	
	Drilling Method: Hollow Stem Auger	Driller: Paragon	Start	Finish
	Depth to Water: 50' below grade	Logged By: Eric Park	Date 12/17/2008	Date 12/17/2008
			Time 13:30	Time 16:00

Surface Conditions: Asphalt

Blows	Depth	Soil Description	PID	Well Construction	Depth
NA	21–22	Brown fine SAND, trace fine Gravel.	ND	Grout / Grout	21–22
NA	23–24	Brown fine SAND, trace fine Gravel.	NA		23–24
NA	25–26	Brown fine SAND, trace fine Gravel.	NA		25–26
NA	27–28	Brown fine SAND, trace fine Gravel.	NA		27–28
NA	29–30	Brown fine SAND, trace fine Gravel.	NA		29–30
NA	31–32	Brown fine SAND, trace fine Gravel.	ND		31–32
NA	33–34	Brown fine SAND, trace fine Gravel.	NA		33–34
NA	35–36	Brown fine SAND, trace fine Gravel.	NA		35–36
NA	37–38	Brown fine SAND, trace fine Gravel.	NA		37–38
NA	39–40	Brown fine SAND, trace fine Gravel.	NA		39–40

Notes: Logged drill cuttings down to end of boring. No soil samples collected from boring P-16.
ND - None detected

AKRF

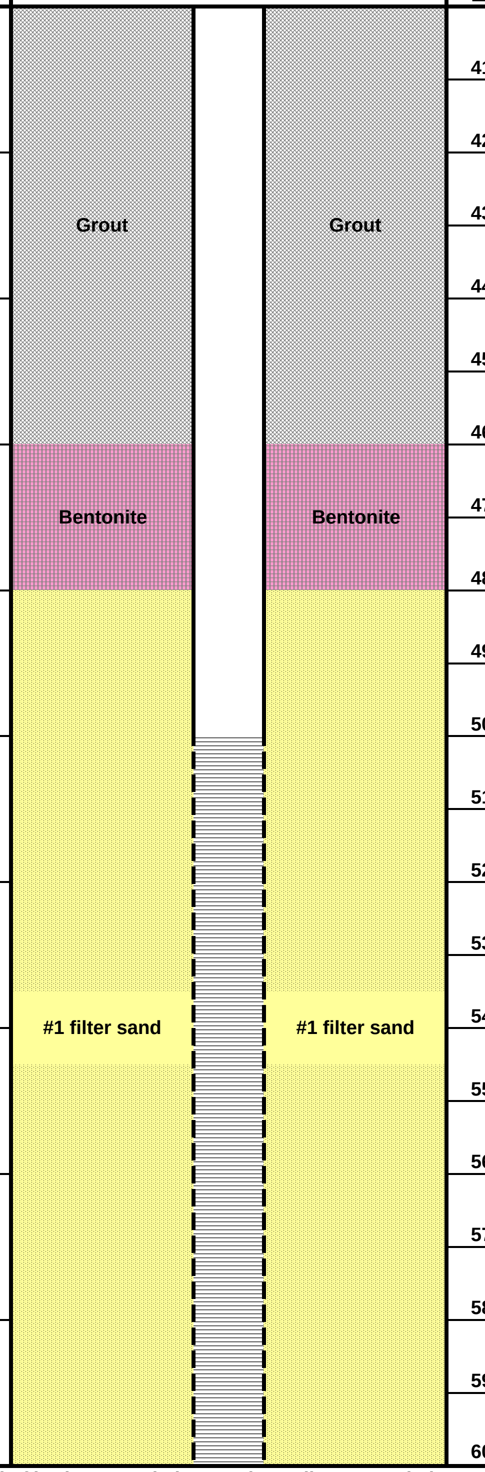
Soil Boring and Well Installation Log

Well No.			
P-16	**Job Number:** 03399	**Client:** Home Depot	**Sheet 3 of 3**
	Location: Home Depot Rego Park	**Weather:** Clear 60°F	**Drilling**
	Drilling Method: Hollow Stem Auger	**Driller:** Paragon	**Start:** Date 12/15/2008, Time 12:30
	Depth to Water: 50' below grade	**Logged By:** Eric Park	**Finish:** Date 12/16/2008, Time 17:00

Surface Conditions: Asphalt

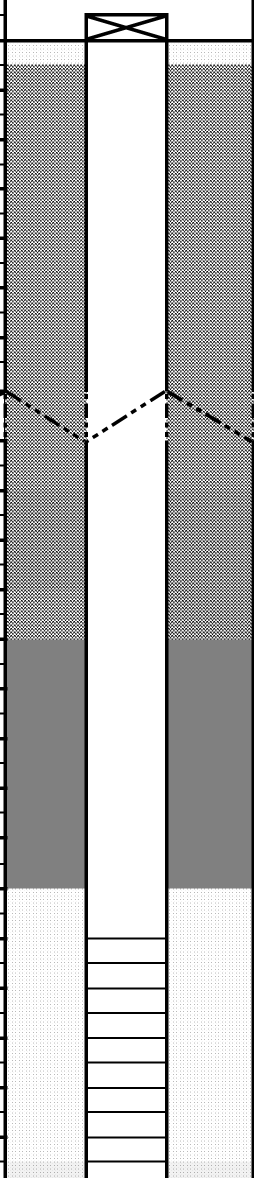
Blows	Depth	Soil Description	PID
NA	41	Brown fine SAND, trace fine Gravel.	ND
	42		
NA	43	Brown fine SAND, trace fine Gravel.	NA
	44		
NA	45	Brown fine SAND, trace fine Gravel.	NA
	46		
NA	47	Brown fine SAND, trace fine Gravel.	NA
	48		
NA	49	Brown fine SAND, trace fine Gravel.	NA
	50		
NA	51	Brown fine SAND, trace fine Gravel.	ND
	52		
NA	53	Brown fine SAND, trace fine Gravel.	NA
	54		
NA	55	Brown fine SAND, trace fine Gravel.	NA
	56		
NA	57	Brown fine SAND, trace fine Gravel.	NA
	58		
NA	59	Brown fine SAND, trace fine Gravel.	NA
	60	End of boring at 60' below grade.	

Well Construction



Notes: Logged drill cuttings down to end of boring. No soil samples collected from boring P-16. End of boring at 60' below grade. Well set at 60' below grade with 10' of 0.010 slot screen.
ND - None detected

AKRF, Inc.	Home Depot - Rego Park, NY AKRF Project Number : 03399-0029		Well No. P-17 Sheet 1 of 1	
Environmental Consultants 440 Park Avenue South New York, NY	**Drilling Method:**	Hollow Stem Auger (CME 85)	**Drilling**	
	Sampling Method:	Split Spoon (see boring log P-18)	**Start**	**Finish**
	Driller :	Aquifer Drilling & Testing, Inc.	**Time:** 12:15	**Time:** 11:25
	Weather:	Partly cloudy, ~60 deg F	**Date:** 10/09/09	**Date:** 10/12/09
	Field Supervisor:	Glen Stefaniak, AKRF		

Depth (Feet)	Well Construction	Surface Condition: Asphalt Pavement
0		**Flush-mounted steel roadbox set within concrete pad.** **EXISTING GRADE**
		No. 2 Silica Sand (0 - 1 foot below grade)
2		
4		
6		**Portland Cement/Bentonite Grout (1 - 88 feet below grade)**
8		
10		
12		
14		**2" x 100' SCH 40 PVC Riser (0 - 100 feet below grade)**
80		
82		
84		
86		
88		
90		
92		**Bentonite Slurry (88 - 98 feet below grade)**
94		
96		
98		
100		**No. 2 Silica Sand (98 - 110 feet below grade)**
102		
104		**2" x 10' SCH 40 PVC 0.010-inch Slotted Screen (100 - 110 feet below grade)**
106		
108		
110		

Notes:

Groundwater measured at 50.22 feet below top of casing on October 20, 2009

SOIL BORING LOG

Home Depot - Rego Park, NY
AKRF Project Number: 03399-0029

Boring No. **P-18**
Sheet 1 of 7

AKRF
440 Park Avenue South, New York, NY
Phone (212) 696-0670 Fax (212) 726-0942

Drilling Method:	Hollow-Stem Auger
Sampling Method:	Split-Spoon
Driller :	Aquifer Drilling & Testing, Inc.
Sampler:	Glen Stefaniak, AKRF

Drilling			
Start Time:	10/06/09 09:05	**Finish Time:**	10/09/09 10:09
Date	October 6, 2009		
Weather:	Clear, ~ 70 deg, F		

Depth (feet)	Recovery (Inches)	Blow Counts	Surface Conditions: Asphalt	Odor	PID (ppm)	NAPL	Samples Collected for Lab Analysis
1–5	N/A	N/A	Dark brown fine SAND, some fine Gravel (damp).	None	N/A	None	None
6–10	N/A	N/A	Dark brown fine SAND, some fine Gravel (dry).	None	N/A	None	None
11–15	N/A	N/A	Dark brown fine SAND (dry).	None	N/A	None	None
16–20	N/A	N/A	Dark brown fine SAND (damp).	None	N/A	None	None

Notes:

Soil samples collected from auger flights until 110 feet below grade.
N/A=not applicable.
ppm=parts per million.

SOIL BORING LOG

Home Depot - Rego Park, NY	**Boring No.**	**P-18**
AKRF Project Number: 03399-0029	Sheet 2 of 7	

AKRF
440 Park Avenue South, New York, NY
Phone (212) 696-0670 Fax (212) 726-0942

Drilling Method:	Hollow-Stem Auger	**Drilling**				
Sampling Method:	Split-Spoon	**Start**	10/06/09	**Finish**	10/09/09	
Driller :	Aquifer Drilling & Testing, Inc.	**Time:**	09:05	**Time:**	10:09	
		Date	October 6, 2009			
Sampler:	Glen Stefaniak, AKRF	**Weather:**	Clear, ~ 70 deg, F			

Depth (feet)	Recovery (Inches)	Blow Counts	Surface Conditions: Asphalt	Odor	PID (ppm)	NAPL	Samples Collected for Lab Analysis
21 22 23 24 25	N/A	N/A	Dark brown fine SAND (damp).	None	N/A	None	None
26 27 28 29 30	N/A	N/A	Dark brown fine SAND (damp).	None	N/A	None	None
31 32 33 34 35	N/A	N/A	Dark brown fine SAND (damp).	None	N/A	None	None
36 37 38 39 40	N/A	N/A	Dark brown fine SAND (damp).	None	N/A	None	None

Notes:

Soil samples collected from auger flights until 110 feet below grade.

N/A=not applicable.

ppm=parts per million.

SOIL BORING LOG

Home Depot - Rego Park, NY	Boring No. P-18
AKRF Project Number: 03399-0029	Sheet 3 of 7

AKRF
440 Park Avenue South, New York, NY
Phone (212) 696-0670 Fax (212) 726-0942

Drilling Method:	Hollow-Stem Auger	**Drilling Start**	10/06/09
Sampling Method:	Split-Spoon	**Time:**	09:05
Driller :	Aquifer Drilling & Testing, Inc.	**Finish**	10/09/09
		Time:	10:09
		Date	October 6, 2009
Sampler:	Glen Stefaniak, AKRF	**Weather:**	Clear, ~ 70 deg, F

Depth (feet)	Recovery (Inches)	Blow Counts	Surface Conditions: Asphalt	Odor	PID (ppm)	NAPL	Samples Collected for Lab Analysis
41–45	N/A	N/A	Dark brown fine SAND (damp).	None	N/A	None	None
46–50	N/A	N/A	Light brown fine SAND (dry).	None	N/A	None	None
51–55	N/A	N/A	Light brown fine SAND (dry).	None	N/A	None	None
56–60	N/A	N/A	Light brown fine SAND (damp).	None	N/A	None	None

Notes:

Soil samples collected from auger flights until 110 feet below grade.
N/A=not applicable.
ppm=parts per million.

SOIL BORING LOG

Home Depot - Rego Park, NY	**Boring No.**	**P-18**
AKRF Project Number: 03399-0029	Sheet 4 of 7	

AKRF
440 Park Avenue South, New York, NY
Phone (212) 696-0670 Fax (212) 726-0942

Drilling Method:	Hollow-Stem Auger	**Drilling**			
Sampling Method:	Split-Spoon	**Start**	10/06/09	**Finish**	10/09/09
Driller :	Aquifer Drilling & Testing, Inc.	**Time:**	09:05	**Time:**	10:09
		Date	October 6, 2009		
Sampler:	Glen Stefaniak, AKRF	**Weather:**	Clear, ~ 70 deg, F		

Depth (feet)	Recovery (Inches)	Blow Counts	Surface Conditions: Asphalt	Odor	PID (ppm)	NAPL	Samples Collected for Lab Analysis
61 62 63 64 65	N/A	N/A	Light brown fine SAND (damp).	None	N/A	None	None
66 67 68 69 70	N/A	N/A	Light brown fine SAND, little Silt (damp).	None	N/A	None	None
71 72 73 74 75	N/A	N/A	Light brown fine SAND, trace Silt (damp).	None	N/A	None	None
76 77 78 79 80	N/A	N/A	Light brown fine SAND, trace Silt (damp).	None	N/A	None	None

Notes:

Soil samples collected from auger flights until 110 feet below grade.
N/A=not applicable.
ppm=parts per million.

SOIL BORING LOG

Home Depot - Rego Park, NY	**Boring No.**	**P-18**
AKRF Project Number: 03399-0029	**Sheet 5 of 7**	

AKRF
440 Park Avenue South, New York, NY
Phone (212) 696-0670 Fax (212) 726-0942

Drilling Method:	Hollow-Stem Auger	**Drilling**			
Sampling Method:	Split-Spoon	**Start**	10/06/09	**Finish**	10/09/09
Driller :	Aquifer Drilling & Testing, Inc.	**Time:**	09:05	**Time:**	10:09
		Date	October 6, 2009		
Sampler:	Glen Stefaniak, AKRF	**Weather:**	Clear, ~ 70 deg, F		

Depth (feet)	Recovery (Inches)	Blow Counts	Surface Conditions: Asphalt	Odor	PID (ppm)	NAPL	Samples Collected for Lab Analysis
81 82 83 84 85	N/A	N/A	Light brown fine to medium SAND, trace Silt (damp).	None	N/A	None	None
86 87 88 89 90	N/A	N/A	Light brown fine to medium SAND, trace Silt (wet).	None	N/A	None	None
91 92 93 94 95	N/A	N/A	Light brown fine SAND, trace Silt (wet).	None	N/A	None	None
96 97 98 99 100	N/A	N/A	Light brown fine SAND, trace Silt (wet).	None	N/A	None	None

Notes:

Soil samples collected from auger flights until 110 feet below grade.
N/A=not applicable.
ppm=parts per million.

SOIL BORING LOG

Home Depot - Rego Park, NY
AKRF Project Number: 03399-0029

Boring No. **P-18**
Sheet 6 of 7

AKRF
440 Park Avenue South, New York, NY
Phone (212) 696-0670 Fax (212) 726-0942

Drilling Method:	Hollow-Stem Auger	**Drilling**	
Sampling Method:	Split-Spoon	**Start Time:**	10/06/09 09:05
Driller :	Aquifer Drilling & Testing, Inc.	**Finish Time:**	10/09/09 10:09
		Date	October 6, 2009
Sampler:	Glen Stefaniak, AKRF	**Weather:**	Clear, ~ 70 deg, F

Depth (feet)	Recovery (Inches)	Blow Counts	Surface Conditions: Asphalt	Odor	PID (ppm)	NAPL	Samples Collected for Lab Analysis
101 103 103 104 105	N/A	N/A	Light brown fine SAND, trace Silt (wet).	None	N/A	None	None
106 107 108 109 110	N/A	N/A	Light brown fine SAND, trace Silt (wet).	None	N/A	None	None
111 112	18	43 50/4	Top 12": Dark grey fine SAND and SILT, trace fine Gravel (wet). Middle 3": Red/brown fine SAND and SILT (wet). Bottom 3": Light brown/orange fine SAND, some Silt (wet).	None	ND ND ND ND	None	None
113 114	12	11 14 17 21	Light brown fine SAND, trace Silt (wet).	None	ND ND	None	None
115 116	15	8 22 36 50	Light brown fine SAND, trace Silt (wet).	None	ND ND	None	None
117 118	9	42 50/3	Light brown fine SAND, little Silt (wet).	None	ND ND	None	None
119 120	24	15 22 33 50	Light brown fine SAND, little Silt, trace fine Gravel (wet).	None	ND ND ND ND	None	None

Notes:

Soil samples collected from auger flights until 110 feet below grade.
N/A=not applicable.
ND=not detected.
ppm=parts per million.

SOIL BORING LOG

Home Depot - Rego Park, NY
AKRF Project Number: 03399-0029

Boring No. **P-18**
Sheet 7 of 7

AKRF
440 Park Avenue South, New York, NY
Phone (212) 696-0670 Fax (212) 726-0942

Drilling Method:	Hollow-Stem Auger
Sampling Method:	Split-Spoon
Driller :	Aquifer Drilling & Testing, Inc.
Sampler:	Glen Stefaniak, AKRF

Drilling			
Start	10/06/09	**Finish**	10/09/09
Time:	09:05	**Time:**	10:09
Date	October 6, 2009		
Weather:	Clear, ~ 70 deg, F		

Depth (feet)	Recovery (Inches)	Blow Counts	Surface Conditions: Asphalt	Odor	PID (ppm)	NAPL	Samples Collected for Lab Analysis
121–122	18	5, 18, 23, 27	Light brown/orange fine SAND, little Silt (wet).	None	ND / ND / ND	None	None
123–124	24	15, 52, 46, 60	Light brown fine SAND, little Silt, trace fine Gravel (wet).	None	ND / ND / ND / ND	None	None
125–126	18	1, 4, 13, 23	Light brown fine SAND, some fine Gravel, little Silt (wet).	None	ND / ND / ND	None	None
127–128	20	7, 11, 5, 4	Light brown fine SAND, some fine Gravel, trace Silt (wet).	None	ND / ND / ND	None	None
129–130	12	23, 33, 32, 35	Light brown fine SAND, some fine Gravel, trace Silt (wet).	None	ND / ND	None	None
131–132	9	24, 50/3	Light brown fine SAND, some fine Gravel, little Silt (wet).	None	ND / ND	None	None
133–134	24	21, 23, 33, 53	Top 6": Dark grey fine SAND, some Silt, trace fine Gravel (wet). Bottom 18": Light brown/orange fine SAND, some fine Gravel, little Silt (wet).	None	ND / ND / ND / ND	None	None
135–136	22	17, 18, 32, 33	Top 18": Orange/brown fine SAND, some fine Gravel, little Silt (wet). Bottom 4": Light grey fine SAND and SILT (wet).	None	ND / ND / ND / ND	None	None
137–138	8	41, 50/2	Top 6": Light grey fine SAND and SILT (wet). Bottom 2": Dark grey fine SAND and SILT (wet).	None	ND / ND	None	None
139–140	18	14, 15, 14, 17	Top 2": Dark grey SILT and fine SAND, some Clay (damp.) Bottom 16": Dark grey CLAY and SILT (damp).	None	ND / ND / ND	None	None

Notes:

End of boring at 140 feet below grade.
Monitoring well set at 137 feet below grade.
ND=not detected.
ppm=parts per million.

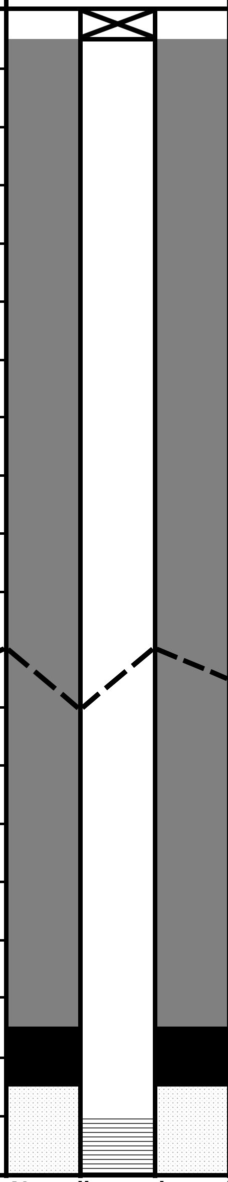
AKRF, Inc.	AKRF Project Number : 03399	Well No. PT-AS Sheet 1 of 1

Environmental Consultants

440 Park Avenue South, 7th Fl. New York, NY 10016

Drilling Method:	Hollow stem auger
Sampling Method:	NA
Driller :	Aquifer Drilling and Testing, Inc.
Weather:	Clear, 30˚F
Logged by:	Eric Park/AKRF

Drilling	
Start	Finish
Time: 09:00	Time: 13:30
Date: 12/22/2009	Date: 12/22/2009

Depth (feet)	Well Construction	Construction Description
2		Flush-mounted steel roadbox set within concrete pad. 2" diameter Sch. 40 PVC riser (0-59.5 feet below grade)
4		
6		
8		
10		
12		Portland cement/Bentonite grout (0-57 feet below grade)
14		
16		
18		
20		
22		
48		
50		
52		
54		
56		
58		Bentonite (57-59 feet below grade)
60		No.1 sand filter pack (59-61.5 feet below grade) 2" x 2' Sch. 40 PVC 0.020-inch slotted screen (59.5-61.5 feet below grade)
62		

Notes: No soil samples collected during well installation

AKRF, Inc.

AKRF Project Number : 03399

Well No. **PT-SVE**

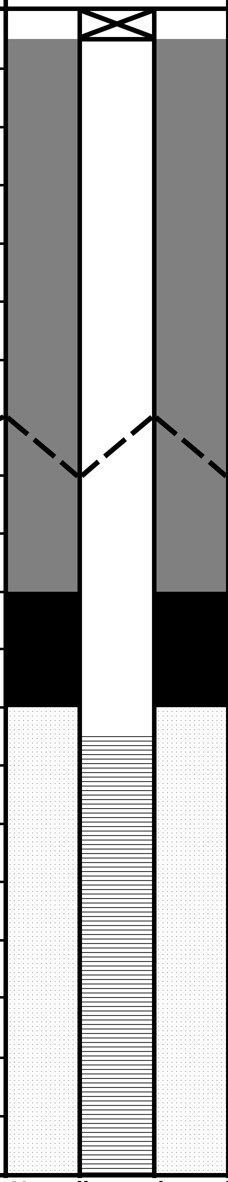
Sheet 1 of 1

Environmental Consultants

440 Park Avenue South, 7th Fl. New York, NY 10016

Drilling Method:	Hollow stem auger
Sampling Method:	NA
Driller :	Aquifer Drilling and Testing, Inc.
Weather:	Clear, 30˚F
Logged by:	Eric Park/AKRF

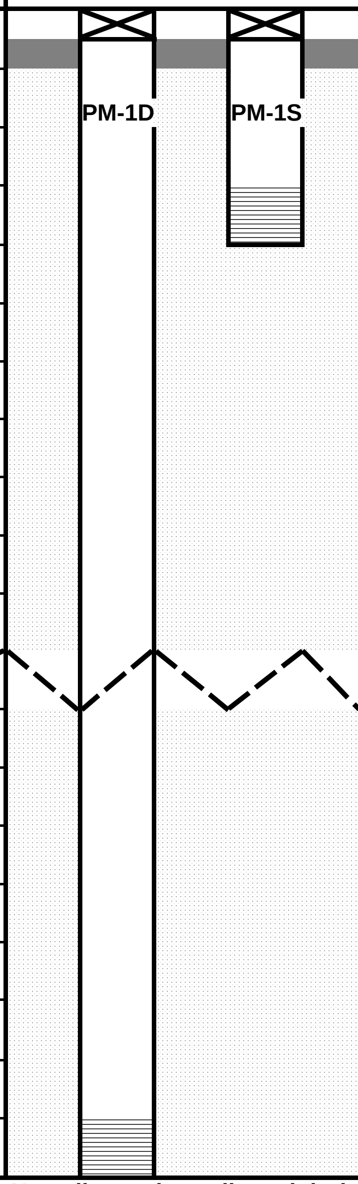
Drilling	
Start	Finish
Time: 08:30	Time: 13:30
Date: 12/23/2009	Date: 12/23/2009

Depth (feet)	Well Construction	Construction Description
2		Flush-mounted steel roadbox set within concrete pad. 4" diameter Sch. 40 PVC riser (0-35 feet below grade)
4		
6		
8		
10		
12		Portland cement/Bentonite grout (0-30.5 feet below grade)
14		
28		
30		
32		
34		
36		
38		
40		
42		
44		
46		Bentonite (57-59 feet below grade)
48		No.1 sand filter pack (34.5-50.2 feet below grade)
50		4" diameter Sch. 40 PVC 0.020-inch slotted screen (35-50.2 feet below grade)

Notes: No soil samples collected during well installation

AKRF, Inc.	AKRF Project Number : 03399	Well No. PM-1D and PM-1S Sheet 1 of 1

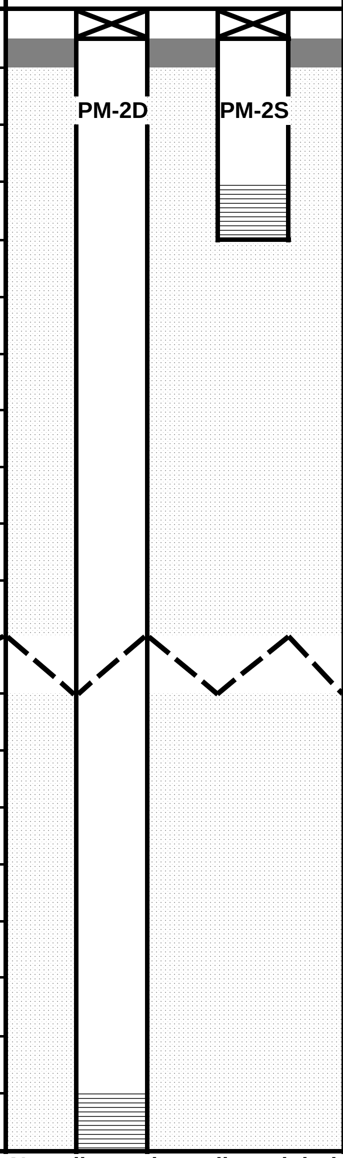
Environmental Consultants 440 Park Avenue South, 7th Fl. New York, NY 10016	Drilling Method:	Direct push probe	Drilling	
	Sampling Method:	NA	Start	Finish
	Driller :	Zebra	Time: 08:00	Time: 19:30
	Weather:	Clear, 30˚F	Date: 12/14/2009	Date: 12/14/2009
	Logged by:	Eric Park/AKRF		

Depth (feet)	Well Construction	Construction Description
		Flush-mounted steel roadbox set within concrete pad.
		Hydrated bentonite seal (0. to 0.5 feet below grade).
1		¼-inch outside diameter polyethylene tubing extending to grade (with plug)
2		6" disposable stainless steel sampling port (1.5 to 2 feet below grade)
3		No. 1 sand filter pack (0.5-45 feet below grade)
4		
5		
42		
43		
44		
45		6" disposable stainless steel sampling port (44.5 to 45 feet below grade)

Notes: No soil samples collected during well installation

AKRF, Inc.	AKRF Project Number : 03399	Well No. PM-2D and PM-2S Sheet 1 of 1

Environmental Consultants 440 Park Avenue South, 7th Fl. New York, NY 10016	Drilling Method:	Direct push probe	Drilling	
	Sampling Method:	NA	Start	Finish
	Driller :	Zebra	Time: 10:30	Time: 12:00
	Weather:	Clear, 30˚F	Date: 12/14/2009	Date: 12/14/2009
	Logged by:	Eric Park/AKRF		



Depth (feet)	Construction Description
	Flush-mounted steel roadbox set within concrete pad.
	Hydrated bentonite seal (0. to 0.5 feet below grade).
1	¼-inch outside diameter polyethylene tubing extending to grade (with plug)
2	6" disposable stainless steel sampling port (1.5 to 2 feet below grade)
3	No. 1 sand filter pack (0.5-45 feet below grade)
4	
5	
42	
43	
44	
45	6" disposable stainless steel sampling port (44.5 to 45 feet below grade)

Notes: No soil samples collected during well installation

AKRF, Inc.

Environmental Consultants

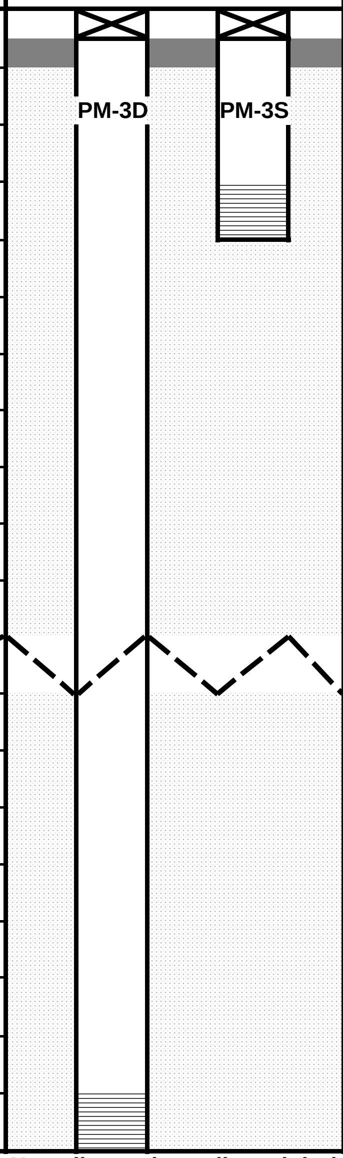
440 Park Avenue South, 7th Fl. New York, NY 10016

AKRF Project Number : 03399

Well No. **PM-3D and PM-3S**

Sheet 1 of 1

Drilling Method:	Direct push probe	**Drilling**	
Sampling Method:	NA	**Start**	**Finish**
Driller :	Zebra	**Time: 12:00**	**Time: 13:30**
Weather:	Clear, 30˚F	**Date: 12/14/2009**	**Date: 12/14/2009**
Logged by:	Eric Park/AKRF		

Depth (feet)	Well Construction	Construction Description
		**Flush-mounted steel roadbox set within concrete pad.**
		Hydrated bentonite seal (0. to 0.5 feet below grade).
1		**¼-inch outside diameter polyethylene tubing extending to grade (with plug)**
2		**6" disposable stainless steel sampling port (1.5 to 2 feet below grade)**
3		**No. 1 sand filter pack (0.5-45 feet below grade)**
4		
5		
42		
43		
44		
45		**6" disposable stainless steel sampling port (44.5 to 45 feet below grade)**

Notes: **No soil samples collected during well installation**

AKRF, Inc.

Environmental Consultants

440 Park Avenue South, 7th Fl. New York, NY 10016

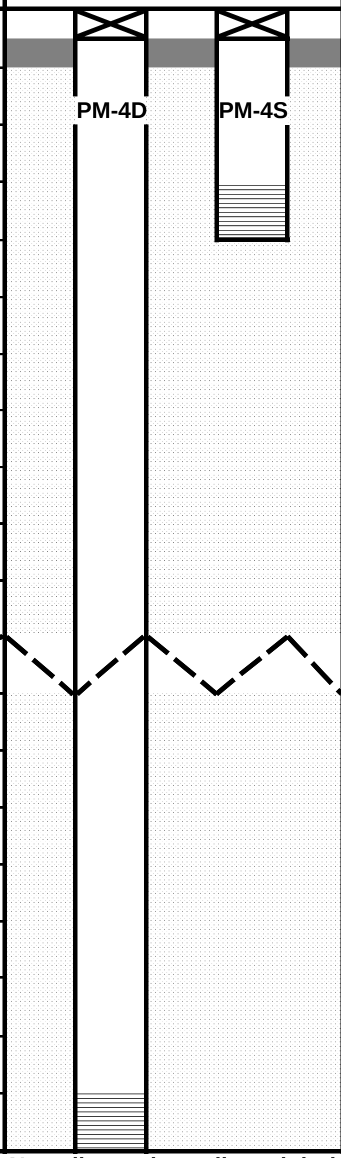
AKRF Project Number : 03399

Well No. **PM-4D and PM-4S**

Sheet 1 of 1

Drilling Method:	Direct push probe
Sampling Method:	NA
Driller :	Zebra
Weather:	Clear, 30˚F
Logged by:	Eric Park/AKRF

Drilling	
Start	Finish
Time: 13:30	Time: 15:00
Date: 12/14/2009	Date: 12/14/2009



Depth (feet)	Construction Description
	Flush-mounted steel roadbox set within concrete pad.
	Hydrated bentonite seal (0. to 0.5 feet below grade).
1	¼-inch outside diameter polyethylene tubing extending to grade (with plug)
2	6" disposable stainless steel sampling port (1.5 to 2 feet below grade)
3	No. 1 sand filter pack (0.5-45 feet below grade)
4	
5	
42	
43	
44	
45	6" disposable stainless steel sampling port (44.5 to 45 feet below grade)

Notes: No soil samples collected during well installation

APPENDIX B
BASELINE MONITORING RESULTS

Appendix B
Home Depot - Rego Park
Rego Park -Glendale, NY
Baseline Monitoring Results

Pre-Test Measurements

Site: Home Depot - Rego Park
Location: Rego Park - Glendale, NY
Personnel: AKRF(EP), Aztech (Garth, Jason)
Date: 1/12/2010

Weather: Clear, cold
Temperature: 30˚F
Barometric Pressure: ~30inHg
Humidity: ~30%
Wind Speed/Direction: 0-5 mph, towards south

Well ID	Distance from SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)	DTW (ft)
PT-SVE	NA	35-50	NA	0.00	0	21.3	NA	NA
PM-3 Shallow	10	1.5-2	West	0.00	0	21.5	NA	NA
PM-3 Deep	10	44.5-45	West	0.09	0	21.4	NA	NA
PT-AS	15	60-62	East	0.00	0	21.2	4.01	55.61
P-13	20	75-85	East	0.00	0	21.2	0.47	55.42
P-14	20	50-60	East	0.00	0	21.2	7.30	50.17
PM-4 Shallow	20	1.5-2	West	0.01	0	21.1	NA	NA
PM-4 Deep	20	44.5-45	West	0.10	0	21.3	NA	NA
P-18	22	127-137	Northeast	0.00	0	21.2	1.08	50.50
P-17	25	100-110	Northeast	0.00	0	21.2	1.44	50.24
PM-2 Shallow	25	1.5-2	Northeast	0.03	0	21.0	NA	NA
PM-2 Deep	25	44.5-45	Northeast	0.00	0	17.5	NA	NA
PM-1 Shallow	30	1.5-2	West	0.03	0	21.1	NA	NA
PM-1 Deep	30	44.5-45	West	0.11	0	21.2	NA	NA
P-15	60	75-85	North-northeast	0.00	0	21.2	1.45	50.66
P-16	65	50-60	North-northeast	0.08	0	21.2	6.06	50.18
P-5	123	57-62	North-northeast	0.00	0	21.2	6.97	50.38

APPENDIX C
PILOT TEST DATA TABLES

Table 1
Home Depot - Rego Park
Rego Park - Glendale, NY
PT-SVE
25% STEP TEST

SVE Test Measurements

Site: Home Depot - Rego Park
Location: Rego Park - Glendale, New York
Personnel: AKRF(EP), Aztech (Garth, Jason)
Date: 1/12/2010

Monitoring Round #: 1
Test No.: 1

Weather: Clear, cold
Temperature: 30˚F
Barometric Pressure: ~30inHg
Humidity: ~30%
Wind Speed/Direction: 0-5 mph, towards south
Start Time.: 10:00
% of Maximum Capacity.: 25%

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	13	55	0.0	20.4	0.0	0.0

Well ID	Distance from PT-SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)
PM-3 Shallow	10	1.5-2	West	0.020	0.0	20.3	NA
PM-3 Deep	10	44.5-45	West	0.900	0.0	20.3	NA
PT-AS	15	60-62	East	NA	0.0	20.4	NA
P-13	20	75-85	East	NA	0.0	20.3	NA
P-14	20	50-60	East	0.040	0.0	20.1	NA
PM-4 Shallow	20	1.5-2	West	0.060	0.0	20.3	NA
PM-4 Deep	20	44.5-45	West	0.600	0.0	20.3	NA
P-18	22	127-137	North-northeast	NA	0.0	20.1	NA
P-17	25	100-110	Northeast	NA	0.0	20.3	NA
PM-2 Shallow	25	1.5-2	Northeast	0.180	0.0	19.9	NA
PM-2 Deep	25	44.5-45	Northeast	0.550	0.0	20.1	NA
PM-1 Shallow	30	1.5-2	West	0.125	0.0	20.4	NA
PM-1 Deep	30	44.5-45	West	0.500	0.0	20.4	NA
P-15	60	75-85	North-northeast	NA	0.0	20.3	NA
P-16	65	50-60	North-northeast	0.300	0.0	20.3	NA
P-5	123	57-62	North-northeast	NA	0.0	20.3	NA

NOTES:

Table 2
Home Depot - Rego Park
Rego Park - Glendale, NY
PT-SVE
25% STEP TEST

SVE Test Measurements

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/12/2010	Humidity:	~30%
		Wind Speed/Direction:	0-5 mph, towards south
Monitoring Round #:	2	Start Time.:	10:50
Test No.:	1	% of Maximum Capacity.:	25%

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	13	54	0.0	18.4	0.0	0.0

Well ID	Distance from PT-SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)
PM-3 Shallow	10	1.5-2	West	0.020	0.0	20.3	NA
PM-3 Deep	10	44.5-45	West	0.800	0.0	20.3	NA
PT-AS	15	60-62	East	NA	0.0	20.3	NA
P-13	20	75-85	East	NA	0.0	20.2	NA
P-14	20	50-60	East	0.020	0.0	20.3	NA
PM-4 Shallow	20	1.5-2	West	0.060	0.0	20.3	NA
PM-4 Deep	20	44.5-45	West	0.650	0.0	20.3	NA
P-18	22	127-137	North-northeast	NA	0.0	20.3	NA
P-17	25	100-110	Northeast	NA	0.0	20.1	NA
PM-2 Shallow	25	1.5-2	Northeast	0.130	0.0	20.3	NA
PM-2 Deep	25	44.5-45	Northeast	0.470	0.0	20.3	NA
PM-1 Shallow	30	1.5-2	West	0.120	0.0	20.1	NA
PM-1 Deep	30	44.5-45	West	0.540	0.0	20.2	NA
P-15	60	75-85	North-northeast	NA	0.0	20.3	NA
P-16	65	50-60	North-northeast	0.250	0.0	20.3	NA
P-5	123	57-62	North-northeast	NA	0.0	20.4	NA

NOTES:

Table 3
Home Depot - Rego Park
Rego Park - Glendale, NY
PT-SVE
25% STEP TEST

SVE Test Measurements

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/12/2010	Humidity:	~30%
		Wind Speed/Direction:	0-5 mph, towards south
Monitoring Round #:	3	Start Time.:	11:10
Test No.:	1	% of Maximum Capacity.:	25%

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	13	66	0.0	19.0	0.0	0.0

Well ID	Distance from PT-SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)
PM-3 Shallow	10	1.5-2	West	0.015	0.0	20.4	NA
PM-3 Deep	10	44.5-45	West	0.800	0.0	20.4	NA
PT-AS	15	60-62	East	NA	0.0	20.3	NA
P-14	20	75-85	East	NA	0.0	20.0	NA
P-13	20	50-60	East	0.000	0.0	20.3	NA
PM-4 Shallow	20	1.5-2	West	0.040	0.0	20.3	NA
PM-4 Deep	20	44.5-45	West	0.550	0.0	20.3	NA
P-18	22	127-137	North-northeast	NA	0.0	19.9	NA
P-17	25	100-110	Northeast	NA	0.0	20.0	NA
PM-2 Shallow	25	1.5-2	Northeast	0.125	0.0	19.7	NA
PM-2 Deep	25	44.5-45	Northeast	0.400	0.0	19.8	NA
PM-1 Shallow	30	1.5-2	West	0.090	0.0	20.3	NA
PM-1 Deep	30	44.5-45	West	0.500	0.0	20.3	NA
P-15	60	75-85	North-northeast	NA	0.0	19.9	NA
P-16	65	50-60	North-northeast	0.180	0.0	19.9	NA
P-5	123	57-62	North-northeast	NA	0.0	20.0	NA

NOTES:

Table 4
Home Depot - Rego Park
Rego Park - Glendale, NY

PT-SVE

25% STEP TEST

SVE Test Measurements

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/12/2010	Humidity:	~30%
		Wind Speed/Direction:	0-5 mph, towards south
Monitoring Round #:	4	Start Time.:	11:40
Test No.:	1	% of Maximum Capacity.:	25%

			Influent		Int.	Eff.
SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	13	69	0.0	16.9	0.0	0.0

Well ID	Distance from PT-SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)
PM-3 Shallow	10	1.5-2	West	0.015	0.0	20.3	NA
PM-3 Deep	10	44.5-45	West	0.800	0.0	20.3	NA
PT-AS	15	60-62	East	NA	0.0	20.3	3.43
P-13	20	75-85	East	NA	0.0	20.3	1.02
P-14	20	50-60	East	0.030	0.0	20.3	7.95
PM-4 Shallow	20	1.5-2	West	0.040	0.0	20.2	NA
PM-4 Deep	20	44.5-45	West	0.550	0.0	20.1	NA
P-18	22	127-137	North-northeast	NA	0.0	20.2	1.08
P-17	25	100-110	Northeast	NA	0.0	20.2	0.70
PM-2 Shallow	25	1.5-2	Northeast	0.115	0.0	20.3	NA
PM-2 Deep	25	44.5-45	Northeast	0.450	0.0	20.3	4.74
PM-1 Shallow	30	1.5-2	West	0.090	0.0	20.0	NA
PM-1 Deep	30	44.5-45	West	0.500	0.0	20.0	NA
P-15	60	75-85	North-northeast	NA	0.0	20.5	1.39
P-16	65	50-60	North-northeast	0.190	0.0	20.5	1.39
P-5	123	57-62	North-northeast	NA	0.0	20.5	6.71

NOTES:

Table 5
Home Depot - Rego Park
Rego Park - Glendale, New York
PT-SVE
50% Step Test

SVE Test Measurements

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/12/2010	Humidity:	~30%
		Wind Speed/Direction:	5-15 mph, towards south
g Round #:	1	Start Time.:	13:00
Test No.:	2	% of Maximum Capacity.:	50%

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	28	105	0.0	19.0	0.0	0.0

Well ID	Distance from PT-SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)
PM-3 Shallow	10	1.5-2	West	0.030	0.0	20.6	NA
PM-3 Deep	10	44.5-45	West	1.300	0.0	20.6	NA
PT-AS	15	60-62	East	NA	0.0	20.6	NA
P-13	20	75-85	East	NA	0.0	20.4	NA
P-14	20	50-60	East	0.035	0.0	20.7	NA
PM-4 Shallow	20	1.5-2	West	0.075	0.0	20.6	NA
PM-4 Deep	20	44.5-45	West	0.850	0.0	20.6	NA
P-18	22	127-137	North-northeast	NA	0.0	20.8	NA
P-17	25	100-110	Northeast	NA	0.0	20.7	NA
PM-2 Shallow	25	1.5-2	Northeast	0.180	0.0	20.8	NA
PM-2 Deep	25	44.5-45	Northeast	0.700	0.0	20.8	NA
PM-1 Shallow	30	1.5-2	West	0.135	0.0	20.5	NA
PM-1 Deep	30	44.5-45	West	0.780	0.0	20.5	NA
P-15	60	75-85	North-northeast	NA	0.0	20.8	NA
P-16	65	50-60	North-northeast	0.350	0.0	20.9	NA
P-5	123	57-62	North-northeast	NA	0.0	20.9	NA

NOTES:

Table 6
Home Depot - Rego Park
Rego Park - Glendale, New York
PT-SVE
50% Step Test

SVE Test Measurements

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/12/2010	Humidity:	~30%
		Wind Speed/Direction:	5-15 mph, towards south
g Round #:	2	Start Time.:	13:40
Test No.:	2	% of Maximum Capacity.:	50%

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	28	105	0.0	18.7	0.0	0.0

Well ID	Distance from PT-SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)
PM-3 Shallow	10	1.5-2	West	0.025	0.0	20.5	NA
PM-3 Deep	10	44.5-45	West	1.350	0.0	20.5	NA
PT-AS	15	60-62	East	NA	0.0	20.5	NA
P-13	20	75-85	East	NA	0.0	20.4	NA
P-14	20	50-60	East	0.040	0.0	20.6	NA
PM-4 Shallow	20	1.5-2	West	0.075	0.0	20.5	NA
PM-4 Deep	20	44.5-45	West	0.850	0.0	20.5	NA
P-18	22	127-137	North-northeast	NA	0.0	20.6	NA
P-17	25	100-110	Northeast	NA	0.0	20.6	NA
PM-2 Shallow	25	1.5-2	Northeast	0.170	0.0	20.6	NA
PM-2 Deep	25	44.5-45	Northeast	0.750	0.0	20.6	NA
PM-1 Shallow	30	1.5-2	West	0.140	0.0	20.4	NA
PM-1 Deep	30	44.5-45	West	0.800	0.0	20.4	NA
P-15	60	75-85	North-northeast	NA	0.0	20.6	NA
P-16	65	50-60	North-northeast	0.300	0.0	20.6	NA
P-5	123	57-62	North-northeast	NA	0.0	20.7	NA

NOTES:

Table 7

Home Depot - Rego Park

Rego Park - Glendale, New York

PT-SVE

50% Step Test

SVE Test Measurements

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/12/2010	Humidity:	~30%
		Wind Speed/Direction:	5-15 mph, towards south
g Round #:	3	Start Time.:	14:15
Test No.:	2	% of Maximum Capacity.:	50%

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	26	107	0.0	18.3	0.0	0.0

Well ID	**Distance from PT-SVE (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Vacuum (in H2O)**	**PID (ppm)**	**O2 (%)**	**DO (mg/l)**
PM-3 Shallow	10	1.5-2	West	0.030	0.0	20.6	NA
PM-3 Deep	10	44.5-45	West	1.400	0.0	20.6	NA
PT-AS	15	60-62	East	NA	0.0	20.5	2.80
P-13	20	75-85	East	NA	0.0	20.4	1.16
P-14	20	50-60	East	0.050	0.0	20.5	8.11
PM-4 Shallow	20	1.5-2	West	0.080	0.0	20.6	NA
PM-4 Deep	20	44.5-45	West	0.900	0.0	20.6	NA
P-18	22	127-137	North-northeast	NA	0.0	20.2	1.12
P-17	25	100-110	Northeast	NA	0.0	20.6	0.96
PM-2 Shallow	25	1.5-2	Northeast	0.220	0.0	20.5	NA
PM-2 Deep	25	44.5-45	Northeast	0.800	0.0	20.5	NA
PM-1 Shallow	30	1.5-2	West	0.140	0.0	20.5	NA
PM-1 Deep	30	44.5-45	West	0.800	0.0	20.5	NA
P-15	60	75-85	North-northeast	NA	0.0	20.6	1.30
P-16	65	50-60	North-northeast	0.400	0.0	20.7	7.60
P-5	123	57-62	North-northeast	NA	0.0	20.7	6.78

NOTES:

Table 8

Home Depot - Rego Park

Rego Park - Glendale, New York

PT-SVE

100% Step Test

SVE Test Measurements

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/12/2010	Humidity:	~30%
		Wind Speed/Direction:	5-15 mph, towards south
g Round #:	1	Start Time.:	15:20
Test No.:	3	% of Maximum Capacity.:	100%

			Influent		Int.	Eff.
SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	50	117	0.0	19.0	0.0	0.0

Well ID	Distance from PT-SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)
PM-3 Shallow	10	1.5-2	West	0.050	0.0	20.5	NA
PM-3 Deep	10	44.5-45	West	1.700	0.0	20.5	NA
PT-AS	15	60-62	East	NA	0.0	20.3	NA
P-13	20	75-85	East	NA	0.0	20.4	NA
P-14	20	50-60	East	0.110	0.0	20.6	NA
PM-4 Shallow	20	1.5-2	West	0.125	0.0	20.5	NA
PM-4 Deep	20	44.5-45	West	1.150	0.0	20.5	NA
P-18	22	127-137	North-northeast	NA	0.0	20.6	NA
P-17	25	100-110	Northeast	NA	0.0	20.6	NA
PM-2 Shallow	25	1.5-2	Northeast	0.260	0.0	20.6	NA
PM-2 Deep	25	44.5-45	Northeast	1.000	0.0	20.6	NA
PM-1 Shallow	30	1.5-2	West	0.200	0.0	20.4	NA
PM-1 Deep	30	44.5-45	West	0.960	0.0	20.4	NA
P-15	60	75-85	North-northeast	NA	0.0	20.6	NA
P-16	65	50-60	North-northeast	0.550	0.0	20.7	NA
P-5	123	57-62	North-northeast	NA	0.0	20.7	NA

NOTES:

Table 9

Home Depot - Rego Park

Rego Park - Glendale, New York

PT-SVE

100% Step Test

SVE Test Measurements

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/12/2010	Humidity:	~30%
		Wind Speed/Direction:	5-15 mph, towards south
g Round #:	2	Start Time.:	15:50
Test No.:	3	% of Maximum Capacity.:	100%

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	50	118	0.0	18.7	0.0	0.0

Well ID	Distance from PT-SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)
PM-3 Shallow	10	1.5-2	West	0.050	0.0	20.5	NA
PM-3 Deep	10	44.5-45	West	1.750	0.0	20.5	NA
PT-AS	15	60-62	East	NA	0.0	20.4	NA
P-13	20	75-85	East	NA	0.0	20.4	NA
P-14	20	50-60	East	0.080	0.0	20.4	NA
PM-4 Shallow	20	1.5-2	West	0.125	0.0	20.4	NA
PM-4 Deep	20	44.5-45	West	1.150	0.0	20.4	NA
P-18	22	127-137	North-northeast	NA	0.0	20.4	NA
P-17	25	100-110	Northeast	NA	0.0	20.4	NA
PM-2 Shallow	25	1.5-2	Northeast	0.260	0.0	20.5	NA
PM-2 Deep	25	44.5-45	Northeast	1.000	0.0	20.5	NA
PM-1 Shallow	30	1.5-2	West	0.200	0.0	20.4	NA
PM-1 Deep	30	44.5-45	West	0.960	0.0	20.4	NA
P-15	60	75-85	North-northeast	NA	0.0	20.4	NA
P-16	65	50-60	North-northeast	0.500	0.0	20.4	NA
P-5	123	57-62	North-northeast	NA	0.0	20.6	NA

NOTES:

Table 10

Home Depot - Rego Park

Rego Park - Glendale, New York

PT-SVE

100% Step Test

SVE Test Measurements

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/12/2010	Humidity:	~30%
		Wind Speed/Direction:	5-15 mph, towards south
g Round #:	3	Start Time.:	16:30
Test No.:	3	% of Maximum Capacity.:	100%

			Influent		Int.	Eff.
SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	47	118	0.0	18.5	0.0	0.0

Well ID	Distance from PT-SVE (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DO (mg/l)
PM-3 Shallow	10	1.5-2	West	0.050	0.0	20.4	NA
PM-3 Deep	10	44.5-45	West	1.750	0.0	20.4	NA
PT-AS	15	60-62	East	NA	0.0	20.3	2.88
P-13	20	75-85	East	NA	0.0	20.4	1.24
P-14	20	50-60	East	0.080	0.0	20.4	8.23
PM-4 Shallow	20	1.5-2	West	0.120	0.0	20.4	NA
PM-4 Deep	20	44.5-45	West	1.200	0.0	20.4	NA
P-18	22	127-137	North-northeast	NA	0.0	20.4	1.12
P-17	25	100-110	Northeast	NA	0.0	20.4	0.63
PM-2 Shallow	25	1.5-2	Northeast	0.260	0.0	20.4	NA
PM-2 Deep	25	44.5-45	Northeast	1.000	0.0	20.4	NA
PM-1 Shallow	30	1.5-2	West	0.220	0.0	20.4	NA
PM-1 Deep	30	44.5-45	West	0.960	0.0	20.4	NA
P-15	60	75-85	North-northeast	NA	0.0	20.4	1.72
P-16	65	50-60	North-northeast	0.550	0.0	20.4	7.53
P-5	123	57-62	North-northeast	NA	0.0	20.5	6.72

NOTES:

Table 11

Home Depot - Rego Park

Rego Park - Glendale, New York

PT-SVE

Observed Net Induced Vacuum Trends

					25% Step Test							
					Round 1		Round 2		Round 3		Round4	
Well ID	**Distance from PT-SVE (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background (in H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum ("H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum ("H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum ("H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum (in H2O)**
PM-3 Shallow	10	1.5-2	West	0.000	0.020	0.020	0.020	0.020	0.015	0.015	0.015	0.015
PM-3 Deep	10	44.5-45	West	0.085	0.900	0.815	0.800	0.715	0.800	0.715	0.800	0.715
PT-AS	15	60-62	East	0.000	NA	NA	NA	NA	NA	NA	NA	NA
P-13	20	75-85	East	0.000	NA	NA	NA	NA	NA	NA	NA	NA
P-14	20	50-60	East	0.000	0.040	0.040	0.020	0.020	0.000	0.000	0.030	0.030
PM-4 Shallow	20	1.5-2	West	0.010	0.060	0.050	0.060	0.050	0.040	0.030	0.040	0.030
PM-4 Deep	20	44.5-45	West	0.100	0.600	0.500	0.650	0.550	0.550	0.450	0.550	0.450
P-18	22	127-137	North-northeast	0.000	NA	NA	NA	NA	NA	NA	NA	NA
P-17	25	100-110	Northeast	0.000	NA	NA	NA	NA	NA	NA	NA	NA
PM-2 Shallow	25	1.5-2	Northeast	0.030	0.180	0.150	0.130	0.100	0.125	0.095	0.115	0.085
PM-2 Deep	25	44.5-45	Northeast	0.000	0.550	0.550	0.470	0.470	0.400	0.400	0.450	0.450
PM-1 Shallow	30	1.5-2	West	0.030	0.125	0.095	0.120	0.090	0.090	0.060	0.090	0.060
PM-1 Deep	30	44.5-45	West	0.110	0.500	0.390	0.540	0.430	0.500	0.390	0.500	0.390
P-15	60	75-85	North-northeast	0.000	NA	NA	NA	NA	NA	NA	NA	NA
P-16	65	50-60	North-northeast	0.080	0.300	0.220	0.250	0.170	0.180	0.100	0.190	0.110
P-5	123	57-62	North-northeast	0.000	NA	NA	NA	NA	NA	NA	NA	NA

					50% Step Test					
					Round 1		Round 2		Round 3	
Well ID	**Distance from PT-SVE (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background (in H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum (in H2O)**
PM-3 Shallow	10	1.5-2	West	0.000	0.030	0.030	0.025	0.025	0.030	0.030
PM-3 Deep	10	44.5-45	West	0.085	1.300	1.215	1.350	1.265	1.400	1.315
PT-AS	15	60-62	East	0.000	NA	NA	NA	NA	NA	NA
P-13	20	75-85	East	0.000	NA	NA	NA	NA	NA	NA
P-14	20	50-60	East	0.000	0.035	0.035	0.040	0.040	0.050	0.050
PM-4 Shallow	20	1.5-2	West	0.010	0.075	0.065	0.075	0.065	0.000	-0.010
PM-4 Deep	20	44.5-45	West	0.100	0.850	0.750	0.850	0.750	0.080	-0.020
P-18	22	127-137	North-northeast	0.000	NA	NA	NA	NA	NA	NA
P-17	25	100-110	Northeast	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	25	1.5-2	Northeast	0.030	0.180	0.150	0.170	0.140	0.220	0.190
PM-2 Deep	25	44.5-45	Northeast	0.000	0.700	0.700	0.750	0.750	0.800	0.800
PM-1 Shallow	30	1.5-2	West	0.030	0.135	0.105	0.140	0.110	0.140	0.110
PM-1 Deep	30	44.5-45	West	0.110	0.780	0.670	0.800	0.690	0.800	0.690
P-15	60	75-85	North-northeast	0.000	NA	NA	NA	NA	NA	NA
P-16	65	50-60	North-northeast	0.080	0.350	0.270	0.300	0.220	0.400	0.320
P-5	123	57-62	North-northeast	0.000	NA	NA	NA	NA	NA	NA

					100% Step Test					
					Round 1		Round 2		Round 3	
Well ID	**Distance from PT-SVE (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background (in H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Observed Induced Vacuum (in H2O)**
PM-3 Shallow	10	1.5-2	West	0.000	0.050	0.050	0.050	0.050	0.050	0.050
PM-3 Deep	10	44.5-45	West	0.085	1.700	1.615	1.750	1.665	1.750	1.665
PT-AS	15	60-62	East	0.000	NA	NA	NA	NA	NA	NA
P-13	20	75-85	East	0.000	NA	NA	NA	NA	NA	NA
P-14	20	50-60	East	0.000	0.110	0.110	0.080	0.080	0.080	0.080
PM-4 Shallow	20	1.5-2	West	0.010	0.125	0.115	0.125	0.115	0.120	0.110
PM-4 Deep	20	44.5-45	West	0.100	1.150	1.050	1.150	1.050	1.200	1.100
P-18	22	127-137	North-northeast	0.000	NA	NA	NA	NA	NA	NA
P-17	25	100-110	Northeast	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	25	1.5-2	Northeast	0.030	0.260	0.230	0.260	0.230	0.260	0.230
PM-2 Deep	25	44.5-45	Northeast	0.000	1.000	1.000	1.000	1.000	1.000	1.000
PM-1 Shallow	30	1.5-2	West	0.030	0.200	0.170	0.200	0.170	0.220	0.190
PM-1 Deep	30	44.5-45	West	0.110	0.960	0.850	0.960	0.850	0.960	0.850
P-15	60	75-85	North-northeast	0.000	NA	NA	NA	NA	NA	NA
P-16	65	50-60	North-northeast	0.080	0.550	0.470	0.500	0.420	0.550	0.470
P-5	123	57-62	North-northeast	0.000	NA	NA	NA	NA	NA	NA

Table 12
Home Depot - Rego Park
Rego Park - Glendale, New York
Shallow AS: PT-AS
25% Step Test

Test Measurements - PT-AS Test

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/13/2010	Humidity:	~30%
Well Screen:	60-62 feet bg	Wind Speed/Direction:	5-15 mph, towards south
Monitoring Round #:	1	Start Time.:	9:30
Test No.:	1	% of Maximum Capacity.:	25%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
PT-AS	4	2.5	90.6

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	~25	93	0	20.7	0	0

Observation Wells	Distance from PT-AS (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	Northeast	0.07	0	19.9	50.38	7.84
P-13	5	75-85	Southeast	NA	0	19.9	50.25	0.93
P-17	17	100-110	North	NA	0	19.9	50.26	0.66
PM-2 Shallow	20	1.5-2	North	0.24	0	20	NA	NA
PM-2 Deep	20	44.5-45	North	0.7	0	9.9	NA	NA
PM-3 Shallow	25	1.5-2	West	0.03	0	19.8	NA	NA
PM-3 Deep	25	44.5-45	West	1.25	0	19.9	NA	NA
PM-4 Shallow	35	1.5-2	West	0.07	0	19.8	NA	NA
PM-4 Deep	35	44.5-45	West	0.85	0	19.8	NA	NA
PM-1 Shallow	45	1.5-2	West	0.12	0	19.9	NA	NA
PM-1 Deep	45	44.5-45	West	0.74	0	19.9	NA	NA

NOTES:

Table 13
Home Depot - Rego Park
Rego Park - Glendale, New York
Shallow AS: PT-AS
25% Step Test

Test Measurements - PT-AS Test

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/13/2010	Humidity:	~30%
Well Screen:	60-62 feet bg	Wind Speed/Direction:	5-15 mph, towards south
Monitoring Round #:	2	Start Time.:	10:15
Test No.:	1	% of Maximum Capacity.:	25%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
PT-AS	4	2.5	90.6

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	~25	93	0	20.7	0	0

Observation Wells	Distance from PT-AS (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	Northeast	0.04	0	20.7	50.25	8.53
P-13	5	75-85	Southeast	NA	0	20.5	50.21	0.67
P-17	17	100-110	North	NA	0	20.7	50.32	0.67
PM-2 Shallow	20	1.5-2	North	0.24	0	20.7	NA	NA
PM-2 Deep	20	44.5-45	North	0.75	0	20.7	NA	NA
PM-3 Shallow	25	1.5-2	West	0.04	0	20.7	NA	NA
PM-3 Deep	25	44.5-45	West	1.3	0	20.6	NA	NA
PM-4 Shallow	35	1.5-2	West	0.07	0	20.6	NA	NA
PM-4 Deep	35	44.5-45	West	0.85	0	20.6	NA	NA
PM-1 Shallow	45	1.5-2	West	0.13	0	20.4	NA	NA
PM-1 Deep	45	44.5-45	West	0.7	0	20.4	NA	NA

NOTES:

Table 14
Home Depot - Rego Park
Rego Park - Glendale, New York
Shallow AS: PT-AS
25% Step Test

Test Measurements - PT-AS Test

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/13/2010	Humidity:	~30%
Well Screen:	60-62 feet bg	Wind Speed/Direction:	5-15 mph, towards south
Monitoring Round #:	3	Start Time.:	11:00
Test No.:	1	% of Maximum Capacity.:	25%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
PT-AS	4	2.5	90.6

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	~25	93	0	20.4	0	0

Observation Wells	Distance from PT-AS (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	Northeast	0.04	0	20.7	50.25	8.61
P-13	5	75-85	Southeast	NA	0	20.2	50.22	0.47
P-17	17	100-110	North	NA	0	20.2	50.28	3.04
PM-2 Shallow	20	1.5-2	North	0.24	0	20.4	NA	NA
PM-2 Deep	20	44.5-45	North	0.75	0	20.4	NA	NA
PM-3 Shallow	25	1.5-2	West	0.03	0	20.4	NA	NA
PM-3 Deep	25	44.5-45	West	1.3	0	20.4	NA	NA
PM-4 Shallow	35	1.5-2	West	0.07	0	20.4	NA	NA
PM-4 Deep	35	44.5-45	West	0.85	0	20.4	NA	NA
PM-1 Shallow	45	1.5-2	West	0.13	0	20.4	NA	NA
PM-1 Deep	45	44.5-45	West	0.72	0	20.4	NA	NA

NOTES:

Table 15
Home Depot - Rego Park
Rego Park - Glendale, New York
Shallow AS: PT-AS
50% Step Test

Test Measurements - PT-AS Test

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/13/2010	Humidity:	~30%
ell Screen:	60-62 feet bg	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	1	Start Time.:	11:30
Test No.:	2	% of Maximum Capacity.:	50%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
PT-AS	7	5	~120

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	~25	94	0	20.4	0	0

Observation Wells	Distance from PT-AS (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	Northeast	0.08	0	20.3	50.21	8.59
P-13	5	75-85	Southeast	NA	0	20.3	50.19	0.74
P-17	17	100-110	North	NA	0	20.3	50.2	0.92
PM-2 Shallow	20	1.5-2	North	0.19	0	20.3	NA	NA
PM-2 Deep	20	44.5-45	North	0.605	0	20.3	NA	NA
PM-3 Shallow	25	1.5-2	West	0.02	0	20.4	NA	NA
PM-3 Deep	25	44.5-45	West	1.15	0	20.4	NA	NA
PM-4 Shallow	35	1.5-2	West	0.05	0	20.4	NA	NA
PM-4 Deep	35	44.5-45	West	0.75	0	20.4	NA	NA
PM-1 Shallow	45	1.5-2	West	0.09	0	20.5	NA	NA
PM-1 Deep	45	44.5-45	West	0.64	0	20.5	NA	NA

NOTES:

Table 16

Home Depot - Rego Park

Rego Park - Glendale, New York

Shallow AS: PT-AS

50% Step Test

Test Measurements - PT-AS Test

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/13/2010	Humidity:	~30%
ell Screen:	60-62 feet bg	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	2	Start Time.:	12:15
Test No.:	2	% of Maximum Capacity.:	50%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
PT-AS	7	5	~120

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	~25	94	0	20.3	0	0

Observation Wells	Distance from PT-AS (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	Northeast	-10.5	0	20.3	49.99	8.55
P-13	5	75-85	Southeast	NA	0	20.3	50.12	1.22
P-17	17	100-110	North	NA	0	20.3	50.18	0.79
PM-2 Shallow	20	1.5-2	North	0.25	0	20.4	NA	NA
PM-2 Deep	20	44.5-45	North	0.75	0	20.4	NA	NA
PM-3 Shallow	25	1.5-2	West	0.03	0	20.2	NA	NA
PM-3 Deep	25	44.5-45	West	1.35	0	20.3	NA	NA
PM-4 Shallow	35	1.5-2	West	0.07	0	20.4	NA	NA
PM-4 Deep	35	44.5-45	West	0.9	0	20.4	NA	NA
PM-1 Shallow	45	1.5-2	West	0.09	0	20.3	NA	NA
PM-1 Deep	45	44.5-45	West	0.85	0	20.3	NA	NA

NOTES:

Table 17
Home Depot - Rego Park
Rego Park - Glendale, New York
Shallow AS: PT-AS
50% Step Test

Test Measurements - PT-AS Test

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/13/2010	Humidity:	~30%
ell Screen:	60-62 feet bg	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	3	Start Time.:	13:00
Test No.:	2	% of Maximum Capacity.:	50%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
PT-AS	7	5	~120

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	~25	94	0	19	0	0

Observation Wells	Distance from PT-AS (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	Northeast	-11	0	20.5	49.89	8.41
P-13	5	75-85	Southeast	NA	0	20.4	50.11	1.23
P-17	17	100-110	North	NA	0	20.5	50.15	1.22
PM-2 Shallow	20	1.5-2	North	0.25	0	20.6	NA	NA
PM-2 Deep	20	44.5-45	North	0.8	0	20.6	NA	NA
PM-3 Shallow	25	1.5-2	West	0.03	0	20.2	NA	NA
PM-3 Deep	25	44.5-45	West	1.35	0	20.3	NA	NA
PM-4 Shallow	35	1.5-2	West	0.07	0	20.4	NA	NA
PM-4 Deep	35	44.5-45	West	0.9	0	20.4	NA	NA
PM-1 Shallow	45	1.5-2	West	0.09	0	20.5	NA	NA
PM-1 Deep	45	44.5-45	West	0.85	0	20.5	NA	NA

NOTES:

Table 18

Home Depot - Rego Park

Rego Park - Glendale, New York

Shallow AS: PT-AS

100% Step Test

Test Measurements - PT-AS Test

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/13/2010	Humidity:	~30%
ell Screen:	60-62 feet bg	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	1	Start Time.:	14:00
Test No.:	3	% of Maximum Capacity.:	100%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
PT-AS	~15	10	~145

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	~25	92	0	20.4	0	0

Observation Wells	Distance from PT-AS (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	Northeast	-14	0	20.3	48.32	8.46
P-13	5	75-85	Southeast	NA	0	20.3	49.89	0.82
P-17	17	100-110	North	NA	0	20.2	50.09	1.18
PM-2 Shallow	20	1.5-2	North	0.15	0	20.4	NA	NA
PM-2 Deep	20	44.5-45	North	0.65	0	20.4	NA	NA
PM-3 Shallow	25	1.5-2	West	0.02	0	20.3	NA	NA
PM-3 Deep	25	44.5-45	West	1.2	0	20.3	NA	NA
PM-4 Shallow	35	1.5-2	West	0.05	0	20.5	NA	NA
PM-4 Deep	35	44.5-45	West	0.8	0	20.5	NA	NA
PM-1 Shallow	45	1.5-2	West	0.07	0	20.5	NA	NA
PM-1 Deep	45	44.5-45	West	0.7	0	20.5	NA	NA

NOTES:

Table 19

Home Depot - Rego Park

Rego Park - Glendale, New York

Shallow AS: PT-AS

100% Step Test

Test Measurements - PT-AS Test

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30°F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/13/2010	Humidity:	~30%
ell Screen:	60-62 feet bg	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	2	Start Time.:	14:40
Test No.:	3	% of Maximum Capacity.:	100%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
PT-AS	~15	10	~145

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	~25	92	0	20.4	0	0

Observation Wells	Distance from PT-AS (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	Northeast	-15.5	0	20.3	48.49	9.82
P-13	5	75-85	Southeast	NA	0	20.3	49.92	0.83
P-17	17	100-110	North	NA	0	20.3	50.04	1.03
PM-2 Shallow	20	1.5-2	North	0.15	0	20.3	NA	NA
PM-2 Deep	20	44.5-45	North	0.6	0	20.3	NA	NA
PM-3 Shallow	25	1.5-2	West	0.02	0	20.3	NA	NA
PM-3 Deep	25	44.5-45	West	1.2	0	20.3	NA	NA
PM-4 Shallow	35	1.5-2	West	0.05	0	20.4	NA	NA
PM-4 Deep	35	44.5-45	West	0.8	0	20.4	NA	NA
PM-1 Shallow	45	1.5-2	West	0.07	0	20.4	NA	NA
PM-1 Deep	45	44.5-45	West	0.7	0	20.4	NA	NA

NOTES:

Table 20
Home Depot - Rego Park
Rego Park - Glendale, New York
Shallow AS: PT-AS
100% Step Test

Test Measurements - PT-AS Test

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/13/2010	Humidity:	~30%
ell Screen:	60-62 feet bg	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	3	Start Time.:	15:30
Test No.:	3	% of Maximum Capacity.:	100%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
PT-AS	~15	10	~145

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)	Helium (ppm)
PT-SVE	~25	92	0	20.3	0	0	0

Observation Wells	Distance from PT-AS (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)	Helium (ppm)
P-14	5	50-60	Northeast	-15	0	20.3	48.6	9.83	2710
P-13	5	75-85	Southeast	NA	0	20.3	49.96	0.62	0
P-17	17	100-110	North	NA	0	20.3	50.06	1.02	0
PM-2 Shallow	20	1.5-2	North	0.15	0	20.3	NA	NA	750
PM-2 Deep	20	44.5-45	North	0.65	0	20.3	NA	NA	0
PM-3 Shallow	25	1.5-2	West	0.02	0	20.3	NA	NA	25
PM-3 Deep	25	44.5-45	West	1.25	0	20.3	NA	NA	0
PM-4 Shallow	35	1.5-2	West	0.05	0	20.4	NA	NA	0
PM-4 Deep	35	44.5-45	West	0.8	0	20.4	NA	NA	0
PM-1 Shallow	45	1.5-2	West	0.075	0	20.4	NA	NA	0
PM-1 Deep	45	44.5-45	West	0.7	0	20.4	NA	NA	0

NOTES:

Table 21

Home Depot - Rego Park

Rego Park - Glendale, New York

Shallow AS: PT-AS

Trends in Depth to Water, Dissolved Oxygen and Change in Induced Vacuum

	Background	25%			50%			100%		
Well ID	**DTW (ft)**	1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round
P-14	50.24	50.38	50.25	50.25	50.21	49.99	49.89	48.32	48.49	48.6
P-13	50.28	50.25	50.21	50.22	50.19	50.12	50.11	49.89	49.92	49.96
P-17	50.27	50.26	50.32	50.28	50.2	50.18	50.15	50.09	50.04	50.06

	Background	25%			50%			100%		
Well ID	**DO (mg/l)**	1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round
P-14	5.24	7.84	8.53	8.61	8.59	8.55	8.41	8.46	9.82	9.83
P-13	1.24	0.93	0.67	0.47	0.74	1.22	1.23	0.82	0.83	0.62
P-17	2.41	0.66	0.67	3.04	0.92	0.79	1.22	1.18	1.03	1.02

					25% Step Test					
					Round 1		Round 2		Round 3	
Observation Wells	**Distance from PT-AS (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**
P-14	5	50-60	Northeast	0.050	0.07	-0.020	0.04	0.010	0.04	0.010
P-13	5	75-85	Southeast	0.000	NA	NA	NA	NA	NA	NA
P-17	17	100-110	North	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	20	1.5-2	North	0.220	0.24	-0.020	0.24	-0.020	0.24	-0.020
PM-2 Deep	20	44.5-45	North	0.800	0.7	0.100	0.75	0.050	0.75	0.050
PM-3 Shallow	25	1.5-2	West	0.030	0.03	0.000	0.04	-0.010	0.03	0.000
PM-3 Deep	25	44.5-45	West	1.400	1.25	0.150	1.3	0.100	1.3	0.100
PM-4 Shallow	35	1.5-2	West	0.080	0.07	0.010	0.07	0.010	0.07	0.010
PM-4 Deep	35	44.5-45	West	0.900	0.85	0.050	0.85	0.050	0.85	0.050
PM-1 Shallow	45	1.5-2	West	0.140	0.12	0.020	0.13	0.010	0.13	0.010
PM-1 Deep	45	44.5-45	West	0.800	0.74	0.060	0.7	0.100	0.72	0.080

					50% Step Test					
					Round 1		Round 2		Round 3	
Observation Wells	**Distance from PT-AS (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**
P-14	5	50-60	Northeast	0.050	0.08	-0.030	-10.5	10.550	-11	11.050
P-13	5	75-85	Southeast	0.000	NA	NA	NA	NA	NA	NA
P-17	17	100-110	North	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	20	1.5-2	North	0.220	0.19	0.030	0.25	-0.030	0.25	-0.030
PM-2 Deep	20	44.5-45	North	0.800	0.605	0.195	0.75	0.050	0.8	0.000
PM-3 Shallow	25	1.5-2	West	0.030	0.02	0.010	0.03	0.000	0.03	0.000
PM-3 Deep	25	44.5-45	West	1.400	1.15	0.250	1.35	0.050	1.35	0.050
PM-4 Shallow	35	1.5-2	West	0.080	0.05	0.030	0.07	0.010	0.07	0.010
PM-4 Deep	35	44.5-45	West	0.900	0.75	0.150	0.9	0.000	0.9	0.000
PM-1 Shallow	45	1.5-2	West	0.140	0.09	0.050	0.09	0.050	0.09	0.050
PM-1 Deep	45	44.5-45	West	0.800	0.64	0.160	0.85	-0.050	0.85	-0.050

					100% Step Test					
					Round 1		Round 2		Round 3	
Observation Wells	**Distance from PT-AS (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**
P-14	5	50-60	Northeast	0.050	-14	14.050	-15.5	15.550	-15	15.050
P-13	5	75-85	Southeast	0.000	NA	NA	NA	NA	NA	NA
P-17	17	100-110	North	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	20	1.5-2	North	0.220	0.15	0.070	0.15	0.070	0.15	0.070
PM-2 Deep	20	44.5-45	North	0.800	0.65	0.150	0.6	0.200	0.65	0.150
PM-3 Shallow	25	1.5-2	West	0.030	0.02	0.010	0.02	0.010	0.02	0.010
PM-3 Deep	25	44.5-45	West	1.400	1.2	0.200	1.2	0.200	1.25	0.150
PM-4 Shallow	35	1.5-2	West	0.080	0.05	0.030	0.05	0.030	0.05	0.030
PM-4 Deep	35	44.5-45	West	0.900	0.8	0.100	0.8	0.100	0.8	0.100
PM-1 Shallow	45	1.5-2	West	0.140	0.07	0.070	0.07	0.070	0.075	0.065
PM-1 Deep	45	44.5-45	West	0.800	0.7	0.100	0.7	0.100	0.7	0.100

Table 22

Home Depot - Rego Park

Rego Park - Glendale, New York

Intermediate AS: P-13

25% Step Test

Test Measurements - AS Test at P-13

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/14/2010	Humidity:	~30%
Well Screen:	75-85' bgs	Wind Speed/Direction:	5-15 mph, towards south
Monitoring Round #:	1	Start Time.:	8:45
Test No.:	1	% of Maximum Capacity.:	25%

AS Well	Applied Pressure	Air Flow (CFM)	Temp (F)
P-13	10	3.5	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	25	92	0.0	19.8	0	0

Observation Wells	Distance from P-13 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	North	-1.200	0	20.0	50.20	11.21
PT-AS	5	60-62	Northwest	0.000	0	20.0	50.16	13.72
P-17	19	100-110	North	NA	0	19.9	50.24	0.71
PM-2 Shallow	22	1.5-2	North	0.250	0	19.8	NA	NA
PM-2 Deep	22	44.5-45	North	0.750	0	19.9	NA	NA
PM-3 Shallow	28	1.5-2	West	0.030	0	19.8	NA	NA
PM-3 Deep	28	44.5-45	West	1.300	0	19.8	NA	NA
PM-4 Shallow	38	1.5-2	West	0.070	0	19.9	NA	NA
PM-4 Deep	38	44.5-45	West	0.920	0	19.9	NA	NA
PM-1 Shallow	48	1.5-2	West	0.085	0	19.8	NA	NA
PM-1 Deep	48	44.5-45	West	0.800	0	19.8	NA	NA

NOTES:

Table 23

Home Depot - Rego Park

Rego Park - Glendale, New York

Intermediate AS: P-13

25% Step Test

Test Measurements - AS Test at P-13

Site: Home Depot - Rego Park
Location: Rego Park - Glendale, New York
Personnel: AKRF(EP), Aztech (Garth, Jason)
Date: 1/14/2010
Well Screen: 75-85' bgs
Monitoring Round #: 2
Test No.: 1

Weather: Clear, cold
Temperature: 30˚F
Barometric Pressure: ~30inHg
Humidity: ~30%
Wind Speed/Direction: 5-15 mph, towards south
Start Time.: 9:30
% of Maximum Capacity.: 25%

AS Well	Applied Pressure	Air Flow (CFM)	Temp (F)
P-13	10	4	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	25	87	0.0	19.8	0	0

Observation Wells	Distance from P-13 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	North	-2.500	0	19.8	50.21	11.48
PT-AS	5	60-62	Northwest	-0.300	0	19.8	50.20	13.55
P-17	19	100-110	North	NA	0	19.9	50.23	1.25
PM-2 Shallow	22	1.5-2	North	0.250	0	19.3	NA	NA
PM-2 Deep	22	44.5-45	North	0.800	0	19.9	NA	NA
PM-3 Shallow	28	1.5-2	West	0.020	0	19.9	NA	NA
PM-3 Deep	28	44.5-45	West	1.350	0	19.9	NA	NA
PM-4 Shallow	38	1.5-2	West	0.080	0	19.9	NA	NA
PM-4 Deep	38	44.5-45	West	0.960	0	19.9	NA	NA
PM-1 Shallow	48	1.5-2	West	0.090	0	19.9	NA	NA
PM-1 Deep	48	44.5-45	West	0.810	0	19.9	NA	NA

NOTES:

Table 24

Home Depot - Rego Park

Rego Park - Glendale, New York

Intermediate AS: P-13

25% Step Test

Test Measurements - AS Test at P-13

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/14/2010	Humidity:	~30%
Well Screen:	75-85' bgs	Wind Speed/Direction:	5-15 mph, towards south
Monitoring Round #:	3	Start Time.:	10:20
Test No.:	1	% of Maximum Capacity.:	25%

AS Well	Applied Pressure	Air Flow (CFM)	Temp (F)
P-13	11	4.5	122

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	25	104	0.0	19.9	0	0

Observation Wells	Distance from P-13 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	North	-2.500	0.0	19.9	50.24	11.30
PT-AS	5	60-62	Northwest	-0.300	0.0	19.5	50.06	13.42
P-17	19	100-110	North	NA	0.0	20	50.25	1.28
PM-2 Shallow	22	1.5-2	North	0.250	0.0	19.9	NA	NA
PM-2 Deep	22	44.5-45	North	0.750	0.0	20	NA	NA
PM-3 Shallow	28	1.5-2	West	0.040	0.0	19.8	NA	NA
PM-3 Deep	28	44.5-45	West	1.300	0.0	19.8	NA	NA
PM-4 Shallow	38	1.5-2	West	0.080	0.0	19.7	NA	NA
PM-4 Deep	38	44.5-45	West	0.970	0.0	19.8	NA	NA
PM-1 Shallow	48	1.5-2	West	0.090	0.0	19.8	NA	NA
PM-1 Deep	48	44.5-45	West	0.800	0.0	19.8	NA	NA

NOTES:

Table 25

Home Depot - Rego Park

Rego Park - Glendale, New York

Intermediate AS: P-13

50% Step Test

Test Measurements - AS Test at P-13

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/14/2010	Humidity:	~30%
ell Screen:	75-85' bgs	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	1	Start Time.:	11:00
Test No.:	2	% of Maximum Capacity.:	50%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	15	7	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	25	103	0.0	20.1	0	0

Observation Wells	Distance from P-13 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	North	-3.000	0.0	20.1	50.20	11.35
PT-AS	5	60-62	Northwest	-0.300	0.0	20.1	49.76	12.78
P-17	19	100-110	North	NA	0.0	20.2	50.10	1.19
PM-2 Shallow	22	1.5-2	North	0.200	0.0	20.0	NA	NA
PM-2 Deep	22	44.5-45	North	0.650	0.0	20.0	NA	NA
PM-3 Shallow	28	1.5-2	West	0.045	0.0	20.1	NA	NA
PM-3 Deep	28	44.5-45	West	1.250	0.0	20.1	NA	NA
PM-4 Shallow	38	1.5-2	West	0.060	0.0	20.1	NA	NA
PM-4 Deep	38	44.5-45	West	0.860	0.0	20.1	NA	NA
PM-1 Shallow	48	1.5-2	West	0.070	0.0	20.1	NA	NA
PM-1 Deep	48	44.5-45	West	0.700	0.0	20.1	NA	NA

NOTES:

Table 26
Home Depot - Rego Park
Rego Park - Glendale, New York
Intermediate AS: P-13
50% Step Test

Test Measurements - AS Test at P-13

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/14/2010	Humidity:	~30%
ell Screen:	75-85' bgs	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	2	Start Time.:	11:50
Test No.:	2	% of Maximum Capacity.:	50%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	15	7	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	25	101	0.0	20.3	0	0

Observation Wells	Distance from P-13 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	North	-7.400	0.0	20.2	50.18	11.28
PT-AS	5	60-62	Northwest	-0.900	0.0	20.2	49.57	12.86
P-17	19	100-110	North	NA	0.0	20.2	50.07	1.20
PM-2 Shallow	22	1.5-2	North	0.200	0.0	20.2	NA	NA
PM-2 Deep	22	44.5-45	North	0.650	0.0	20.2	NA	NA
PM-3 Shallow	28	1.5-2	West	0.045	0.0	20.3	NA	NA
PM-3 Deep	28	44.5-45	West	1.250	0.0	20.3	NA	NA
PM-4 Shallow	38	1.5-2	West	0.060	0.0	20.3	NA	NA
PM-4 Deep	38	44.5-45	West	0.860	0.0	20.3	NA	NA
PM-1 Shallow	48	1.5-2	West	0.070	0.0	20.3	NA	NA
PM-1 Deep	48	44.5-45	West	0.700	0.0	20.3	NA	NA

NOTES:

Table 27

Home Depot - Rego Park

Rego Park - Glendale, New York

Intermediate AS: P-13

50% Step Test

Test Measurements - AS Test at P-13

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/14/2010	Humidity:	~30%
ell Screen:	75-85' bgs	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	3	Start Time.:	12:30
Test No.:	2	% of Maximum Capacity.:	50%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	16	7	152

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	25	104	0.0	20.3	0	0

Observation Wells	Distance from P-13 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	North	-7.400	0.0	20.1	50.07	11.37
PT-AS	5	60-62	Northwest	-0.900	0.0	20.2	49.51	12.93
P-17	19	100-110	North	NA	0.0	20.3	50.08	1.20
PM-2 Shallow	22	1.5-2	North	0.200	0.0	20.2	NA	NA
PM-2 Deep	22	44.5-45	North	0.650	0.0	20.2	NA	NA
PM-3 Shallow	28	1.5-2	West	0.045	0.0	20.3	NA	NA
PM-3 Deep	28	44.5-45	West	1.250	0.0	20.3	NA	NA
PM-4 Shallow	38	1.5-2	West	0.060	0.0	20.3	NA	NA
PM-4 Deep	38	44.5-45	West	0.860	0.0	20.3	NA	NA
PM-1 Shallow	48	1.5-2	West	0.070	0.0	20.3	NA	NA
PM-1 Deep	48	44.5-45	West	0.700	0.0	20.3	NA	NA

NOTES:

Table 28

Home Depot - Rego Park

Rego Park - Glendale, New York

Intermediate AS: P-13

100% Step Test

Test Measurements - AS Test at P-13

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/14/2010	Humidity:	~30%
ell Screen:	75-85' bgs	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	1	Start Time.:	13:45
Test No.:	3	% of Maximum Capacity.:	100%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	20	9	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	25	105	0.0	18.9	0	0

Observation Wells	Distance from P-13 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	North	-10.050	0.0	20.3	50.01	11.33
PT-AS	5	60-62	Northwest	-1.600	0.0	20.3	49.50	12.90
P-17	19	100-110	North	NA	0.0	20.3	50.04	1.51
PM-2 Shallow	22	1.5-2	North	0.200	0.0	20.2	NA	NA
PM-2 Deep	22	44.5-45	North	0.650	0.0	20.2	NA	NA
PM-3 Shallow	28	1.5-2	West	0.040	0.0	20.2	NA	NA
PM-3 Deep	28	44.5-45	West	1.250	0.0	20.2	NA	NA
PM-4 Shallow	38	1.5-2	West	0.060	0.0	20.2	NA	NA
PM-4 Deep	38	44.5-45	West	0.860	0.0	20.2	NA	NA
PM-1 Shallow	48	1.5-2	West	0.070	0.0	20.2	NA	NA
PM-1 Deep	48	44.5-45	West	0.700	0.0	20.2	NA	NA

NOTES:

Table 29
Home Depot - Rego Park
Rego Park - Glendale, New York
Intermediate AS: P-13
100% Step Test

Test Measurements - AS Test at P-13

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/14/2010	Humidity:	~30%
ell Screen:	75-85' bgs	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	2	Start Time.:	14:30
Test No.:	3	% of Maximum Capacity.:	100%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	20	9	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	25	104	0.0	18.9	0	0

Observation Wells	Distance from P-13 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-14	5	50-60	North	-14.500	0.0	20.2	49.90	11.44
PT-AS	5	60-62	Northwest	-2.900	0.0	19.8	49.38	12.80
P-17	19	100-110	North	NA	0.0	20.2	50.00	1.27
PM-2 Shallow	22	1.5-2	North	0.200	0.0	20.1	NA	NA
PM-2 Deep	22	44.5-45	North	0.650	0.0	20.2	NA	NA
PM-3 Shallow	28	1.5-2	West	0.040	0.0	20.2	NA	NA
PM-3 Deep	28	44.5-45	West	1.250	0.0	20.2	NA	NA
PM-4 Shallow	38	1.5-2	West	0.060	0.0	20.2	NA	NA
PM-4 Deep	38	44.5-45	West	0.860	0.0	20.2	NA	NA
PM-1 Shallow	48	1.5-2	West	0.070	0.0	20.3	NA	NA
PM-1 Deep	48	44.5-45	West	0.700	0.0	20.3	NA	NA

NOTES:

Table 30

Home Depot - Rego Park

Rego Park - Glendale, New York

Intermediate AS: P-13

100% Step Test

Test Measurements - AS Test at P-13

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	30˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/14/2010	Humidity:	~30%
ell Screen:	75-85' bgs	Wind Speed/Direction:	5-15 mph, towards south
g Round #:	3	Start Time.:	15:10
Test No.:	3	% of Maximum Capacity.:	100%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	20	9	178

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)	Influent Helium (ppm)	Influent Helium (ppm)
PT-SVE	25	104	0.0	18.9	0.0	0.0	0.0	0.0

Observation Wells	Distance from P-13 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)	Helium (ppm)	Helium (ppm)
P-14	5	50-60	North	-14.500	0.0	20.3	49.14	11.70	450.0	425.0
PT-AS	5	60-62	Northwest	-2.900	0.0	20.2	49.45	13.47	0.0	0.0
P-17	19	100-110	North	NA	0.0	20.3	50.02	1.32	0.0	0.0
PM-2 Shallow	22	1.5-2	North	0.200	0.0	20.3	NA	NA	0.0	600.0
PM-2 Deep	22	44.5-45	North	0.650	0.0	20.4	NA	NA	0.0	0.0
PM-3 Shallow	28	1.5-2	West	0.040	0.0	20.4	NA	NA	0.0	0.0
PM-3 Deep	28	44.5-45	West	1.250	0.0	20.4	NA	NA	0.0	0.0
PM-4 Shallow	38	1.5-2	West	0.060	0.0	20.4	NA	NA	0.0	0.0
PM-4 Deep	38	44.5-45	West	0.860	0.0	20.4	NA	NA	0.0	0.0
PM-1 Shallow	48	1.5-2	West	0.070	0.0	20.4	NA	NA	0.0	0.0
PM-1 Deep	48	44.5-45	West	0.700	0.0	20.4	NA	NA	0.0	0.0

NOTES:

Table 31

Home Depot - Rego Park

Rego Park - Glendale, New York

Intermediate AS: P-13

Trends in Depth to Water, Dissolved Oxygen and Change in Induced Vacuum

Well ID	Background DTW (ft)	25% 1st Round	25% 2nd Round	25% 3rd Round	50% 1st Round	50% 2nd Round	50% 3rd Round	100% 1st Round	100% 2nd Round	100% 3rd Round
P-14	50.18	50.20	50.21	50.24	50.20	50.18	50.07	50.01	49.90	49.14
PT-AS	50.47	50.16	50.20	50.06	49.76	49.57	49.51	49.50	49.38	49.45
P-17	50.33	50.24	50.23	50.25	50.10	50.07	50.08	50.04	50.00	50.02

Well ID	Background DO (mg/l)	25% 1st Round	25% 2nd Round	25% 3rd Round	50% 1st Round	50% 2nd Round	50% 3rd Round	100% 1st Round	100% 2nd Round	100% 3rd Round
P-14	10.26	11.21	11.48	11.30	11.35	11.28	11.37	11.33	11.44	11.70
PT-AS	13.20	13.72	13.55	13.42	12.78	12.86	12.93	12.90	12.80	13.47
P-17	0.80	0.71	1.25	1.28	1.19	1.20	1.20	1.51	1.27	1.32

					25% Step Test					
					Round 1		Round 2		Round 3	
Observation Wells	**Distance from P-13 (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**
P-14	5	50-60	North	0.050	-1.200	1.250	-2.500	2.550	-2.500	2.550
PT-AS	5	60-62	Northwest	0.000	0.000	0.000	-0.300	0.300	-0.300	0.300
P-17	19	100-110	North	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	22	1.5-2	North	0.220	0.250	-0.030	0.250	-0.030	0.250	-0.030
PM-2 Deep	22	44.5-45	North	0.800	0.750	0.050	0.800	0.000	0.750	0.050
PM-3 Shallow	28	1.5-2	West	0.030	0.030	0.000	0.020	0.010	0.040	-0.010
PM-3 Deep	28	44.5-45	West	1.400	1.300	0.100	1.350	0.050	1.300	0.100
PM-4 Shallow	38	1.5-2	West	0.080	0.070	0.010	0.080	0.000	0.080	0.000
PM-4 Deep	38	44.5-45	West	0.900	0.920	-0.020	0.960	-0.060	0.970	-0.070
PM-1 Shallow	48	1.5-2	West	0.140	0.085	0.055	0.090	0.050	0.090	0.050
PM-1 Deep	48	44.5-45	West	0.800	0.800	0.000	0.810	-0.010	0.800	0.000

					50% Step Test					
					Round 1		Round 2		Round 3	
Observation Wells	**Distance from P-13 (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**
P-14	5	50-60	North	0.050	-3.000	3.050	-7.400	7.450	-7.400	7.450
PT-AS	5	60-62	Northwest	0.000	-0.300	0.300	-0.900	0.900	-0.900	0.900
P-17	19	100-110	North	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	22	1.5-2	North	0.220	0.200	0.020	0.200	0.020	0.200	0.020
PM-2 Deep	22	44.5-45	North	0.800	0.650	0.150	0.650	0.150	0.650	0.150
PM-3 Shallow	28	1.5-2	West	0.030	0.045	-0.015	0.045	-0.015	0.045	-0.015
PM-3 Deep	28	44.5-45	West	1.400	1.250	0.150	1.250	0.150	1.250	0.150
PM-4 Shallow	38	1.5-2	West	0.080	0.060	0.020	0.060	0.020	0.060	0.020
PM-4 Deep	38	44.5-45	West	0.900	0.860	0.040	0.860	0.040	0.860	0.040
PM-1 Shallow	48	1.5-2	West	0.140	0.070	0.070	0.070	0.070	0.070	0.070
PM-1 Deep	48	44.5-45	West	0.800	0.700	0.100	0.700	0.100	0.700	0.100

					100% Step Test					
					Round 1		Round 2		Round 3	
Observation Wells	**Distance from P-13 (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum (in H2O)**
P-14	5	50-60	North	0.050	-10.050	10.100	-14.500	14.550	-14.500	14.550
PT-AS	5	60-62	Northwest	0.000	-1.600	1.600	-2.900	2.900	-2.900	2.900
P-17	19	100-110	North	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	22	1.5-2	North	0.220	0.200	0.020	0.200	0.020	0.200	0.020
PM-2 Deep	22	44.5-45	North	0.800	0.650	0.150	0.650	0.150	0.650	0.150
PM-3 Shallow	28	1.5-2	West	0.030	0.040	-0.010	0.040	-0.010	0.040	-0.010
PM-3 Deep	28	44.5-45	West	1.400	1.250	0.150	1.250	0.150	1.250	0.150
PM-4 Shallow	38	1.5-2	West	0.080	0.060	0.020	0.060	0.020	0.060	0.020
PM-4 Deep	38	44.5-45	West	0.900	0.860	0.040	0.860	0.040	0.860	0.040
PM-1 Shallow	48	1.5-2	West	0.140	0.070	0.070	0.070	0.070	0.070	0.070
PM-1 Deep	48	44.5-45	West	0.800	0.700	0.100	0.700	0.100	0.700	0.100

Table 32

Home Depot - Rego Park

Rego Park - Glendale, New York

Deep AS: P-17

25% Step Test

Test Measurements - AS Test at P-17

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	40˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	####	Humidity:	42%
Well Screen:	100-110' bgs	Wind Speed/Direction:	0-5 mph, towards east
Monitoring Round #:	1	Start Time.:	8:45
Test No.:	1	% of Maximum Capacity.:	25%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	21	3	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	25	103	0.0	20.0	0.0	0.0

Observation Wells	Distance from P-17 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-18	5	127-137	South	NA	0.0	20.2	50.60	1.96
PM-2 Shallow	10	1.5-2	Northwest	0.250	0.0	20.2	NA	NA
PM-2 Deep	10	44.5-45	Northwest	0.800	0.0	20.2	NA	NA
P-14	10	50-60	South	0.250	0.0	19.9	50.21	11.10
PT-AS	12	60-62	Southwest	0.000	0.0	20.1	50.33	12.39
P-13	15	75-85	South	0.000	0.0	20.1	50.14	3.14
PM-3 Shallow	32	1.5-2	West	0.025	0.0	20.0	NA	NA
PM-3 Deep	32	44.5-45	West	1.350	0.0	20.0	NA	NA
PM-4 Shallow	42	1.5-2	West	0.080	0.0	20.0	NA	NA
PM-4 Deep	42	44.5-45	West	0.940	0.0	20.0	NA	NA
PM-1 Shallow	52	1.5-2	Northwest	0.080	0.0	20.0	NA	NA
PM-1 Deep	52	44.5-45	Northwest	0.800	0.0	20.0	NA	NA

NOTES:

Table 33
Home Depot - Rego Park
Rego Park - Glendale, New York
Deep AS: P-17
25% Step Test

Test Measurements - AS Test at P-17

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	40˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	####	Humidity:	42%
Well Screen:	100-110' bgs	Wind Speed/Direction:	0-5 mph, towards east
Monitoring Round #:	2	Start Time.:	9:15
Test No.:	1	% of Maximum Capacity.:	25%

AS Well	Applied Pressure	Air Flow (CFM)	Temp (F)
P-13	21	3	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int. PID (ppm)	Eff. PID (ppm)
			PID (ppm)	O2 (%)		
PT-SVE	25	104	0.0	20.4	0.0	0.0

Observation Wells	Distance from P-17 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-18	5	127-137	South	NA	0.0	20.4	50.56	1.95
PM-2 Shallow	10	1.5-2	Northwest	0.250	0.0	20.3	NA	NA
PM-2 Deep	10	44.5-45	Northwest	0.750	0.0	20.3	NA	NA
P-14	10	50-60	South	0.550	0.0	20.4	50.20	11.90
PT-AS	12	60-62	Southwest	0.000	0.0	20.4	50.34	12.70
P-13	15	75-85	South	0.000	0.0	20.4	50.10	2.50
PM-3 Shallow	32	1.5-2	West	0.035	0.0	20.4	NA	NA
PM-3 Deep	32	44.5-45	West	1.350	0.0	20.4	NA	NA
PM-4 Shallow	42	1.5-2	West	0.070	0.0	20.4	NA	NA
PM-4 Deep	42	44.5-45	West	0.092	0.0	20.4	NA	NA
PM-1 Shallow	52	1.5-2	Northwest	0.070	0.0	20.4	NA	NA
PM-1 Deep	52	44.5-45	Northwest	0.780	0.0	20.4	NA	NA

NOTES:

Table 34
Home Depot - Rego Park
Rego Park - Glendale, New York
Deep AS: P-17
25% Step Test

Test Measurements - AS Test at P-17

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	40˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	####	Humidity:	42%
Well Screen:	100-110' bgs	Wind Speed/Direction:	0-5 mph, towards east
Monitoring Round #:	3	Start Time.:	10:05
Test No.:	1	% of Maximum Capacity.:	25%

AS Well	Applied Pressure	Air Flow (CFM)	Temp (F)
P-13	21	3	168

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	25	104	0.0	19.0	0.0	0.0

Observation Wells	Distance from P-17 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-18	5	127-137	South	NA	0.0	20.5	50.51	1.95
PM-2 Shallow	10	1.5-2	Northwest	0.250	0.0	20.5	NA	NA
PM-2 Deep	10	44.5-45	Northwest	0.750	0.0	20.4	NA	NA
P-14	10	50-60	South	0.550	0.0	20.4	50.19	11.95
PT-AS	12	60-62	Southwest	0.000	0.0	20.4	50.32	12.71
P-13	15	75-85	South	0.000	0.0	20.4	50.11	2.67
PM-3 Shallow	32	1.5-2	West	0.035	0.0	20.5	NA	NA
PM-3 Deep	32	44.5-45	West	1.350	0.0	20.4	NA	NA
PM-4 Shallow	42	1.5-2	West	0.070	0.0	20.5	NA	NA
PM-4 Deep	42	44.5-45	West	0.920	0.0	20.5	NA	NA
PM-1 Shallow	52	1.5-2	Northwest	0.070	0.0	20.5	NA	NA
PM-1 Deep	52	44.5-45	Northwest	0.780	0.0	20.5	NA	NA

NOTES:

Table 35

Home Depot - Rego Park

Rego Park - Glendale, New York

Deep AS: P-17

50% Step Test

Test Measurements - AS Test at P-17

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	40˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg

Date:	1/15/2010	Humidity:	42%
ell Screen:	100-110' bgs	Wind Speed/Direction:	0-5 mph, towards east
g Round #:	1	Start Time.:	11:00
Test No.:	2	% of Maximum Capacity.:	50%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	23	5.5	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	25	108	0.0	19.0	0.0	0.0

Observation Wells	Distance from P-17 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-18	5	127-137	South	NA	0.0	20.5	50.46	3.00
PM-2 Shallow	10	1.5-2	Northwest	0.200	0.0	20.6	NA	NA
PM-2 Deep	10	44.5-45	Northwest	0.750	0.0	20.6	NA	NA
P-14	10	50-60	South	0.900	0.0	20.5	50.16	11.81
PT-AS	12	60-62	Southwest	-0.025	0.0	20.6	50.24	13.13
P-13	15	75-85	Southwest	0.000	0.0	20.5	50.12	2.64
PM-3 Shallow	32	1.5-2	West	0.030	0.0	20.5	NA	NA
PM-3 Deep	32	44.5-45	West	1.300	0.0	20.5	NA	NA
PM-4 Shallow	42	1.5-2	West	0.065	0.0	20.5	NA	NA
PM-4 Deep	42	44.5-45	West	0.900	0.0	20.5	NA	NA
PM-1 Shallow	52	1.5-2	Northwest	0.065	0.0	20.5	NA	NA
PM-1 Deep	52	44.5-45	Northwest	0.720	0.0	20.5	NA	NA

NOTES:

Table 36

Home Depot - Rego Park

Rego Park - Glendale, New York

Deep AS: P-17

50% Step Test

Test Measurements - AS Test at P-17

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	40˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/15/2010	Humidity:	42%
ell Screen:	100-110' bgs	Wind Speed/Direction:	0-5 mph, towards east
g Round #:	2	Start Time.:	11:45
Test No.:	2	% of Maximum Capacity.:	50%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	23	5.5	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	25	107	0.0	19.8	0.0	0.0

Observation Wells	Distance from P-17 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-18	5	127-137	South	NA	0.0	20.5	50.42	5.25
PM-2 Shallow	10	1.5-2	Northwest	0.200	0.0	20.6	NA	NA
PM-2 Deep	10	44.5-45	Northwest	0.650	0.0	19.0	NA	NA
P-14	10	50-60	South	0.855	0.0	20.5	50.15	11.95
PT-AS	12	60-62	Southwest	-0.005	0.0	20.5	50.18	13.21
P-13	15	75-85	Southwest	-2.250	0.0	20.5	50.00	2.75
PM-3 Shallow	32	1.5-2	West	0.030	0.0	20.5	NA	NA
PM-3 Deep	32	44.5-45	West	1.250	0.0	20.5	NA	NA
PM-4 Shallow	42	1.5-2	West	0.060	0.0	20.5	NA	NA
PM-4 Deep	42	44.5-45	West	0.840	0.0	20.5	NA	NA
PM-1 Shallow	52	1.5-2	Northwest	0.060	0.0	20.5	NA	NA
PM-1 Deep	52	44.5-45	Northwest	0.680	0.0	20.5	NA	NA

NOTES:

Table 37

Home Depot - Rego Park

Rego Park - Glendale, New York

Deep AS: P-17

50% Step Test

Test Measurements - AS Test at P-17

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	40˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/15/2010	Humidity:	42%
ell Screen:	100-110' bgs	Wind Speed/Direction:	0-5 mph, towards east
g Round #:	3	Start Time.:	12:30
Test No.:	2	% of Maximum Capacity.:	50%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	23	5.5	186

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	25	107	0.0	19.8	0.0	0.0

Observation Wells	Distance from P-17 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-18	5	127-137	South	NA	0.0	20.5	50.42	5.30
PM-2 Shallow	10	1.5-2	Northwest	0.200	0.0	20.5	NA	NA
PM-2 Deep	10	44.5-45	Northwest	0.750	0.0	19.0	NA	NA
P-14	10	50-60	South	0.855	0.0	20.5	50.15	12.13
PT-AS	12	60-62	Southwest	-0.005	0.0	20.5	50.25	13.27
P-13	15	75-85	Southwest	-2.250	0.0	20.5	49.98	2.77
PM-3 Shallow	32	1.5-2	West	0.030	0.0	20.4	NA	NA
PM-3 Deep	32	44.5-45	West	1.250	0.0	20.3	NA	NA
PM-4 Shallow	42	1.5-2	West	0.060	0.0	20.4	NA	NA
PM-4 Deep	42	44.5-45	West	0.840	0.0	20.4	NA	NA
PM-1 Shallow	52	1.5-2	Northwest	0.060	0.0	20.4	NA	NA
PM-1 Deep	52	44.5-45	Northwest	0.680	0.0	20.4	NA	NA

NOTES:

Table 38

Home Depot - Rego Park

Rego Park - Glendale, New York

Deep AS: P-17

100% Step Test

Test Measurements - AS Test at P-17

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	40˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/15/2010	Humidity:	42%
ell Screen:	100-110' bgs	Wind Speed/Direction:	0-5 mph, towards east
g Round #:	1	Start Time.:	13:30
Test No.:	3	% of Maximum Capacity.:	100%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	26	8	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent		Int.	Eff.
			PID (ppm)	O2 (%)	PID (ppm)	PID (ppm)
PT-SVE	25	107	0.0	19.2	0.0	0.0

Observation Wells	Distance from P-17 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-18	5	127-137	South	NA	0.0	20.7	50.38	3.25
PM-2 Shallow	10	1.5-2	Northwest	0.200	0.0	20.0	NA	NA
PM-2 Deep	10	44.5-45	Northwest	0.655	0.0	20.7	NA	NA
P-14	10	50-60	South	0.855	0.0	20.6	50.14	12.41
PT-AS	12	60-62	Southwest	0.000	0.0	20.6	50.17	13.62
P-13	15	75-85	Southwest	-4.900	0.0	20.6	49.90	9.22
PM-3 Shallow	32	1.5-2	West	0.080	0.0	20.5	NA	NA
PM-3 Deep	32	44.5-45	West	1.250	0.0	20.5	NA	NA
PM-4 Shallow	42	1.5-2	West	0.060	0.0	20.5	NA	NA
PM-4 Deep	42	44.5-45	West	0.900	0.0	20.5	NA	NA
PM-1 Shallow	52	1.5-2	Northwest	0.070	0.0	20.5	NA	NA
PM-1 Deep	52	44.5-45	Northwest	0.740	0.0	20.5	NA	NA

NOTES:

Table 39

Home Depot - Rego Park

Rego Park - Glendale, New York

Deep AS: P-17

100% Step Test

Test Measurements - AS Test at P-17

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	40˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/15/2010	Humidity:	42%
ell Screen:	100-110' bgs	Wind Speed/Direction:	0-5 mph, towards east
g Round #:	2	Start Time.:	14:15
Test No.:	3	% of Maximum Capacity.:	100%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	26	8	NA

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)
PT-SVE	25	106	0.0	19.2	0.0	0.0

Observation Wells	Distance from P-17 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)
P-18	5	127-137	South	NA	0.0	20.7	50.30	5.25
PM-2 Shallow	10	1.5-2	Northwest	0.200	0.0	19.9	NA	NA
PM-2 Deep	10	44.5-45	Northwest	0.655	0.0	20.7	NA	NA
P-14	10	50-60	South	1.050	0.0	20.6	50.14	12.71
PT-AS	12	60-62	Southwest	0.000	0.0	20.6	50.19	13.79
P-13	15	75-85	Southwest	-6.800	0.0	20.6	49.87	16.10
PM-3 Shallow	32	1.5-2	West	0.065	0.0	20.6	NA	NA
PM-3 Deep	32	44.5-45	West	1.300	0.0	20.6	NA	NA
PM-4 Shallow	42	1.5-2	West	0.060	0.0	20.6	NA	NA
PM-4 Deep	42	44.5-45	West	0.900	0.0	20.6	NA	NA
PM-1 Shallow	52	1.5-2	Northwest	0.070	0.0	20.6	NA	NA
PM-1 Deep	52	44.5-45	Northwest	0.740	0.0	20.6	NA	NA

NOTES:

Table 40

Home Depot - Rego Park

Rego Park - Glendale, New York

Deep AS: P-17

100% Step Test

Test Measurements - AS Test at P-17

Site:	Home Depot - Rego Park	Weather:	Clear, cold
Location:	Rego Park - Glendale, New York	Temperature:	40˚F
Personnel:	AKRF(EP), Aztech (Garth, Jason)	Barometric Pressure:	~30inHg
Date:	1/15/2010	Humidity:	42%
ell Screen:	100-110' bgs	Wind Speed/Direction:	0-5 mph, towards east
g Round #:	3	Start Time.:	15:20
Test No.:	3	% of Maximum Capacity.:	100%

AS Well	Applied Pressure (psi)	Air Flow (CFM)	Temp (F)
P-13	26	8	201

SVE Well	Applied Vacuum (in H2O)	Air Flow (CFM)	Influent PID (ppm)	Influent O2 (%)	Int. PID (ppm)	Eff. PID (ppm)	Influent Helium (ppm)	Influent Helium (ppm)
PT-SVE	25	106	0.0	19.0	0.0	0.0	0.0	0.0

Observation Wells	Distance from P-17 (feet)	Screened Interval (feet below grade)	Orientation	Vacuum (in H2O)	PID (ppm)	O2 (%)	DTW (feet below grade)	DO (mg/l)	Helium (ppm)	Helium (ppm)
P-18	5	127-137	South	NA	0.0	20.8	50.34	5.28	0.0	600.0
PM-2 Shallow	10	1.5-2	Northwest	0.200	0.0	19.0	NA	NA	475.0	850.0
PM-2 Deep	10	44.5-45	Northwest	0.700	0.0	20.6	NA	NA	0.0	0.0
P-14	10	50-60	South	1.050	0.0	20.6	50.14	12.62	0.0	0.0
PT-AS	12	60-62	Southwest	0.000	0.0	20.7	50.15	13.92	0.0	0.0
P-13	15	75-85	Southwest	-6.800	0.0	20.7	49.87	16.17	0.0	425.0
PM-3 Shallow	32	1.5-2	West	0.070	0.0	20.6	NA	NA	0.0	0.0
PM-3 Deep	32	44.5-45	West	1.300	0.0	20.6	NA	NA	0.0	0.0
PM-4 Shallow	42	1.5-2	West	0.060	0.0	20.6	NA	NA	0.0	0.0
PM-4 Deep	42	44.5-45	West	0.900	0.0	20.6	NA	NA	0.0	0.0
PM-1 Shallow	52	1.5-2	Northwest	0.070	0.0	20.6	NA	NA	0.0	0.0
PM-1 Deep	52	44.5-45	Northwest	0.740	0.0	20.6	NA	NA	0.0	0.0

NOTES:

Table 41
Home Depot - Rego Park
Rego Park - Glendale, New York

Deep AS: P-17

Trends in Depth to Water, Dissolved Oxygen and Change in Induced Vacuum

	Background	25%			50%			100%		
Well ID	**DTW (ft)**	1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round
P-18	50.48	50.60	50.56	50.51	50.46	50.42	50.42	50.38	50.30	50.34
P-14	50.28	50.21	50.20	50.19	50.16	50.15	50.15	50.14	50.14	50.14
PT-AS	50.47	50.33	50.34	50.32	50.24	50.18	50.25	50.17	50.19	50.15
P-13	50.23	50.14	50.10	50.11	50.12	50.00	49.98	49.90	49.87	49.87

	Background	25%			50%			100%		
Well ID	**DO (mg/l)**	1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round	1st Round	2nd Round	3rd Round
P-18	1.24	1.96	1.95	1.95	3.00	5.25	5.30	3.25	5.25	5.28
P-14	10.96	11.10	11.90	11.95	11.81	11.95	12.13	12.41	12.71	12.62
PT-AS	12.19	12.39	12.70	12.71	13.13	13.21	13.27	13.62	13.79	13.92
P-13	2.94	3.14	2.50	2.67	2.64	2.75	2.77	9.22	16.10	16.17

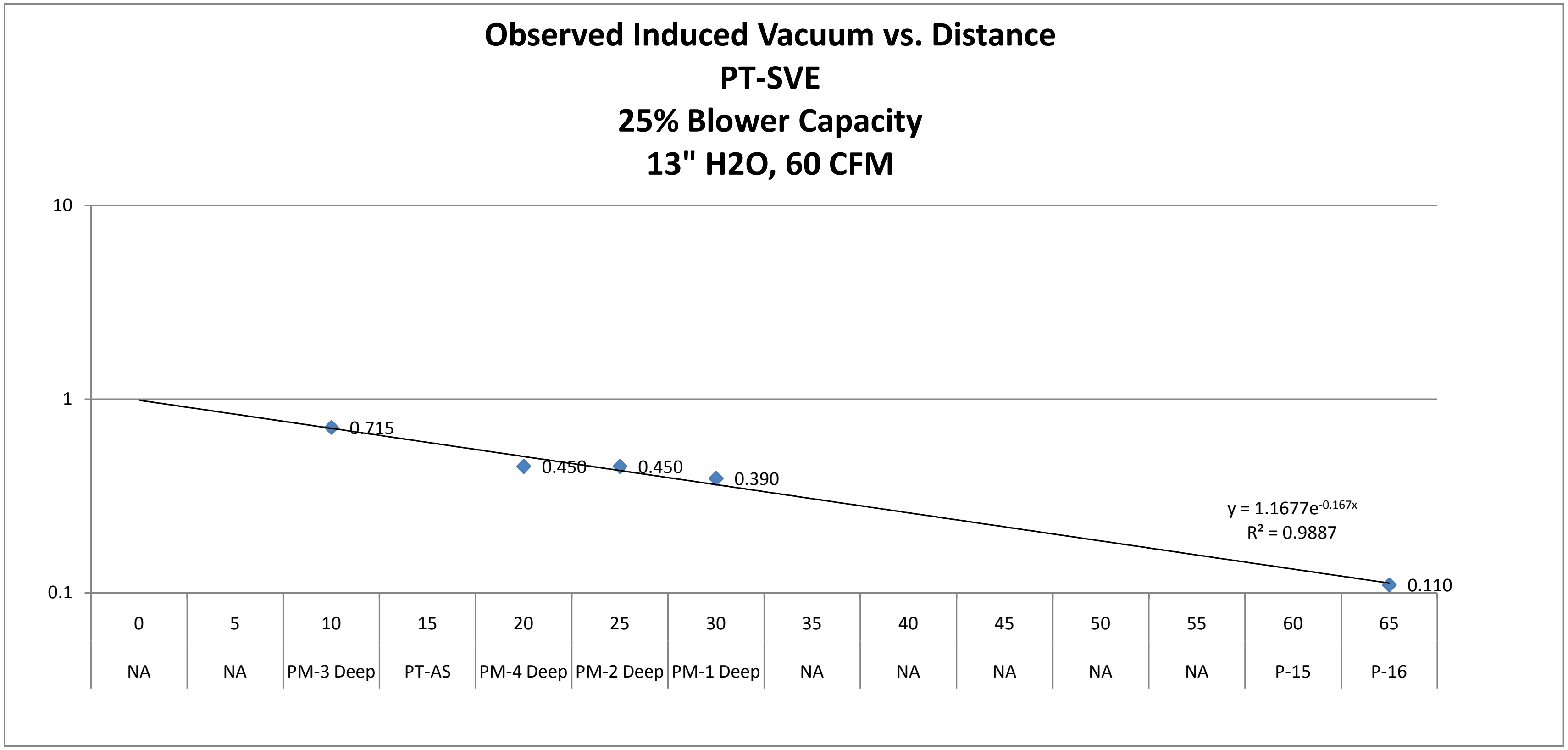
					25% Step Test					
					Round 1		Round 2		Round 3	
Observation Wells	**Distance from P-17 (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background**	**Vacuum (in H2O)**	**Change in Induced Vacuum ("H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum ("H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum ("H2O)**
P-18	5	127-137	South	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	10	1.5-2	Northwest	0.220	0.250	-0.030	0.250	-0.030	0.250	-0.030
PM-2 Deep	10	44.5-45	Northwest	0.800	0.800	0.000	0.750	0.050	0.750	0.050
P-14	10	50-60	South	0.050	0.250	-0.200	0.550	-0.500	0.550	-0.500
PT-AS	12	60-62	Southwest	0.000	0.000	0.000	0.000	0.000	0.000	0.000
P-13	15	75-85	South	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PM-3 Shallow	32	1.5-2	West	0.030	0.025	0.005	0.035	-0.005	0.035	-0.005
PM-3 Deep	32	44.5-45	West	1.400	1.350	0.050	1.350	0.050	1.350	0.050
PM-4 Shallow	42	1.5-2	West	0.080	0.080	0.000	0.070	0.010	0.070	0.010
PM-4 Deep	42	44.5-45	West	0.900	0.940	-0.040	0.092	0.808	0.920	-0.020
PM-1 Shallow	52	1.5-2	Northwest	0.140	0.080	0.060	0.070	0.070	0.070	0.070
PM-1 Deep	52	44.5-45	Northwest	0.800	0.800	0.000	0.780	0.020	0.780	0.020

					50% Step Test					
					Round 1		Round 2		Round 3	
Observation Wells	**Distance from P-17 (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background**	**Vacuum (in H2O)**	**Change in Induced Vacuum ("H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum ("H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum ("H2O)**
P-18	5	127-137	South	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	10	1.5-2	Northwest	0.220	0.200	0.020	0.200	0.020	0.200	0.020
PM-2 Deep	10	44.5-45	Northwest	0.800	0.750	0.050	0.650	0.150	0.750	0.050
P-14	10	50-60	South	0.050	0.900	-0.850	0.855	-0.805	0.855	-0.805
PT-AS	12	60-62	Southwest	0.000	-0.025	0.025	-0.005	0.005	-0.005	0.005
P-13	15	75-85	South	0.000	0.000	0.000	-2.250	2.250	-2.250	2.250
PM-3 Shallow	32	1.5-2	West	0.030	0.030	0.000	0.030	0.000	0.030	0.000
PM-3 Deep	32	44.5-45	West	1.400	1.300	0.100	1.250	0.150	1.250	0.150
PM-4 Shallow	42	1.5-2	West	0.080	0.065	0.015	0.060	0.020	0.060	0.020
PM-4 Deep	42	44.5-45	West	0.900	0.900	0.000	0.840	0.060	0.840	0.060
PM-1 Shallow	52	1.5-2	Northwest	0.140	0.065	0.075	0.060	0.080	0.060	0.080
PM-1 Deep	52	44.5-45	Northwest	0.800	0.720	0.080	0.680	0.120	0.680	0.120

					100% Step Test					
					Round 1		Round 2		Round 3	
Observation Wells	**Distance from P-17 (feet)**	**Screened Interval (feet below grade)**	**Orientation**	**Background**	**Vacuum (in H2O)**	**Change in Induced Vacuum ("H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum ("H2O)**	**Vacuum (in H2O)**	**Change in Induced Vacuum ("H2O)**
P-18	5	127-137	South	0.000	NA	NA	NA	NA	NA	NA
PM-2 Shallow	10	1.5-2	Northwest	0.220	0.200	0.020	0.200	0.020	0.200	0.020
PM-2 Deep	10	44.5-45	Northwest	0.800	0.655	0.145	0.655	0.145	0.700	0.100
P-14	10	50-60	South	0.050	0.855	-0.805	1.050	-1.000	1.050	-1.000
PT-AS	12	60-62	Southwest	0.000	0.000	0.000	0.000	0.000	0.000	0.000
P-13	15	75-85	South	0.000	-4.900	4.900	-6.800	6.800	-6.800	6.800
PM-3 Shallow	32	1.5-2	West	0.030	0.080	-0.050	0.065	-0.035	0.070	-0.040
PM-3 Deep	32	44.5-45	West	1.400	1.250	0.150	1.300	0.100	1.300	0.100
PM-4 Shallow	42	1.5-2	West	0.080	0.060	0.020	0.060	0.020	0.060	0.020
PM-4 Deep	42	44.5-45	West	0.900	0.900	0.000	0.900	0.000	0.900	0.000
PM-1 Shallow	52	1.5-2	Northwest	0.140	0.070	0.070	0.070	0.070	0.070	0.070
PM-1 Deep	52	44.5-45	Northwest	0.800	0.740	0.060	0.740	0.060	0.740	0.060

APPENDIX D
PILOT TEST GRAPHS

Graph 1
Home Depot - Rego Park
Rego Park - Glendale, New York

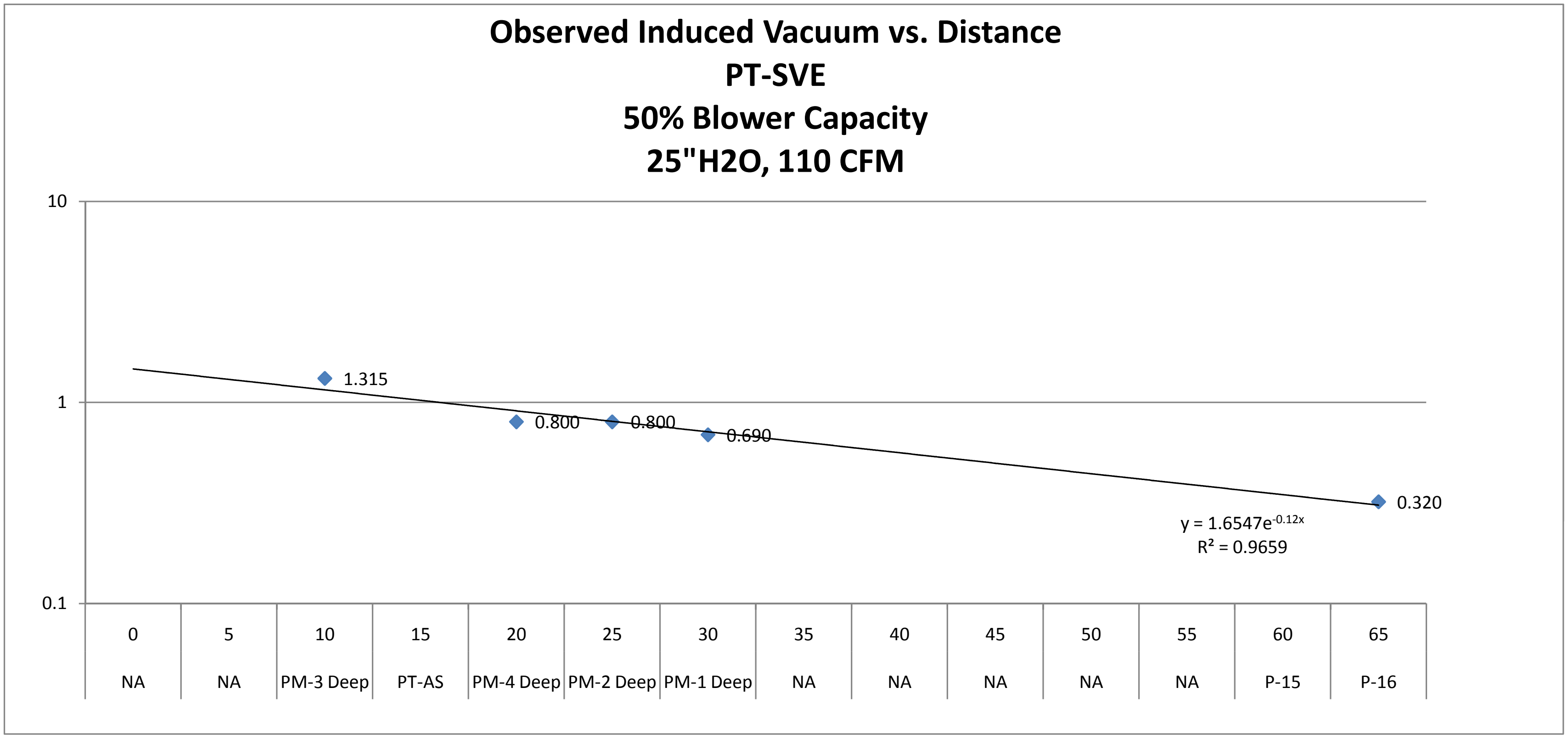


Notes:
Observed induced vacuum - Baseline vacuum taken 01/12/2010
Data from wells with comparable screened intervals

Graph 2

Home Depot - Rego Park

Rego Park - Glendale, New York



Notes:

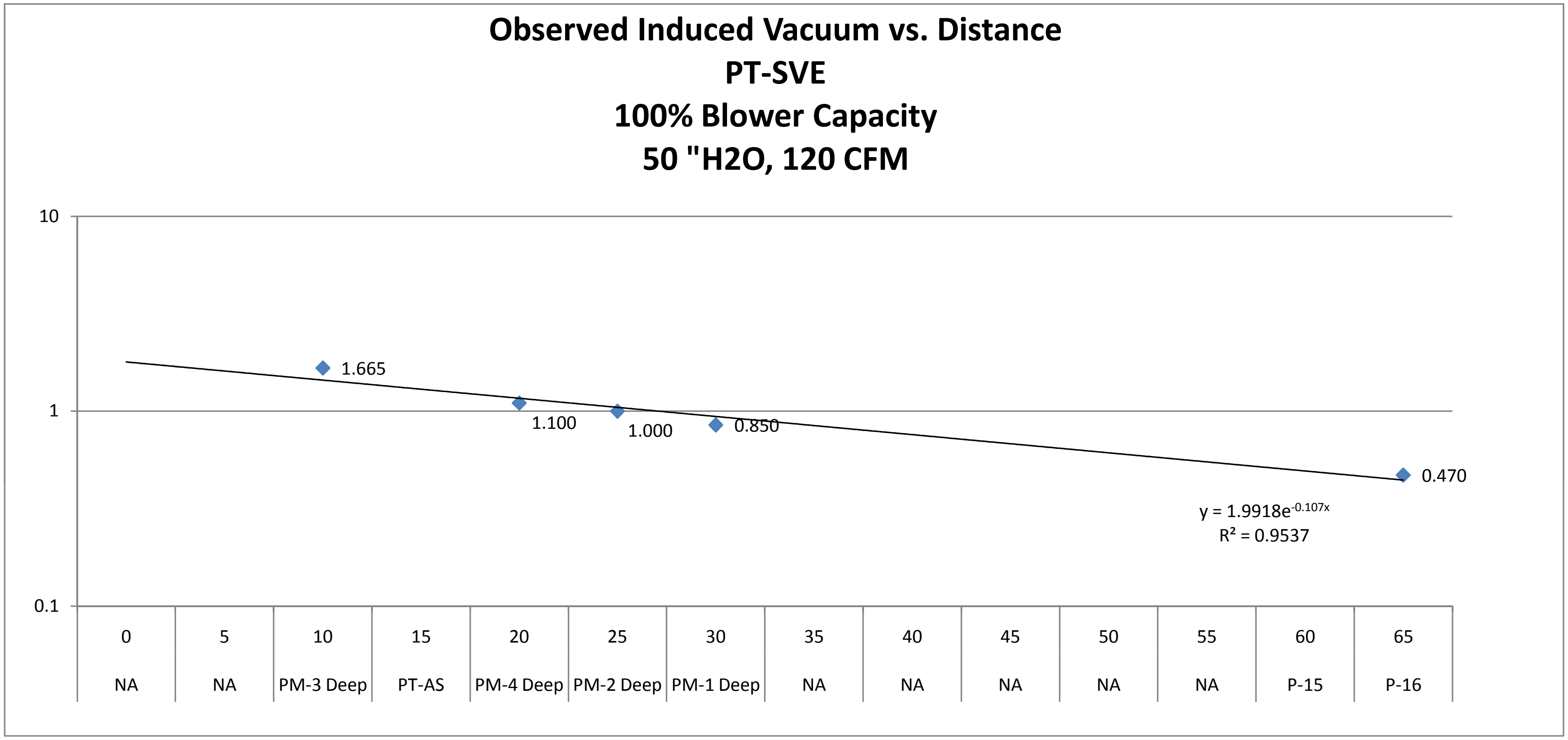
Observed induced vacuum - Baseline vacuum taken 01/12/2010

Data from wells with comparable screened intervals

Graph 3

Home Depot - Rego Park

Rego Park - Glendale, New York



Notes:

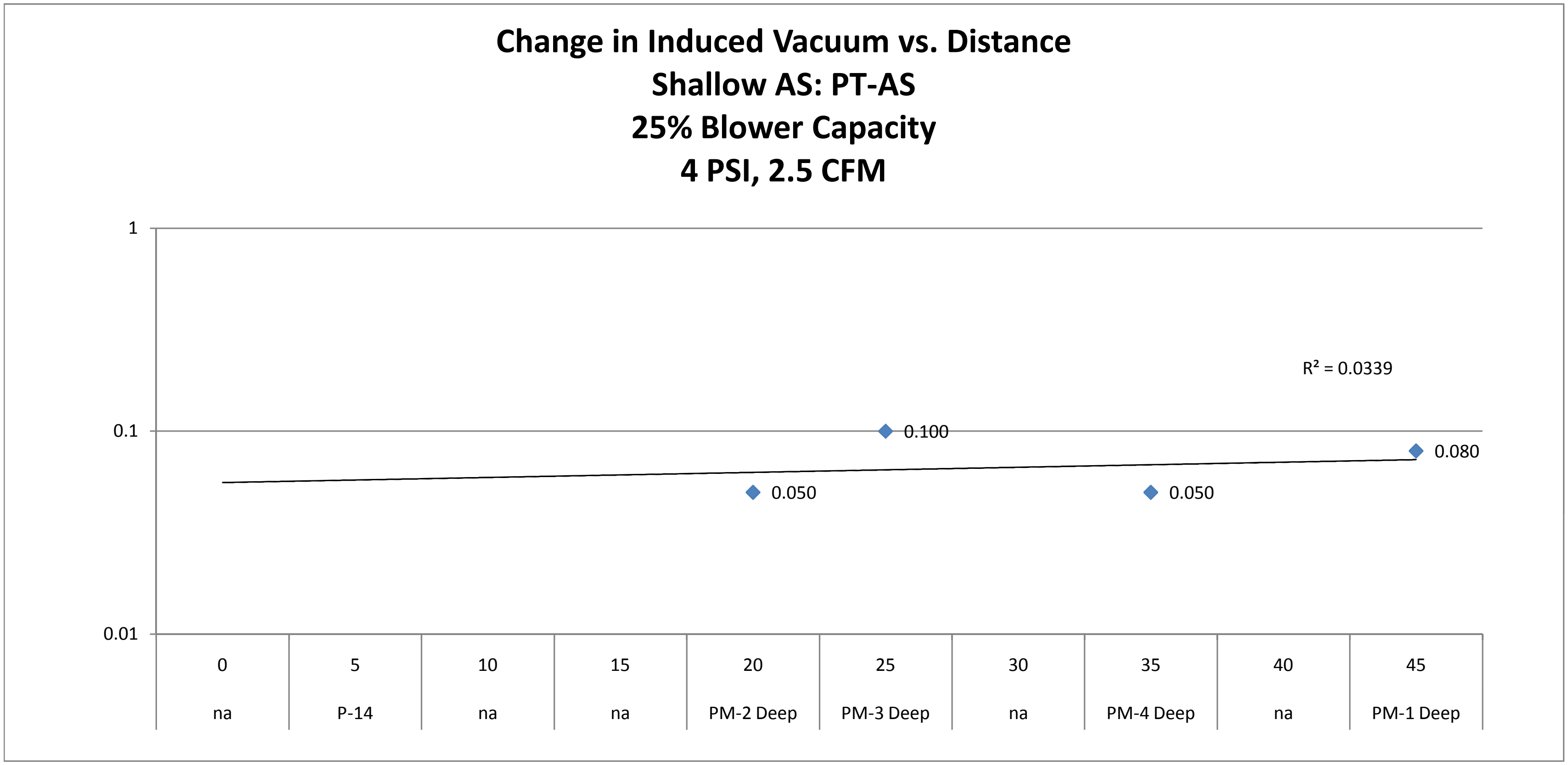
Observed induced vacuum - Baseline vacuum taken 01/12/2010

Data from wells with comparable screened intervals

Graph 4

Home Depot - Rego Park

Rego Park - Glendale, New York

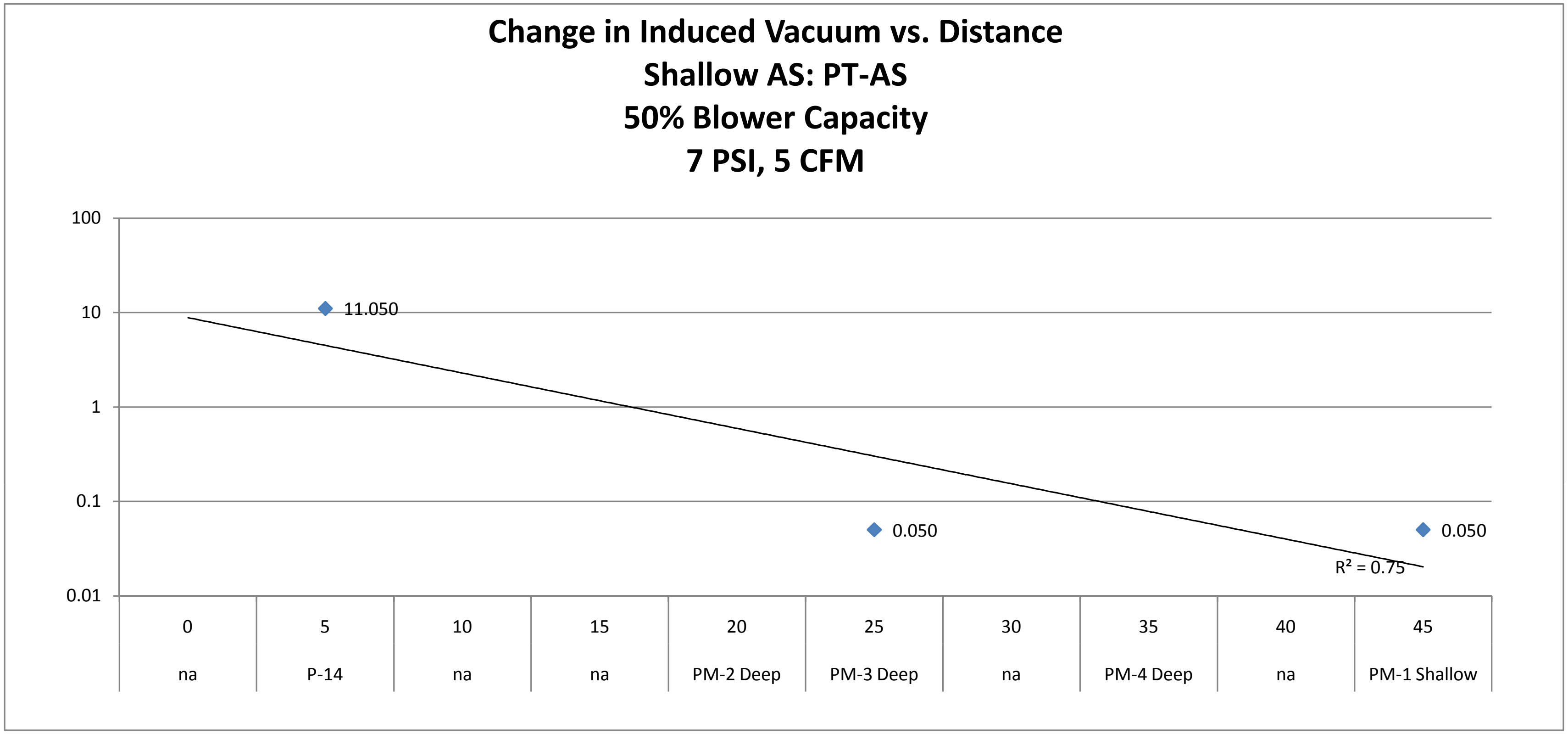


Notes:

Baseline vacuum taken 01/12/2010 - Observed induced vacuum

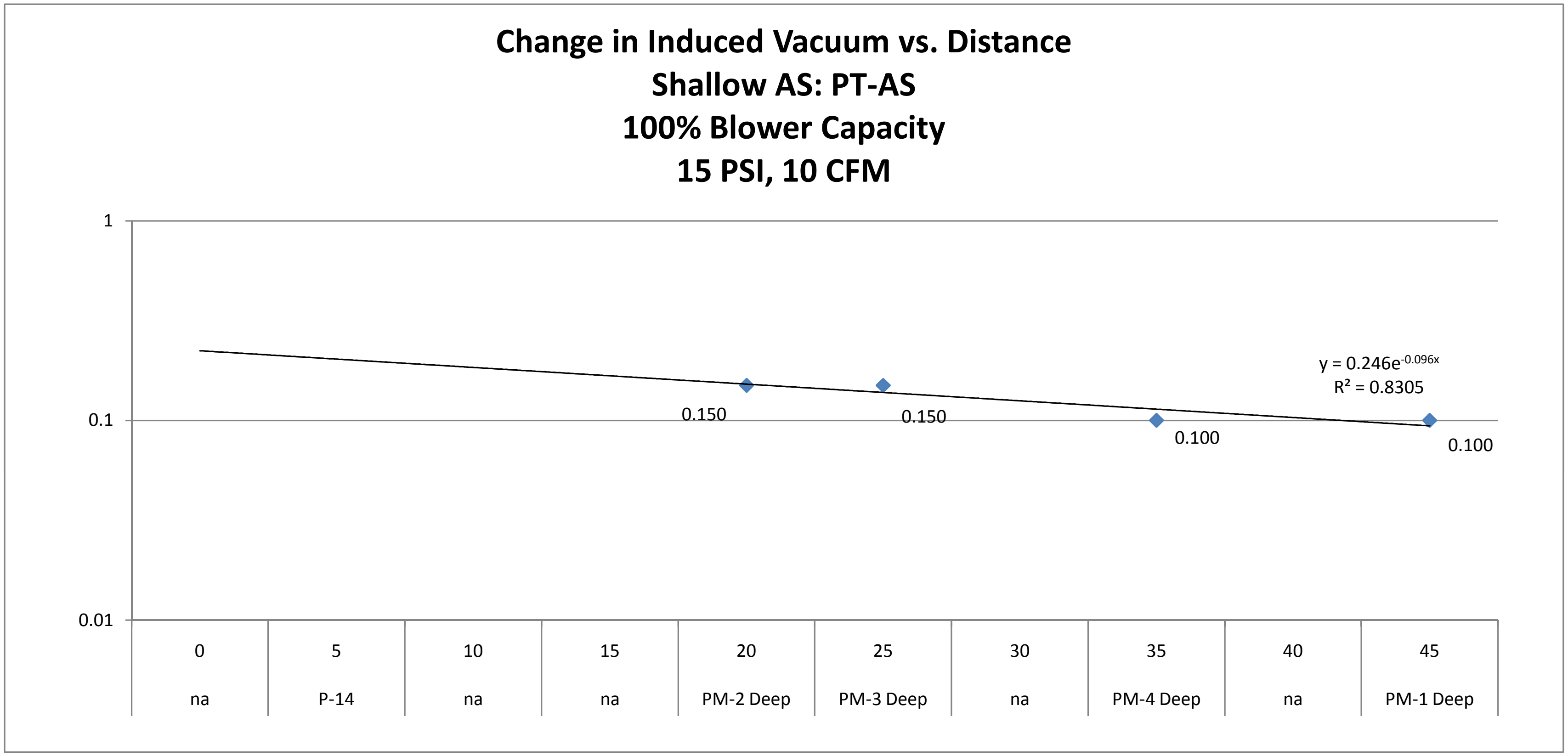
Data from wells with comparable screened intervals

Graph 5
Home Depot - Rego Park
Rego Park - Glendale, New York



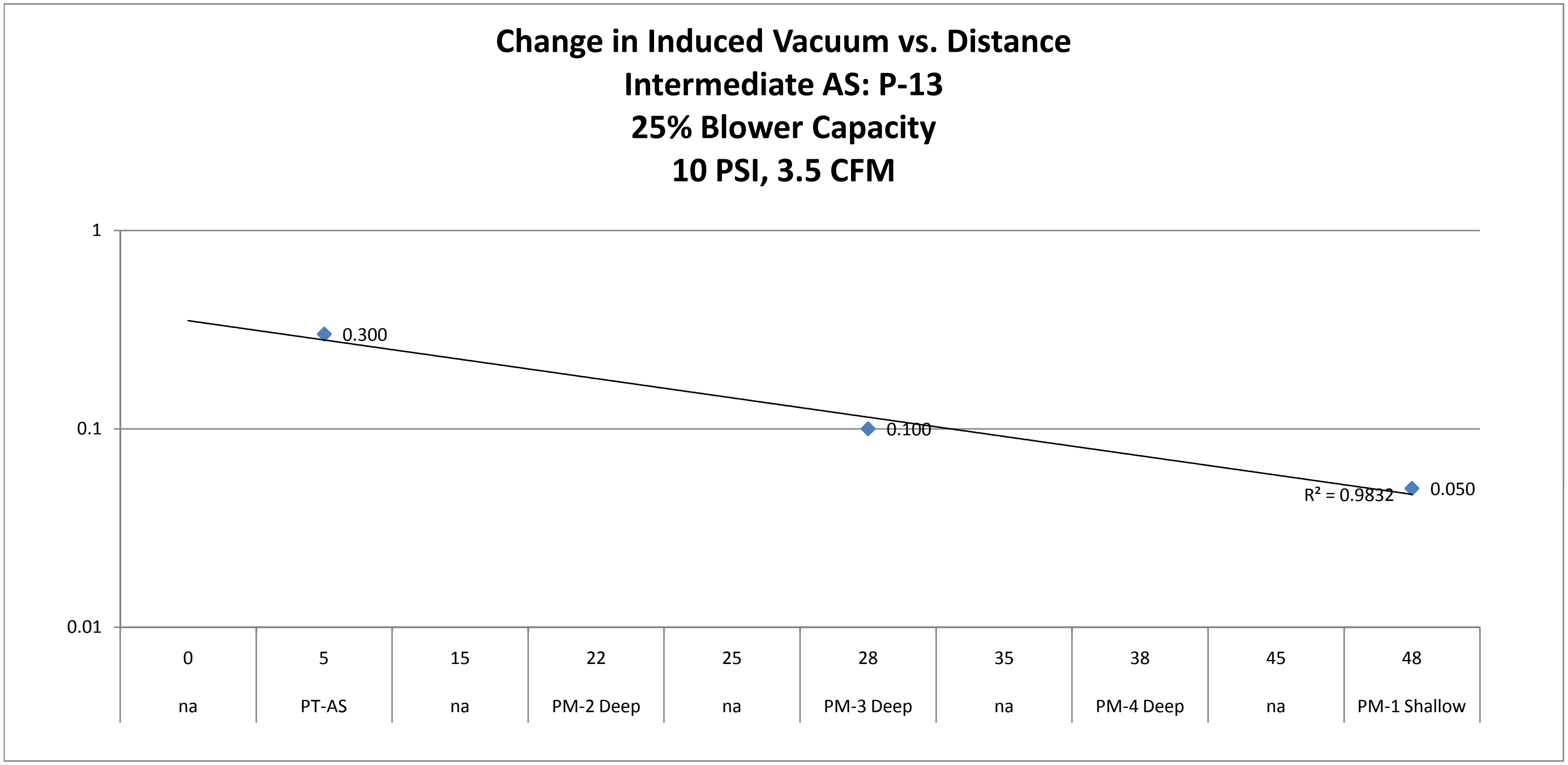
Notes:
Baseline vacuum taken 01/12/2010 - Observed induced vacuum
Data from wells with comparable screened intervals

Graph 6
Home Depot - Rego Park
Rego Park - Glendale, New York



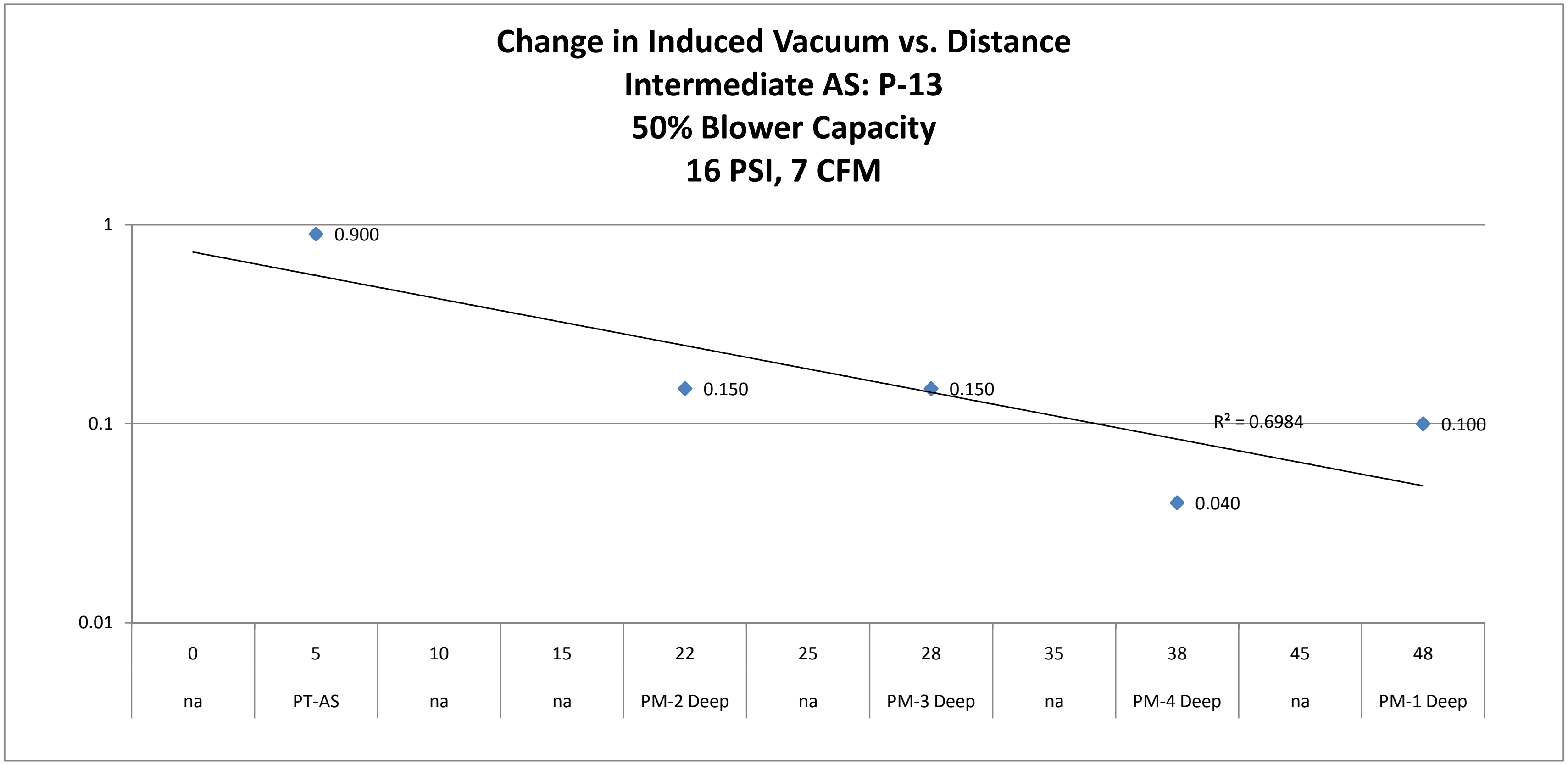
Notes:
Baseline vacuum taken 01/12/2010 - Observed induced vacuum
Data from wells with comparable screened intervals

Graph 7
Home Depot - Rego Park
Rego Park - Glendale, New York



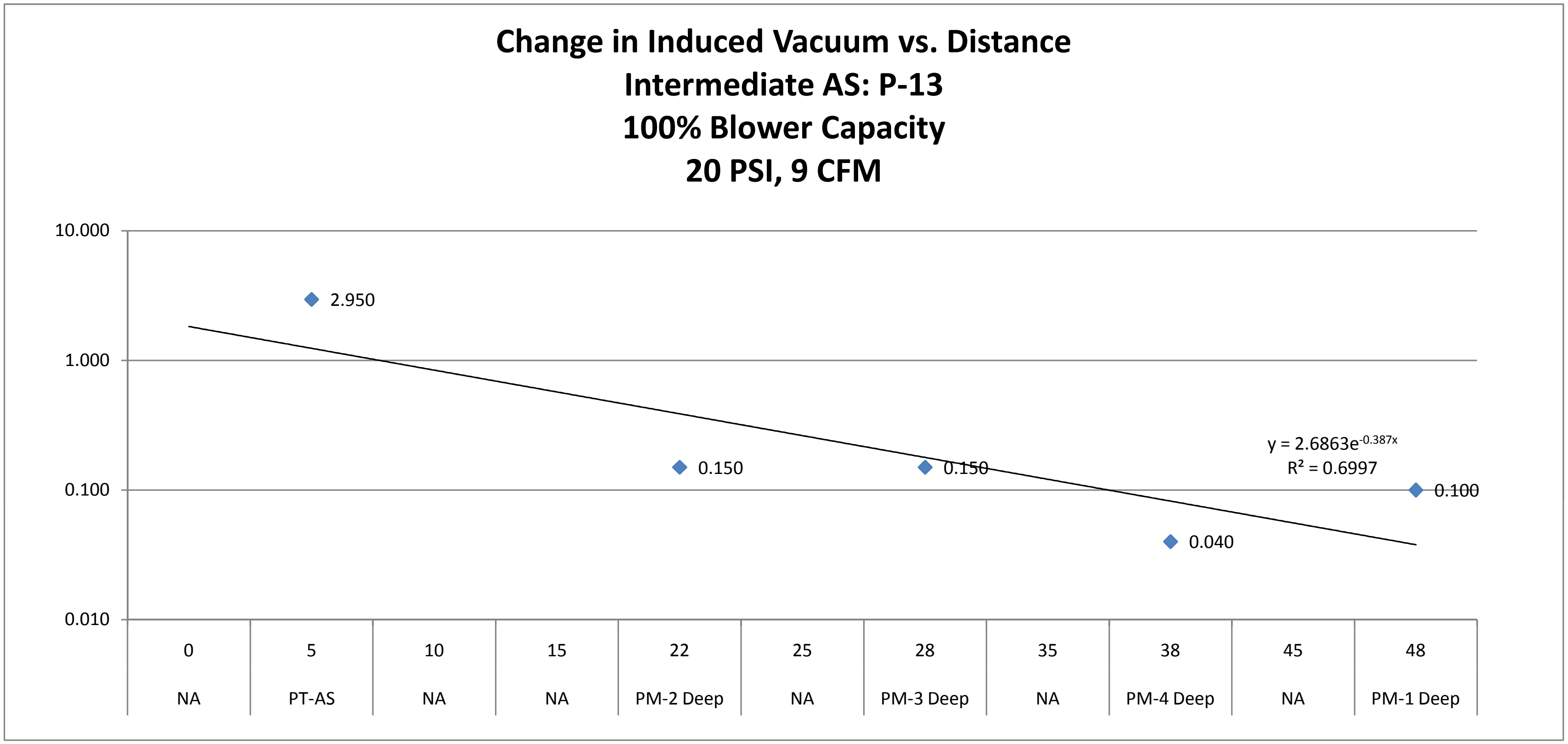
Notes:
Baseline vacuum taken 01/12/2010 - Observed induced vacuum
Data from wells with comparable screened intervals

Graph 8
Home Depot - Rego Park
Rego Park - Glendale, New York



Notes:
Baseline vacuum taken 01/12/2010 - Observed induced vacuum
Data from wells with comparable screened intervals

Graph 9
Home Depot - Rego Park
Rego Park - Glendale, New York

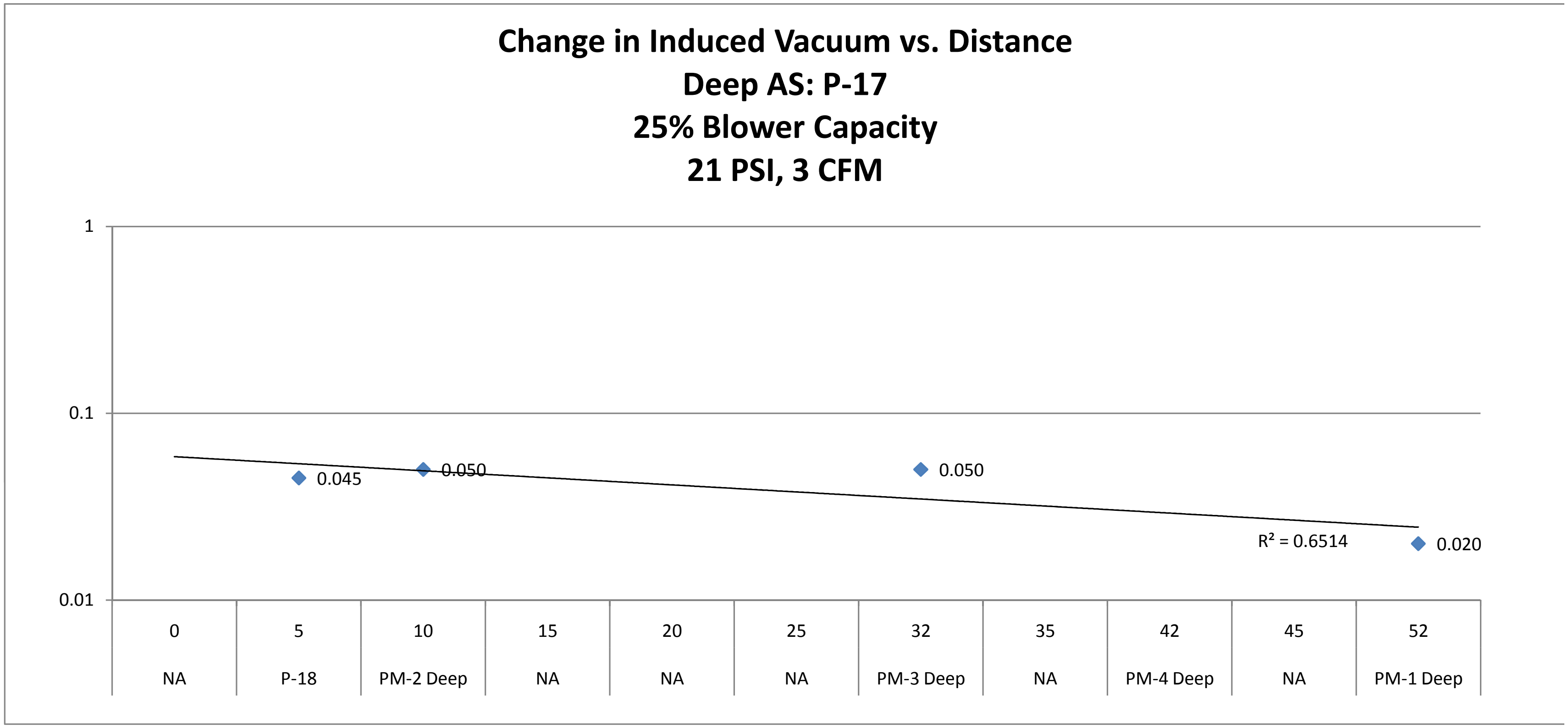


Notes:
Baseline vacuum taken 01/12/2010 - Observed induced vacuum
Data from wells with comparable screened intervals

Graph 10

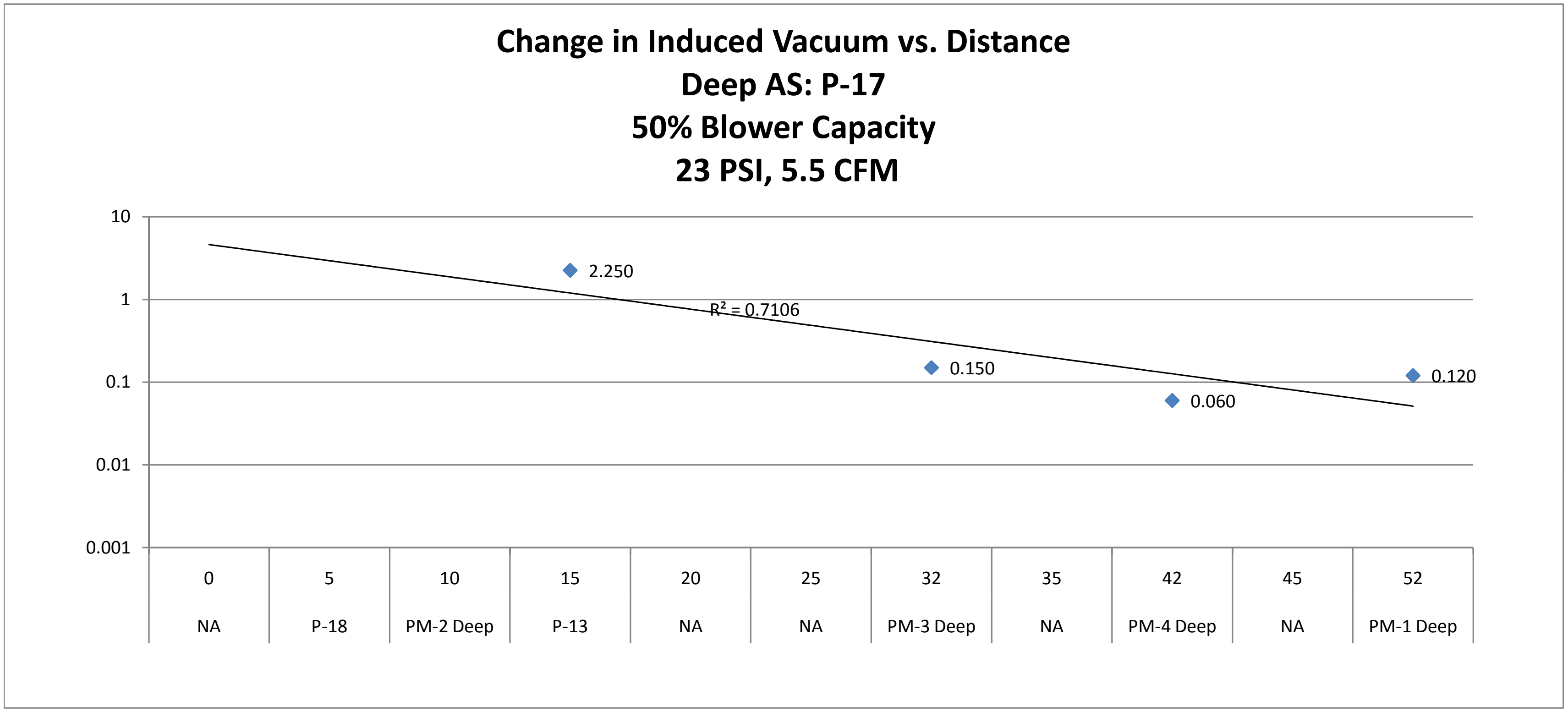
Home Depot - Rego Park

Rego Park - Glendale, New York



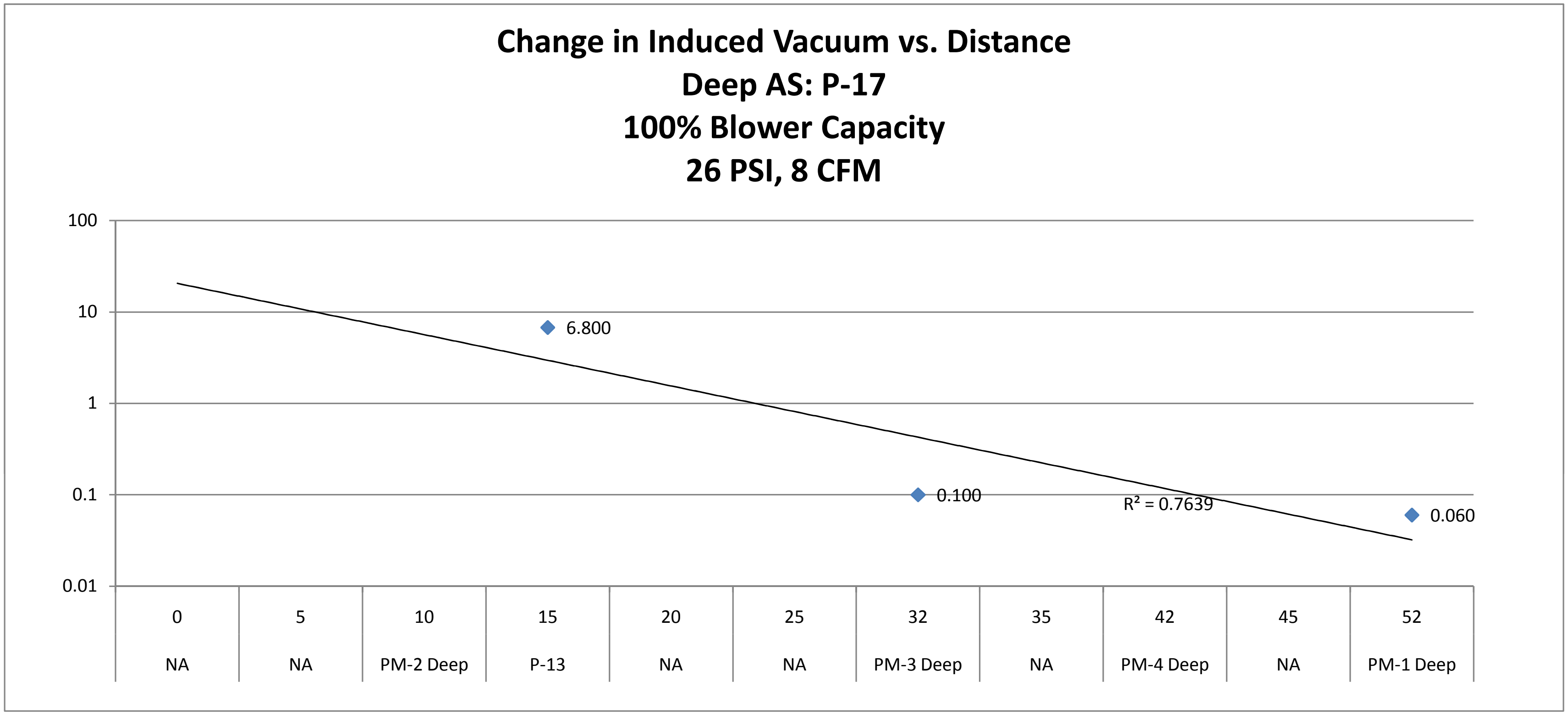
Notes:
Baseline vacuum taken 01/12/2010 - Observed induced vacuum
Data from wells with comparable screened intervals

Graph 11
Home Depot - Rego Park
Rego Park - Glendale, New York



Notes:
Baseline vacuum taken 01/12/2010 - Observed induced vacuum
Data from wells with comparable screened intervals

Graph 12
Home Depot - Rego Park
Rego Park - Glendale, New York



Notes:
Baseline vacuum taken 01/12/2010 - Observed induced vacuum
Data from wells with comparable screened intervals

APPENDIX E
LABORATORY ANALYTICAL RESULTS

Table 1
Home Depot - Rego Park
Rego Park - Glendale, New York
Influent/Effluent Air Sampling Analytical Results
Volatile Organic Compounds

Client ID Lab Sample ID Date Sampled µg/m3	PT-SVE INFLUENT 818153 1/12/2010	PT-SVE EFFLUENT 818154 1/12/2010
1,1,1-Trichloroethane**	54	1.1 U
1,1,2,2-Tetrachloroethane	1.4 U	1.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane	1.5 U	1.5 U
1,1,2-Trichloroethane	1.1 U	1.1 U
1,1-Dichloroethane	0.81 U	0.81 U
1,1-Dichloroethene	1.3	0.79 U
1,2,4-Trichlorobenzene	3.7 U	3.7 U
1,2,4-Trimethylbenzene	0.98 U	0.98 U
1,2-Dibromoethane	1.5 U	1.5 U
1,2-Dichlorobenzene	1.2 U	1.2 U
1,2-Dichloroethane	0.81 U	0.81 U
1,2-Dichloroethene (cis)	0.79 U	0.79 U
1,2-Dichloroethene (trans)	0.79 U	0.79 U
1,2-Dichloroethene,Total	0.79 U	0.79 U
1,2-Dichloropropane	0.92 U	0.92 U
1,2-Dichlorotetrafluoroethane (Freon 114)	1.4 U	1.4 U
1,3,5-Trimethylbenzene	0.98 U	0.98 U
1,3-Butadiene	1.1 U	1.1 U
1,3-Dichlorobenzene	1.2 U	1.2 U
1,3-Dichloropropene (cis)	0.91 U	0.91 U
1,3-Dichloropropene (trans)	0.91 U	0.91 U
1,4-Dichlorobenzene	1.2 U	1.2 U
1,4-Dioxane	18 U	18 U
2,2,4-Trimethylpentane	0.93 U	0.93 U
2-Chlorotoluene (o-Chlorotoluene)	1 U	1 U
3-Chloropropene (allyl chloride)	1.6 U	1.6 U
4-Ethyltoluene (p-Ethyltoluene)	0.98 U	0.98 U
4-Isopropyltoluene	1.1 U	1.1 U
Acetone	12 U	12 U
Benzene	0.64 U	1.3
Benzyl Chloride	1 U	1 U
Bromodichloromethane	1.3 U	1.3 U
Bromoform	2.1 U	2.1 U
Bromomethane (Methyl bromide)	0.78 U	0.78 U
Carbon disulfide	1.6 U	1.6 U
Carbon tetrachloride	1.3 U	1.3 U
Chlorobenzene	0.92 U	0.92 U

Table 1
Home Depot - Rego Park
Rego Park - Glendale, New York
Influent/Effluent Air Sampling Analytical Results
Volatile Organic Compounds

Client ID Lab Sample ID Date Sampled µg/m3	PT-SVE INFLUENT 818153 1/12/2010	PT-SVE EFFLUENT 818154 1/12/2010
Chloroethane (ethyl chloride)	1.3 U	1.3 U
Chloroform	1.3	0.98 U
Chloromethane (Methyl chloride)	1 U	1 U
Cumene	0.98 U	0.98 U
Cyclohexane	0.69 U	0.79
Dibromochloromethane	1.7 U	1.7 U
Dichlorodifluoromethane	2.5 U	2.5 U
Ethylbenzene	0.87 U	0.87 U
Freon-22	3	3.5
Hexachlorobutadiene	2.1 U	2.1 U
Isopropanol	12 U	12 U
Methyl Butyl Ketone	2 U	2 U
Methyl ethyl ketone	1.9	2.1
Methyl isobutyl ketone	2 U	2 U
Methyl methacrylate	2 U	2 U
Methylene Chloride	1.7 U	1.7 U
MTBE (Methyl tert-butyl ether)	1.8 U	1.8 U
Naphthalene	2.6 U	2.6 U
n-Butane	1.2 U	1.2 U
n-Butylbenzene	1.1 U	1.1 U
n-Heptane	0.82 U	0.82 U
n-Hexane	1.8 U	1.8 U
n-Propylbenzene	0.98 U	0.98 U
Sec-Butylbenzene	1.1 U	1.1 U
Styrene	0.85 U	0.85 U
Tert-Butylbenzene	1.1 U	1.1 U
Tertiary butyl alcohol (TBA)	15 U	15 U
Tetrachloroethene (PCE)	130	1.4 U
Tetrahydrofuran	15 U	15 U
Toluene**	27	41
Trichloroethene (TCE)	3.1	1.1 U
Trichlorofluoromethane (Freon 11)	5.6	1.1 U
Vinyl bromide	0.87 U	0.87 U
Vinyl Chloride	0.51 U	0.51 U
Xylene (m&p)	0.87 U	2.1
Xylene (m,p)	1.7 U	2.1
Xylene (o)	0.87 U	0.87 U

Table 2
Home Depot - Rego Park
Rego Park - Glendale, New York
Influent/Effluent Air Sampling Analytical Results
Volatile Organic Compounds

Client ID Lab Sample ID Date Sampled µg/m³	PT-AS INFLUENT 818155 1/13/2010	P-13 INFLUENT 818156 1/14/2010	P-17 INFLUENT 818157 1/15/2010	TRIP BLANK 818158 1/15/2010
1,1,1-Trichloroethane**	50	43	60	1.1 U
1,1,2,2-Tetrachloroethane	1.4 U	1.4 U	1.4 U	1.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane	1.5 U	1.5 U	1.5 U	1.5 U
1,1,2-Trichloroethane	1.1 U	1.1 U	1.1 U	1.1 U
1,1-Dichloroethane	0.81 U	0.81 U	0.81 U	0.81 U
1,1-Dichloroethene	1.7	1.9	3.3	0.79 U
1,2,4-Trichlorobenzene	3.7 U	3.7 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	0.98 U	0.98 U	2	0.98 U
1,2-Dibromoethane	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichlorobenzene	1.2 U	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	0.81 U	0.81 U	0.81 U	0.81 U
1,2-Dichloroethene (cis)	0.79 U	0.79 U	0.79 U	0.79 U
1,2-Dichloroethene (trans)	0.79 U	0.79 U	1.8	0.79 U
1,2-Dichloroethene,Total	0.79 U	0.79 U	1.8	0.79 U
1,2-Dichloropropane	0.92 U	0.92 U	0.92 U	0.92 U
1,2-Dichlorotetrafluoroethane (Freon 114)	1.4 U	1.4 U	1.4 U	1.4 U
1,3,5-Trimethylbenzene	0.98 U	0.98 U	0.98 U	0.98 U
1,3-Butadiene	1.1 U	1.1 U	1.1 U	1.1 U
1,3-Dichlorobenzene	1.2 U	1.2 U	1.2 U	1.2 U
1,3-Dichloropropene (cis)	0.91 U	0.91 U	0.91 U	0.91 U
1,3-Dichloropropene (trans)	0.91 U	0.91 U	0.91 U	0.91 U
1,4-Dichlorobenzene	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dioxane	18 U	18 U	18 U	18 U
2,2,4-Trimethylpentane	0.93 U	0.93 U	0.93 U	0.93 U
2-Chlorotoluene (o-Chlorotoluene)	1 U	1 U	1 U	1 U
3-Chloropropene (allyl chloride)	1.6 U	1.6 U	1.6 U	1.6 U
4-Ethyltoluene (p-Ethyltoluene)	0.98 U	0.98 U	0.98 U	0.98 U
4-Isopropyltoluene	1.1 U	1.1 U	1.1 U	1.1 U
Acetone	12 U	18	17	12 U
Benzene	0.83	1.4	0.64	0.64 U
Benzyl Chloride	1 U	1 U	1 U	1 U
Bromodichloromethane	1.3 U	1.3 U	1.3 U	1.3 U
Bromoform	2.1 U	2.1 U	2.1 U	2.1 U
Bromomethane (Methyl bromide)	0.78 U	0.78 U	0.78 U	0.78 U
Carbon disulfide	1.6 U	1.6 U	1.6 U	1.6 U
Carbon tetrachloride	1.3 U	1.3 U	1.3 U	1.3 U
Chlorobenzene	0.92 U	0.92 U	0.92 U	0.92 U

Table 2
Home Depot - Rego Park
Rego Park - Glendale, New York
Influent/Effluent Air Sampling Analytical Results
Volatile Organic Compounds

Client ID Lab Sample ID Date Sampled µg/m³	PT-AS INFLUENT 818155 1/13/2010	P-13 INFLUENT 818156 1/14/2010	P-17 INFLUENT 818157 1/15/2010	TRIP BLANK 818158 1/15/2010
Chloroethane (ethyl chloride)	1.3 U	1.3 U	1.3 U	1.3 U
Chloroform	1.1	0.98 U	0.98 U	0.98 U
Chloromethane (Methyl chloride)	1 U	1 U	1 U	1 U
Cumene	0.98 U	0.98 U	0.98 U	0.98 U
Cyclohexane	3.8	4.1	1.4	0.69 U
Dibromochloromethane	1.7 U	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	2.5 U	2.5 U	2.5 U	2.5 U
Ethylbenzene	0.87 U	0.87	1.4	0.87 U
Freon-22	2.8	2.2	2	1.8 U
Hexachlorobutadiene	2.1 U	2.1 U	2.1 U	2.1 U
Isopropanol	12 U	12 U	12 U	12 U
Methyl Butyl Ketone	2 U	2 U	2 U	2 U
Methyl ethyl ketone	2.7	5.3	6.8	1.5 U
Methyl isobutyl ketone	2 U	2 U	2 U	2 U
Methyl methacrylate	2 U	2 U	2 U	2 U
Methylene Chloride	1.7 U	1.7 U	1.7 U	1.7 U
MTBE (Methyl tert-butyl ether)	1.8 U	1.8 U	1.8 U	1.8 U
Naphthalene	2.6 U	2.6 U	2.6 U	2.6 U
n-Butane	1.6	1.6	1.2 U	1.2 U
n-Butylbenzene	1.1 U	1.1 U	1.1 U	1.1 U
n-Heptane	1.3	1.5	0.82 U	0.82 U
n-Hexane	1.8 U	1.8 U	1.8 U	1.8 U
n-Propylbenzene	0.98 U	0.98 U	0.98 U	0.98 U
Sec-Butylbenzene	1.1 U	1.1 U	1.1 U	1.1 U
Styrene	0.85 U	0.85 U	0.85 U	0.85 U
Tert-Butylbenzene	1.1 U	1.1 U	1.1 U	1.1 U
Tertiary butyl alcohol (TBA)	15 U	15 U	15 U	15 U
Tetrachloroethene (PCE)	120	75	160	1.4 U
Tetrahydrofuran	15 U	15 U	15 U	15 U
Toluene**	5.7	6.8	5.3	0.75 U
Trichloroethene (TCE)	2.6	2	4.3	1.1 U
Trichlorofluoromethane (Freon 11)	5.1	4.8	5.6	1.1 U
Vinyl bromide	0.87 U	0.87 U	0.87 U	0.87 U
Vinyl Chloride	0.51 U	0.51 U	0.51 U	0.51 U
Xylene (m&p)	0.87 U	2.3	6.1	0.87 U
Xylene (m,p)	1.7 U	2.4	4.3	1.7 U
Xylene (o)	0.87 U	0.87 U	1.7	0.87 U

GENERAL

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

µg/m^3 : micrograms per cubic meter of air

Exceedences are highlighted in bold font.

See Figure 3 for monitoring well locations.

APPENDIX F
VOC MASS LOADING SAMPLE CALCULATION

Home Depot – Rego Park
Rego Park – Glendale, New York

VOC Mass Loading Sample Calculation

<u>*Mass Loading*</u>

Total VOC concentration= **3,000μg/m^3**

VOC emissions per year (given *flow rate*= 300 f^3/min)=

[3000 (μg/m^3)]x[300 (f^3/min)]x[0.027826 (m^3/f^3)]x[1x10^{-6} (g/μg)]x[1x10^{-3} (kg/g)]x[2.2 (lbs/kg)]x

[60 (min/hr)]x[24 (hr/day)]x[365 (days/year)] = **28.95 (lbs/year)**

VOC emissions per month = **2.41 (lbs/month)**

<u>*GAC Sizing Assumptions*</u>

10% Safety factor

10% VOC loading

GAC use per month= [2.41 (lbs/month)]x[(1+10%)/10%]

= **241.0 (lbs. carbon/month)**

APPENDIX G
HEALTH AND SAFETY PLAN

Home Depot – Rego Park

REGO PARK - GLENDALE, NEW YORK

Revised Health and Safety Plan

NYSDEC VCP Site No. V00095

AKRF Project Number: 03399

Prepared for:

Home Depot, U.S.A., Inc.
3096 Hamilton Boulevard
South Plainfield, NJ 07080

Prepared by:

AKRF, Inc.
440 Park Avenue South, 7th Floor
New York, NY 10016
212-696-0670

APRIL 2010

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1.0 INTRODUCTION

The Home Depot - Rego Park Voluntary Cleanup Program site is located at 75-09 Woodhaven Boulevard in the Rego Park–Glendale section of Queens, New York. The Home Depot building is a single-story slab-on-grade structure with public access on the north side, a loading dock near the southwestern corner, and a garden center on the west side. The Site is bounded on the west by the Woodhaven Boulevard service road, on the south by active tracks of the Long Island Railroad, and on the east by an abandoned former railroad embankment, beyond which is a school currently under construction. Commercial properties are located north-adjacent to the Site. Across the railroad tracks to the south of the Site is a baseball field with associated parking area and concession stand; further to the south is a residential area.

The major contaminant of concern identified on the Site is tetrachloroethene (PCE). The site was historically occupied by two parcels occupied by warehouses. PCE contamination in soil and groundwater was discovered during due diligence studies prior to acquisition of the property by Home Depot U.S.A., Inc., and confirmed by supplemental groundwater sampling in 2003 – 2005. Two areas of elevated PCE in groundwater were detected in the western and southwestern areas of the site, and an air sparging / soil vapor extraction s(A/SVE) system was installed in these locations.

This environmental Health and Safety Plan (HASP) has been developed for implementation of the AS/SVE Expansion Work Plan, which details the extension of the existing AS/SVE system the downgradient boundary of the site and to address deeper contamination in the source area in the southwestern corner of the site.

This HASP applies to subsurface activities conducted by all personnel on-site, both AKRF employees and others. This HASP does not discuss other routine health and safety issues common to general construction/excavation, including but not limited to slips, trips, falls, shoring, and other physical hazards.

All AKRF employees are directed that all work must be performed in accordance with the Company's Generic HASP and all OSHA applicable regulations for the work activities required for the project. All project personnel are furthermore directed that they are not permitted to enter Permit Required Confined Spaces (as defined by OSHA). For issues unrelated to contaminated materials, all non-AKRF employees are to be bound by all applicable OSHA regulations as well as any more stringent requirements specified by their employer in their corporate HASP or otherwise. AKRF is not responsible for providing oversight for issues unrelated to contaminated materials for non-employees. This oversight shall be the responsibility of the employer of that worker or other official designated by that employer.

2.0 HEALTH AND SAFETY GUIDELINES AND PROCEDURES

2.1 Hazard Evaluation

2.1.1 Hazards of Concern

Check all that apply		
(**X**) Organic Chemicals	( ) Inorganic Chemicals	( ) Radiological
( ) Biological	( ) Explosive/Flammable	( ) Oxygen Deficient Atm
( ) Heat Stress	( ) Cold Stress	( ) Carbon Monoxide
Comments: No personnel are permitted to enter permit confined spaces.		

2.1.2 Physical Characteristics

Check all that apply		
(**X**) Liquid	(**X**) Solid	( ) Sludge
(**X**) Vapors	( ) Unknown	( ) Other
Comments:		

2.1.3 Hazardous Materials

Check all that apply					
Chemicals	**Solids**	**Sludges**	**Solvents**	**Oils**	**Other**
( ) Acids	( ) Ash	( ) Paints	( ) Halogens	( ) Transformer	( ) Lab
( ) Caustics	( ) Asbestos	( ) Metals	( ) Petroleum	( ) Other DF	( ) Pharm
( ) Pesticides	( ) Tailings	( ) POTW	( ) Other	( ) Motor or Hydraulic Oil	( ) Hospital
( ) Petroleum	( ) Other	( ) Other		( ) Gasoline	( ) Rad
( ) Inks				( ) Fuel Oil	( ) MGP
( ) PCBs					( ) Mold
( ) Metals					( ) Cyanide
(X)Other: VOCs & SVOCs					

2.1.4 Chemicals of Concern

Chemicals	REL/PEL/STEL (ppm)	Health Hazards
Tetrachloroethene	PEL = 100 ppm Ceiling = 200 ppm Five minute max peak in any 3 hours = 300 ppm	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.
Trichloroethene	PEL = 100 ppm Ceiling = 200 ppm Five minute max peak in any 3 hours = 300 ppm	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. 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.
Comments: REL = NIOSH Recommended Exposure Limit PEL = OSHA Permissible Exposure Limit STEL = OSHA Short Term Exposure Limit		

2.2 Designated Personnel

AKRF will appoint one of its on-site personnel as the Site Safety Officer (SSO). This individual will be responsible for the implementation of the HASP. The SSO will have a college degree in occupational safety or a related science/engineering field, and experience in implementation of air monitoring and hazardous materials sampling programs. Health and safety training required for the SSO and all field personnel is outlined in Section 2.3 of this HASP.

2.3 Training

All personnel who enter the work area while 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. In addition, all personnel will have up-to-date 8-hour refresher training. The training will allow personnel to 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 these objectives before he/she goes onto the site. A site safety meeting will be conducted at the start of the project. Additional meetings shall be conducted, as necessary, for new personnel working at the site.

2.4 Medical Surveillance Program

All AKRF and subcontractor personnel performing field work involving subsurface disturbance at the site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). A physician's medical release for work will be confirmed by the SSO before an employee can begin site activities. The medical release shall consider the type of work to be performed and the required PPE. The medical examination will, at a minimum, be provided annually and upon termination of hazardous waste site work.

2.5 Site Work Zones

During any activities involving 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 exposure to impacted media could be encountered. The Contamination Reduction Zone (CRZ) is the area where decontamination procedures take place and is located next to the Exclusion Zone. The Support is the zone area where support facilities such as vehicles, 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. A summary of these areas is provided below. These zones may changed by SSO, depending on that day's activities. All field personnel will be informed of the location of these zones before work begins.

Task	Exclusion Zone	CRZ	Support Zone
Well Drilling	10 ft from Borehole	25 ft from Borehole	As Needed
Trench Excavation and Pipe Installation	10 ft from Open Excavation	25 ft from Open Excavation	As Needed
Comments: Control measures such as "caution tape" and/or traffic cones will be placed around the perimeter of the exclusion zone work area when work is being done in a public area.			

2.6 Air Monitoring

The purpose of the air monitoring program is to identify any exposure of the field personnel 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.

An organic vapor meter [OVM – or photoionization detector (PID)] will be used to perform air monitoring during soil disturbance activities to determine airborne levels of total VOCs. The PID will be calibrated daily with a 100 ppm isobutylene standard.

A particulate monitor will be used to measure airborne levels of respirable particulates less than 10 microns in size (PM_{10}). The particulate monitor will be zeroed daily and used in accordance with the manufacturer's specifications. Real time continuous air monitoring will be performed with the OVM and particulate monitor during activities that will disturb potentially contaminated soil.

2.6.1 Work Zone Air Monitoring

Work zone measurements will be taken prior to commencement of work and continuously during the work as outlined in the table below. Measurements will be made as close to the workers as practical and at the breathing height of the workers. The SSO will 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 in the following table.

Instrument	Task to be Monitored	Action Level (15-min TWA)	Response Action
PID (OVM 580B or equivalent)	All tasks disturbing potentially contaminated soil	Less than 10 ppm in breathing zone.	Level D or D-Modified
		Between 10 and 500 ppm	Level C Perform perimeter community air monitoring (Sec. 2.6.2)
		More than 500 ppm	Stop work. Resume work when readings are less than 500 ppm.
Particulate monitor	All tasks disturbing potentially contaminated soil	Less than 5 mg/m^3	Level D
		Between 5 mg/m^3 and 125 mg/m^3	Level C. Apply additional dust suppression measures. If < 2.5 mg/m^3, resume work using Level D. Otherwise, use Level C. Perform community air monitoring (Sec. 2.6.2)
		Above 125 mg/m3	Stop work. Apply additional dust suppression measures. Resume work when less than 125 mg/m^3. Perform community air monitoring (Sec. 2.6.2)
Notes: 1 – 15-minute time-weighted average mg/m^3 = milligrams per cubic meter ppm = parts per million			

2.6.2 Community Air Monitoring

At the start of work, air monitoring stations will be established upwind of the work activities and at the downwind perimeter of the work zone. Monitoring for VOCs and PM_{10} at the upwind and downwind stations will be conducted at the start of each workday where potentially contaminated soil is disturbed, and every time the wind direction changes.

If during the continuous work zone air monitoring detailed in Sections 2.6.1 above, any air monitoring readings in the work zone reach the community action levels, then monitoring at the downwind site perimeter station will be conducted. If no exceedances of the community action levels are noted at the downwind perimeter station at this time, then community air monitoring can stop and work zone air monitoring will recommence.

Background readings and any readings that trigger response actions will be recorded in the project logbook, which will be available on-site for NYSDEC or NYSDOH review. If exceedances in the community action levels at the downwind perimeter station are noted, additional control measures will be immediately implemented, and continuous monitoring at the downwind perimeter station will be conducted until any exceedance is corrected and air monitoring levels are re-established at the background conditions. Any exceedances of community air monitoring action levels and the corrective actions taken will be detailed in an email to the project managers for NYSDEC and NYSDOH.

Instrument	Task to be Monitored	Action Level (Note 1)	Response Action
PID	When work zone action levels exceeded	Less than 5 ppm above background at downwind perimeter.	Continue work
		Between 5 and 25 ppm above background at downwind perimeter.	**Stop work** and continue monitoring. Apply vapor suppression measures. If organic vapor levels (instantaneous reading) steadily decrease to <5 ppm, resume work. If organic vapor levels persists at >5 ppm, identify source and take steps to abate emissions. Work can resume if 15-minute average of VOCs <5 ppm 200 feet downwind of work zone or half the distance to the nearest potential receptor, whichever is closer.
		More than 25 ppm above background at downwind perimeter.	**Shut down job**. Apply additional vapor suppression measures. Resume work when perimeter readings are less than 5 ppm above background at downwind perimeter.
Particulate monitor	When work zone action levels exceeded	Less than 0.1 mg/m^3 above background (upwind perimeter) at downwind perimeter.	Continue work.
		Between 0.1 mg/m^3 and 0.15 mg/m^3 above background (upwind perimeter) at downwind perimeter.	Apply additional dust suppression measures. Work can continue provided downwind PM_{10} particulate levels do not exceed 150 mg/m^3 above background levels and no visible dust is migrating from the work area.
		Greater than 0.15 mg/m^3 above background (upwind perimeter) at downwind perimeter after dust suppression.	**Stop work**. Apply additional dust suppression measures. Resume work when less than 0.15 mg/m^3 above background levels and no visible dust is migrating from the work area.
Notes: 1 – 15-minute time-weighted average mg/m^3 = milligrams per cubic meter ppm = parts per million			

2.7 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, at a minimum, Level D personal protective equipment. The protection will be based on the air monitoring described in Section 2.6.

LEVEL OF PROTECTION & PPE		Tasks
Level D (x) Steel Toe Shoes (x) Hard Hat (within 25 ft of drill rig/excavator) (x) Work Gloves	(x) Safety Glasses ( ) Face Shield (x) Ear Plugs (within 25 ft of drill rig/excavator) (x) Latex Gloves	Potential contact with suspected contaminated materials
Level D – Modified *(in addition to Level D)* (x) Tyvek Coveralls ( ) Saranex Coveralls	(x) Nitrile Gloves ( ) Overboots	Potential contact with NAPL or soil with elevated PCE
Level C *(in addition to Level D – Modified)* ( ) Half-Face Respirator (x) Full Face Respirator ( ) Full-Face PAPR	( ) Particulate Cartridge ( ) Organic Cartridge (x) Dual Organic/Particulate Cartridge	If PID > 10 ppm or particulate > 5 mg/m^3 in breathing zone
Notes: Cartridges to be changed out at least once per shift unless warranted beforehand (e.g., more difficult to breathe or any odors detected).		

2.8 General Work Practices

To protect the health and safety of the field personnel, 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 SSO.
- Workers must wash their hands 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.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat/cold stress.

3.0 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 SSO 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 be driven to a hospital by on-site personnel. Directions to the hospital are provided below, and a hospital route map is attached.

3.1 Hospital Directions

Hospital Name:	North Shore University Hospital – Forest Hills
Phone Number:	(718) 830-4200
Address/Location:	102-01 66th Road, Forest Hills, NY (66th Road between 102nd Street and 103rd Street)
Directions:	Go WEST on *73rd Avenue* toward *Woodhaven Boulevard* RIGHT onto *Woodhaven Boulevard* SLIGHT RIGHT onto *Yellowstone Boulevard* LEFT onto *66th Road* The hospital will be on the right.

Emergency Contacts

Company	Individual Name	Title	Contact Number
AKRF	Marc Godick	Project Director	914-922-2356 (office)
	Kate Brunner	Project Manger	917-612-3990 (cell)
	Steve Grens	SSO	917-613-6022 (cell)
The Home Depot	Terri Brophy	Project Manager	781-956-7785 (cell)
Ambulance, Fire Department & Police Department	-	-	911
NYSDEC Spill Hotline	-	-	800-457-7362

APPROVAL & ACKNOWLEDGMENTS OF HASP

APPROVAL

Signed: ______________________________ Date: ______________________________

AKRF Project Manager

Signed: ______________________________ Date: ______________________________

AKRF Health and Safety Officer

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 SSO.

AFFIDAVIT

I,________________________(name), of______________________________(company name), have read the Health and Safety Plan (HASP) for the Home Depot - Rego Park site. 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: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

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Signed: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

Signed: ______________________ Company: ____________________ Date: ________

AFFIDAVIT

I,__________________________(name), of_________________________________(company name), have read the Health and Safety Plan (HASP) for the Home Depot Rego Park, NY site. 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:	____________________________	Company:	_________________________	Date:	__________
Signed:	____________________________	Company:	_________________________	Date:	__________
Signed:	____________________________	Company:	_________________________	Date:	__________
Signed:	____________________________	Company:	_________________________	Date:	__________
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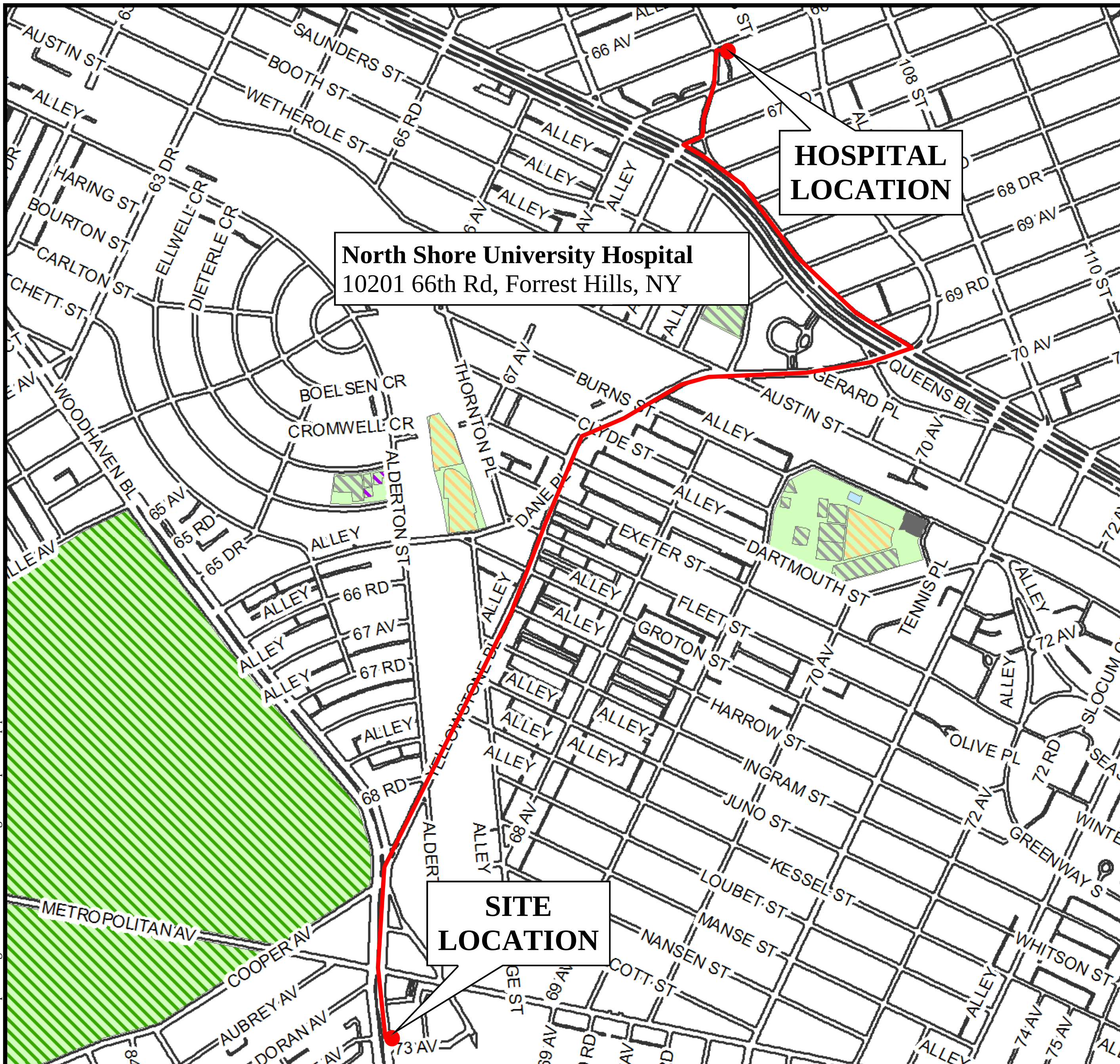
Signed:	____________________________	Company:	_________________________	Date:	__________
Signed:	____________________________	Company:	_________________________	Date:	__________
Signed:	____________________________	Company:	_________________________	Date:	__________
Signed:	____________________________	Company:	_________________________	Date:	__________

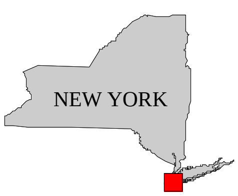
FIGURES



SCALE IN FEET

0' 500' 1000' 2000'

SCALE: 1"=1000'



N

HOME DEPOT—REGO PARK
REGO PARK, NEW YORK

HOSPITAL LOCATION MAP

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

DATE
02.02.08

PROJECT No.
03399

SCALE
AS SHOWN

FIGURE

APPENDIX A

POTENTIAL HEALTH EFFECTS FROM ON-SITE CONTAMINANTS

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.

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.

TETRACHLOROETHYLENE

CAS # 127-18-4

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

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 tetrachloroethylene 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.

APPENDIX B

REPORT FORMS

WEEKLY SAFETY REPORT FORM

Week Ending: ______________ Project Name/Number: ______________________________

Report Date: ______________ Project Manager Name: ______________________________

Summary of any violations of procedures occurring that week:

____

____

____

Summary of any job related injuries, illnesses, or near misses that week:

____

____

____

____

Summary of air monitoring data that week (include and sample analyses, action levels exceeded, and actions taken):

____

____

____

Comments:

____

____

____

Name: _________________________ Company: ______________________________

Signature: _________________________ Title: ______________________________

INCIDENT REPORT FORM

Date of Report: ____________________

Injured: ____________________

Employer: ____________________

Site: ____________________ Site Location: ____________________

Report Prepared By: ____________________ ____________________
Signature Title

ACCIDENT/INCIDENT CATEGORY (check all that applies)

___Injury	___ Illness	___ Near Miss
__ Property Damage	___ Fire	___ Chemical Exposure
__ On-site Equipment	___ Motor Vehicle	___ Electrical
__ Mechanical	___ Spill	___ Other

DATE AND TIME OF ACCIDENT/INCIDENT: Narrative report of Accident/Incident: Identify: 1) actions leading to or contributing to the accident/incident; 2) the accident/incident occurrence; and 3) actions following the accident/incident.

____
____
____
____
____
____
____
____
____
____

WITNESS TO ACCIDENT/INCIDENT:

Name:	____________________	Company:	____________________
Address:	____________________	Address:	____________________
Phone No.:	____________________	Phone No.:	____________________
Name:	____________________	Company:	____________________
Address:	____________________	Address:	____________________
Phone No.:	____________________	Phone No.:	____________________

INJURED - ILL:

Name: ____________________ SSN: ____________________

Address: ____________________ Age: ____________________

Length of Service: ____________________ Time on Present Job: ____________________

Time/Classification: ____________________

SEVERITY OF INJURY OR ILLNESS:

____ Disabling ___ Non-disabling ___ Fatality

____ Medical Treatment ___ First Aid Only

ESTIMATED NUMBER OF DAYS AWAY FROM JOB: ____________________

NATURE OF INJURY OR ILLNESS: ____________________

____

____

CLASSIFICATION OF INJURY:

__ Abrasions ______ Dislocations ____ Punctures

__ Bites ______ Faint/Dizziness ____ Radiation Burns

__ Blisters ______ Fractures ____ Respiratory Allergy

__ Bruises ______ Frostbite ____ Sprains

__ Chemical Burns ______ Heat Burns ____ Toxic Resp. Exposure

__ Cold Exposure ______ Heat Exhaustion ____ Toxic Ingestion

__ Concussion ______ Heat Stroke ____ Dermal Allergy

__ Lacerations

Part of Body Affected: ____________________

Degree of Disability: ____________________

Date Medical Care was Received: ____________________

Where Medical Care was Received: ____________________

Address (if off-site): ____________________

(If two or more injuries, record on separate sheets)

PROPERTY DAMAGE:

Description of Damage: ______________________________

____

Cost of Damage: $ ______________________________

ACCIDENT/INCIDENT LOCATION: ______________________________

ACCIDENT/INCIDENT ANALYSIS: Causative agent most directly related to accident/incident (Object, substance, material, machinery, equipment, conditions)

____

____

____

____

Was weather a factor?:______________________________

____

Unsafe mechanical/physical/environmental condition at time of accident/incident (Be specific):

____

____

____

Personal factors (Attitude, knowledge or skill, reaction time, fatigue):

____

____

ON-SITE ACCIDENTS/INCIDENTS:

Level of personal protection equipment required in Site Safety Plan:

____

____

Modifications:

____

Was injured using required equipment?:

____

____

If not, how did actual equipment use differ from plan?:

____

____

ACTION TAKEN TO PREVENT RECURRENCE: (Be specific. What has or will be done? When will it be done? Who is the responsible party to insure that the correction is made?

____

____

____

____

____

ACCIDENT/INCIDENT REPORT REVIEWED BY:

______________________	______________________
SSO Name Printed	SSO Signature

OTHERS PARTICIPATING IN INVESTIGATION:

______________________	______________________
Signature	Title
______________________	______________________
Signature	Title
______________________	______________________
Signature	Title

ACCIDENT/INCIDENT FOLLOW-UP: Date: ______________________

Outcome of accident/incident: ______________________

____

____

____

Physician's recommendations: ______________________

____

____

____

Date injured returned to work: ______________________

Follow-up performed by:

______________________	______________________
Signature	Title

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

APPENDIX C

EMERGENCY HAND SIGNALS

EMERGENCY SIGNALS

In most cases, field personnel will carry portable radios for communication. If this is the case, a transmission that indicates an emergency will take priority over all other transmissions. All other site radios will yield the frequency to the emergency transmissions.

Where radio communications is not available, the following air-horn and/or hand signals will be used:

EMERGENCY HAND SIGNALS

OUT OF AIR, CAN'T BREATH!

Hand gripping throat

LEAVE AREA IMMEDIATELY, NO DEBATE!

(No Picture) Grip partner's wrist or place both hands around waist

NEED ASSISTANCE!

Hands on top of head

OKAY! – I'M ALL RIGHT!

- I UNDERSTAND!

Thumbs up

NO! - NEGATIVE!

Thumbs down

APPENDIX H
QUALITY ASSURANCE PROJECT PLAN

Home Depot – Rego Park

REGO PARK - GLENDALE, NEW YORK

Revised Quality Assurance Project Plan

NYSDEC VCP Site No. V00095

AKRF Project Number: 03399

Prepared for:

Home Depot U.S.A., Inc.
3096 Hamilton Boulevard
South Plainfield, NJ 07080

Prepared by:

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

APRIL 2010

TABLE OF CONTENTS

TABLES

ATTACHMENTS

INTRODUCTION

This Quality Assurance Project Plan (QAPP) describes the protocols and procedures that will be followed during drilling and installation for expansion to the air sparging (AS)/soil vapor extraction (SVE) system at the Home Depot – Rego Park site in the Rego Park – Glendale section of Queens, New York. The objective of the QAPP is to provide for Quality Assurance (QA) and maintain Quality Control (QC) of environmental investigative, sampling and remedial activities conducted under the Revised AS/SVE Expansion Work Plan. Adherence to the QAPP will ensure that defensible data will be obtained during performance of the work.

PROJECT TEAM

The project team will be drawn from AKRF professional and technical personnel and AKRF's subcontractors. All field personnel and subcontractors will have completed a 40-hour training course and updated 8-hour refresher course that meet the Occupational Safety and Health Administration (OSHA) requirements of 29 CFR Part 1910. The following sections describe the key project personnel and their responsibilities.

Project Director

The project director will be responsible for the general oversight of all aspects of the project, including scheduling, budgeting, data management and decision-making regarding the field program. The project director will communicate regularly with all members of the AKRF project team, the New York State Department of Environmental Conservation (NYSDEC), and Home Depot U.S.A., Inc. to ensure a smooth flow of information between involved parties. Marc Godick, LEP, will serve as the project director for the project. Mr. Godick's resume is included in Attachment A.

Project Manager

The project manager will be responsible for directing and coordinating all elements of the Pilot Test Work Plan. The project manager will prepare reports and participate in meetings with Home Depot U.S.A., Inc. and/or the NYSDEC. Kathleen Brunner will serve as the project manager for the AS/SVE expansion activities. Ms. Brunner's resume is included in Attachment A.

Field Team Leader

The field team leader will be responsible for supervising the daily activities, including health and safety activities, in the field and will ensure adherence to the Work Plans and HASP. He will report to the Project Manager on a regular basis regarding daily progress and any deviations from the Work Plan. The field team leader will be a qualified, responsible person, able to act professionally and promptly during soil disturbing activities. It is anticipated that Stephen Grens will serve as the field team leader for the AS/SVE expansion activities. Mr. Grens' resume is included in Attachment A.

Project Quality Assurance/Quality Control Officer

The Quality Assurance/Quality Control (QA/QC) Officer will be responsible for adherence to the QAPP. The QA/QC Officer will review the procedures with all personnel prior to commencing any fieldwork and will conduct periodic site visits to assess implementation of the procedures. The QA/QC officer will also be responsible for preparing or coordinating for equally qualified personnel to prepare a Data Usability Summary Report (DUSR) for analytical results, as described in Section 5.0 of this QAPP. Marcus Simons will serve as the QA/QC officer for the pilot testing activities. Mr. Simons's resume is included in Attachment A.

Laboratory Quality Assurance/Quality Control Officer

The laboratory QA/QC officer will be responsible for quality control procedures and checks in the laboratory and ensuring adherence to laboratory protocols. He/she will track the movement of samples from the time they are checked in at the laboratory to the time that analytical results are issued. He/she will conduct a final check on the analytical calculations and sign off on the laboratory reports. The laboratory QA/QC officer will be determined upon selection of a contract laboratory or laboratories.

STANDARD OPERATING PROCEDURES

The following sections describe the standard operating procedures (SOPs) for the activities included in the AS/SVE Expansion Work Plan. During these operations, safety monitoring will be performed as described in the project Health and Safety Plan (HASP) and all field personnel will wear appropriate personal protective equipment.

Well Installation

Eight SVE wells and 26 AS wells are planned for installation as part of the expansion. The well installation and development data (location, depth, construction details, water level measurements, volume purged, etc.) will be documented in the field logbook or on field data sheets. The drilling equipment will be decontaminated after the work in the southwestern corner in AS/SVE Zone 7, and if evidence of contamination is noted in other areas of the site at the discretion of the field team leader. Decontamination protocol is described in Section 3.2 of this QAPP.

Soil Vapor Extraction Well Installation

Eight soil vapor extraction wells (SVE-7A, SVE-7B, SVE-8A, SVE-8B, SVE-9A, SVE-9B, SVE-10A and SVE-10B) will be installed as part of the system expansion. The borings for the wells will be installed using sonic and/or hollow stem auger drilling techniques. The SVE wells will be constructed of 4-inch diameter Schedule 40 polyvinyl chloride (PVC) riser and 15-foot long 0.020-inch slotted screen. The screened interval for the 6 deep SVE wells will be from 35 feet below grade to 50 feet below grade, and the screened interval for the 2 shallow SVE wells will be from 10 feet below grade to 25 feet below grade. The screen annulus will be backfilled with #1 sand pack material, which corresponds with the surrounding sandy soil, ensuring adequate air flow while restricting fines in the soil from clogging the filter sand or entering the well. The well will be completed using a flush-mount manhole, with a concrete apron set around the manhole to prevent drainage of surface runoff toward the well.

No soil samples will be collected during drilling; however, the soil will be characterized and field-screened based on drill cuttings. A photoionization detector (PID) will be used to measure total VOCs of the soil headspace from drill cuttings.

The SVE wells will be installed according to the following procedure:

- Drill to the desired well depth (25 feet below grade or 50 feet below grade).
- Measure the total depth (and depth to water, if any) in the open hole using a Solinst® Water Table Meter – Model 101 or equivalent.

- Place 4-inch diameter PVC riser with a 15-foot length of 0.020-inch slotted PVC screen at the bottom of the borehole.
- Install No. 1 sand filter pack around the well screen to a depth of six inches above the top of the screen.
- Install a wetted bentonite seal to a depth of four feet above the filter pack.
- Backfill the annular space to a depth of 5 feet below grade using a bentonite-cement grout (no grout will be used in the two shallow SVE wells).
- Backfill the remainder of the annular space using sand filter pack to a depth of 0.5 feet below grade.
- Complete the well temporarily with a locking cap and a flush-with-grade curb box set in concrete. Provide a concrete apron around the curb box to direct runoff away from the well.
- As part of the piping connections to the SVE blower, the well head will be reconstructed with a threaded plug at the surface and a tee with 4-inch PVC connecting the well to the blower.

Air Sparge Well Installation and Development

Twenty-six air sparge wells will be installed in 12 clusters as part of the AS/SVE system expansion.

The borings for the wells will be installed using sonic and/or hollow stem auger drilling techniques. The AS wells will be constructed of 2-inch diameter Schedule 40 PVC riser and 2-foot long 0.020-inch slotted screen. The screened intervals will be:

- 12 wells screened 60 to 62 feet below grade;
- 12 wells screened 80 to 82 feet below grade;
- 1 well screened 120 to 122 feet below grade; and
- 1 well screened 130 to 132 feet below grade.

The screen annulus will be backfilled with #1 sand pack material, which corresponds with the surrounding sandy soil, ensuring adequate air flow while restricting fines in the soil from clogging the filter sand or entering the well. The well will be completed using a flush-mount manhole, with a concrete apron set around the manhole to prevent drainage of surface runoff toward the well.

No soil samples will be collected during drilling; however, the soil will be characterized and field screened based on drill cuttings. A PID will be used to measure total VOCs of the soil headspace from drill cuttings.

AS wells will be installed according to the following procedure:

- Drill to the desired well depth (62 feet below grade, 82 feet below grade, 122 feet below grade or 132 feet below grade).
- Measure the total depth and depth to water in the open hole using a Solinst® Water Table Meter – Model 101 or equivalent.
- Place 2-inch diameter PVC riser with a 2-foot length of 0.020-inch slotted PVC screen at the bottom of the borehole.

- Install No. 1 sand filter pack around the well screen to a depth of six inches above the top of the screen.
- Install a wetted bentonite seal to a depth of four feet above the filter pack.
- Backfill the annular space to a depth of 5 feet below grade using a bentonite-cement grout.
- Backfill the remainder of the annular space using sand filter pack to a depth of 0.5 feet below grade.
- Complete the well temporarily with a locking cap and a flush-with-grade curb box set in concrete. Provide a concrete apron around the curb box to direct runoff away from the well.
- As part of the piping connections to the AS blower, the well head will be reconstructed with a threaded plug at the surface and a tee with 1-inch HDPE tubing connecting the well to the blower.

The new air sparge wells will be developed according to the following procedure:

- Measure the depth to water using an oil/water interface probe and the total depth of the well using a weighted tape. Use these measurements to calculate the length of the water column. Calculate the volume of water in the well using 0.163 volumes per foot of water column (gallons) as the conversion factor for a 2-inch diameter well.
- For the first five minutes of well development, develop the well by re-circulating the water back into the well to create maximum agitation. This method is intended to remove fines from the sand pack, the adjacent formation and from the well.

  After the first five minutes of well development, develop the well by discharging the water to five-gallon buckets or directly into 55-gallon drums. Water from the buckets will be transferred to 55-gallon drums designated for well development water before the end of each work day.
- During development, collect periodic samples and analyze for turbidity with measurements collected approximately every five minutes.
- Continue developing the well until turbidity is less than 50 nephelometric turbidity units (NTUs) for three successive readings. If the turbidity does not decrease to 50 NTUs, then development should continue for a maximum of three well volumes.
- All well development water, decontamination, and purge water will be containerized in 55-gallon drums and handled as described in the Section 3.3 of this QAPP.

Decontamination of Drilling and Sampling Equipment

The drilling and purging equipment will be decontaminated after the work in the southwestern corner in AS/SVE Zone 7, and if evidence of contamination is noted in other areas of the site, at the discretion of the field team leader.

If environmental sampling is to be performed, all sampling equipment will be either dedicated or decontaminated between sampling locations. The decontamination procedure will be as follows:

1. Scrub using tap water/Simple Green® mixture and bristle brush.
2. Rinse with tap water.
3. Scrub again with tap water/ Simple Green® and bristle brush.

4. Rinse with tap water.
5. Rinse with distilled water.
6. Air-dry the equipment, if possible.

Decontamination will be conducted on plastic sheeting (or equivalent) that is bermed to prevent discharge to the ground. Wash water will be handled as described in Section 3.3.

Management of Investigation Derived Waste

All investigation-derived waste and excavation spoils not being used as backfill material will be containerized in Department of Transportation (DOT)-approved 55-gallon drums, roll-off boxes or other equivalent containers. The drums will be sealed at the end of each work day and labeled with the date, the well or boring number(s), the type of waste (i.e., drill cuttings; development water or purge water) and the name of an AKRF point-of-contact. The material will be analyzed for waste characterization, if warranted. All containers will be labeled "pending analysis" until laboratory data is available. All waste will be disposed of or treated according to applicable local, state and federal regulations.

Field Instrumentation

Field personnel will be trained in the proper operation of all field instruments at the start of the field program. Instruction manuals for the equipment will be on file at the site for referencing proper operation, maintenance and calibration procedures. The equipment will be calibrated according to manufacturer specifications at the start of each day of fieldwork, if applicable. If an instrument fails calibration, the project manager or QA/QC officer will be contacted immediately to obtain a replacement instrument. A calibration log will be maintained to record the date of each calibration, any failure to calibrate and corrective actions taken. The photoionization detector (PID) will be calibrated each day using 100 parts per million (ppm) isobutylene standard gas.

SAMPLING AND LABORATORY PROCEDURES

Sample Collection Methodology

Where appropriate, equipment blank, trip blank, blind duplicate and matrix spike and matrix spike duplicate samples will be collected, as described in Section 4.4. Chain of Custody forms will include project name, names of sampling personnel, sample number, date and time of collection, sample matrix, signatures of individuals involved in sample transfer, and the dates and times of transfers. All samples will be analyzed using the most recent NYSDEC Analytical Services Protocol (ASP) by a laboratory certified through the NYSDOH ELAP.

Air Sample Collection

Confirmatory vapor samples will be collected from the influent and effluent sample ports according to the following procedure:

- Connect the tubing leading from the designated sampling port to the inlet of a labeled Summa canister fitted with a 2-hour or 6-hour regulator, as appropriate. Record the vacuum reading from the vacuum gauge on the canister at the beginning of the sampling period. Open the valve of the canister and record the time in the field book.

- At the end of the sampling period and prior to the vacuum gauge returning to ambient pressure, close valve, remove flow-rate controllers and vacuum gauges, install caps on canisters, and record time.
- Place canisters in shipping containers for transportation to laboratory.
- Decontaminate all non-dedicated sampling equipment between sampling locations as described in Section 3.2 of this QAPP.

Groundwater Sample Collection

Groundwater samples will be collected using low-flow purging and sampling methods based on the procedures described in the U.S. EPA's Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers (EPA 542-S-02-001). Sampling will be conducted according to the following procedure:

- Prepare the sampling area by placing plastic sheeting over the well. Cut a hole in the sheeting to provide access to the well.
- Remove the locking cap and measure the vapor concentrations in the well with a PID.
- Measure the total well depth, depth to water and check for the presence of light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL) using an oil/water interface probe. Groundwater samples will not be collected from wells containing measurable NAPL.
- Use the water level and total well depth measurements to calculate the length of the mid-point of the water column within the screened interval. For example, for a shallow well where the total depth is 60 feet, screened interval is 45 to 60 feet, and depth to water is 50 feet, the mid-point of the water column within the screened interval would be 55 feet.
- Connect dedicated tubing to either a submersible or bladder pump and lower the pump such that the intake of the pump is set at the mid-point of water column within the screened interval of the well. Connect the discharge end of the tubing to the flow-through cell of a Hydrolab Quanta multi-parameter meter or equivalent. Connect tubing to the output of the cell and place the discharge end of the tubing in a 5-gallon bucket or other container.
- Activate the pump at the lowest flow rate setting of the pump.
- Measure the depth to water within the well. The pump flow rate may be increased such that the water level measurements do not change by more than 0.3 feet as compared to the initial static reading. The well purging rate should be adjusted so as to produce a smooth, constant (laminar) flow and so as not to produce excessive turbulence in the well.
- Transfer discharged water from the 5-gallon buckets to 55-gallon drums designated for well-purge water.
- During purging, collect periodic samples and analyze for water quality indicators (e.g., turbidity, pH, temperature, dissolved oxygen, oxidation-reduction potential, and specific conductivity) with measurements collected approximately every five minutes.

- Continue purging the well until water quality indicators have stabilized to the extent practicable. The criteria for stabilization will be three successive readings for the following parameters and criteria:

Parameter	Stabilization Criteria
pH	+/- 0.1 pH units
Specific Conductance	+/- 3% mS/cm
Oxidation-reduction potential	+/- 10 mV
Turbidity	< 50 NTUs
Dissolved Oxygen	+/- 0.3 mg/l

- If the water quality parameters do not stabilize within two hours, purging may be discontinued, and samples will be collected as described below. Efforts to stabilize the water quality for the well must be recorded in the field book.
- After purging, disconnect the tubing to the inlet of the flow-through cell. Collect groundwater samples directly from the discharge end of the tubing into the required labeled sample containers and place in a chilled cooler.
- Collect one final field sample and analyze for turbidity and water quality parameters (e.g., pH, temperature, dissolved oxygen, oxidation-reduction potential, and specific conductivity).
- Once sampling is complete, remove the pump and tubing from the well. Dispose of the PPE and other disposable sampling materials appropriately.
- Decontaminate the pump, water level indicator, and flow-through cell as described in Section 3.2.
- Record all measurements (depth to water, depth to NAPL, water quality parameters, turbidity), calculations (well volume) and observations in the project logbook or field data sheet.

Waste Characterization Sample Collection

Investigation-derived waste and excess excavation material requiring off-site disposal will be sampled for waste characterization analyses. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be performed in a manner suitable to the anticipated receiving facility.

Laboratory Methods

A New York State certified laboratory will perform all analytical work. The laboratory will operate a QA/QC program that will consist of proper laboratory practices (including the required chain-of-custody), an internal quality control program, and external quality control audits by New York State.

Table 1 summarizes the laboratory methods that will be used to analyze field samples as well as the sample container type, preservation, and applicable holding times. An ELAP Certified laboratory will be used for all chemical analyses in accordance with DER-10 2.1(b) and 2.1(f), i.e., Category A (or Category Spills) laboratory data deliverables will be required.

Table 1
Laboratory Analytical Methods for Field Samples

Analysis Group	Parameter	Method	Sample Containers	Preservative	Holding Times
Air (Influent and Effluent)	VOCs	EPA TO-15	SUMMA Canister	None	30 days
Groundwater	VOCs	EPA 8260	2-40 mL clear glass vials	HCl, 4^{o}C	14 days
Waste Characterization Sampling	TBD - Depending on Disposal Facility				

Sample Handling

Sample Identification

All samples will be consistently identified in all field documentation, chain-of-custody documents and laboratory reports using an alpha-numeric code. Vapor samples will be identified by the monitoring well number. For example, a vapor sample collected from SVE influent from SVE-8A will be identified as "SVE-8A Influent". Waste characterization samples collected from 55-gallon drums or other containers will be identified by the container number (e.g., DRUM-1 or DRUM-2).

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.

Sample Labeling and Shipping

All sample containers will be provided with labels containing the following information:

- Project identification
- Sample identification
- Date and time of collection
- Analysis(es) to be performed
- Sampler's initials

Once the soil or water 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. Air samples will be placed in shipping containers.

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

Sample Custody

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 (COC) forms. The COC forms will contain the following information: project name; names of sampling personnel; sample number; date and time of collection and matrix; and signatures of individuals involved in sample transfer, and the dates and times of transfers. Laboratory personnel will note the condition of the custody seal and sample containers at sample check-in.

Quality Control Sampling

In addition to the laboratory analysis of the groundwater samples, additional analysis may be included for quality control measures, as required by the Category A sampling techniques. These samples will include equipment blank, trip blank, blind duplicate and matrix spike and matrix spike duplicate samples. Equipment blank 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 waste characterization.

DATA REVIEW

The QA/QC officer will conduct a review of all analytical data. A data usability summary report (DUSR) is not anticipated for the data collected under the AS/SVE Expansion Work Plan. However, if necessary a DUSR would further assess the quality of the data and determine its usability. To assess the data, the QA/QC officer or qualified designee will:

- Ensure the data package is complete as defined under the requirements for the NYSDEC ASP Category A deliverables as appropriate, and that all data were generated using established and agreed upon protocols.
- Check that all holding times were met.
- Check that all QC data (blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data) fall within the protocol required limits and specifications.
- Compare raw data with results provided in the data summary sheets and quality control verification forms.
- Check that correct data qualifiers were used.
- Evaluate the raw data and confirm the results provided in the data summary sheets and quality control verification forms.

Any QC exceedances will be specified in the DUSR, and the corresponding data package QC summary sheet identifying the exceedances will be attached. The DUSR will identify any data deficiencies, analytical protocol deviations and quality control problems and discuss their effect on the data. Recommendations for resampling and/or reanalysis will be made.

ATTACHMENT A

RESUMES OF PROJECT QA/QC PERSONNEL

MARC S. GODICK, LEP

SENIOR VICE PRESIDENT

General Introduction

Marc S. Godick, a Senior Vice President of the firm, has over 18 years of experience in the environmental consulting industry. Mr. Godick's broad-based environmental experience includes expertise in remedial investigation, design and implementation of remedial measures, environmental/compliance assessment, litigation support, and storage tank management.

Remedial Investigation, Remediation, and Risk Assessment

Mr. Godick has comprehensive experience with completed projects throughout the Mid-Atlantic and New England regions. His specific experience includes development and implementation of multi-site strategies related to regulatory compliance including brownfields redevelopment, release reporting, remedial investigations, remediation, and risk assessment at bulk fuel storage/distribution, utility, chemical distribution, landfill, industrial, and commercial facilities.

Environmental/Compliance Assessment

Mr. Godick's experience in this area includes the completion and management of Phase I and Phase II environmental site assessment (ESA) and compliance audit projects throughout the United States and in Canada. He has provided management support to multi-site environmental assessment programs, with responsibilities including environmental liability analysis, compliance review, and waste management practices. His projects have included assessments of semiconductor reclamation facilities, food processing plants, and numerous other types of industrial and commercial facilities. Several of the projects were multiple-facility audits on a fast-track basis for venture capital firms, banks, and multinational corporations.

Litigation Support

Mr. Godick provided litigation support services for several remediation projects including insurance claims and other cost recovery actions. He provided expert testimony and developed detailed costing estimates and cost allocation models.

Storage Tank Management

Mr. Godick has managed several single and multi-facility underground and aboveground storage tank (UST/AST) replacement projects. His responsibilities included the management of design, preparation of specifications, contractor bidding, construction oversight, project budgets, and documentation. His compliance experience includes development and implementation of inspection, maintenance, record-keeping, and Spill Prevention Control Countermeasures (SPCC) programs.

BACKGROUND

Education

M.E., Engineering Science/Environmental Engineering, Pennsylvania State University, 1998

B.S., Chemical Engineering, Carnegie Mellon University, 1989

Licenses/Certifications

Licensed Environmental Professional (License # 396) – State of Connecticut – 2003

40 Hour HAZWOPER and Annual Refresher Training, 1990-2008

Supervisors of Hazardous Waste Operations (8 Hour), 1990

Professional Memberships

Member, Village of Larchmont/Town of Mamaroneck Coastal Zone Management Commission, 1997 - Present

Board of Directors, Westchester County Soil and Water Conservation District, 2005 - Present

Board of Directors, Sheldrake Environmental Center, Larchmont, New York, 2006 - Present

Member, NYSDEC Risk-Based Corrective Action (RBCA) Advisory Group for Petroleum-Impacted Sites, 1997

Community Leadership Alliance, Pace University School of Law, 2001

Seminars, Lectures & Publications

"Let Nature Do the Work – Onsite Stormwater Management," Westchester County Department of Parks, Recreation and Conservation, Fall 2003

"Water Pollution Control and Site Assessments and Audits," Environmental Health and Safety Issues Course, Building Owners and Managers Institute (BOMI), 1997-1999

"Hydrogeologic and Geological Aspects of Tank Closures and Remedial Action," Underground Storage Tanks Course, Government Institutes, Summer 1996, Fall 1997

"Soil and Groundwater Cleanup at What Cost? A Review of State-of-the-Art Technologies," Pennsylvania Chamber of Commerce, PennExpo, Fall 1995

Technical Review of "Soil Remediation Technologies" and "Ground Water Remediation Technologies" Chapters, Underground Storage Tank Manual, Thompson Publishing Group

Years of Experience

Year started in company: 2002

Year started in industry: 1990

RELEVANT EXPERIENCE

Flint Park Improvements, Village of Larchmont, NY

As a member of the joint Village of Larchmont/Town of Mamaroneck Coastal Zone Management Committee (CZMC), Mr. Godick was part of a committee involved in development of a master plan for improvements throughout Flint Park. The improvements including restoration of natural grass fields, development of an artificial turf field, and creation of an environmental restoration area along the park's waterfront. Mr. Godick reviewed available technical literature and provided recommendations to the Village Board regarding the use of artificial turf and limitations regarding potential environmental and health concerns.

Brownfield Opportunity Area (BOA) Grant Program Services for the Town of Babylon, Wyandanch, NY

AKRF was retained by the Town of Babylon to prepare a blight study, market study, NYS BOA Step 2 Nomination, an Urban Renewal Plan, and a Generic Environmental Impact Statement (GEIS) as part of a revitalization and redevelopment effort for downtown Wyandanch. Mr. Godick was responsible for overseeing the environmental data collection effort for the 226 brownfields identified in the 105-acre project area, and for identifying strategic sites for which site assessment funding should be sought. He also prepared the Hazardous Materials section of the Wyandanch Downtown Revitalization Plan (which incorporates the Nomination, Urban Renewal Plan, and GEIS), involving a summary of available environmental reports, a review of regulatory records, and limited street-level site inspections.

Alexander Street Urban Renewal Plan, Master Plan, Brownfield Opportunity Area Plan, Yonkers, NY

AKRF was retained by the City of Yonkers to prepare an Urban Renewal Plan, Master Plan, Brownfield Opportunity Area Plan, and **a** Generic Environmental Impact Statement (GEIS) for a 153 acre industrial area along Alexander Street on the Yonkers Waterfront. Mr. Godick is coordinating the preparation of BOA documents and was responsible for the Hazardous Materials sections of the GEIS and Urban Renewal Plan. Mr. Godick managed the environmental data collection effort for the entire study area which involved review and summary of existing environmental reports, a review of regulatory records, and field inspections. The collected information was used to prioritize individual parcels for funding and remediation. The Master Plan for the area calls for the development of a mixed-use neighborhood consisting of residential, neighborhood retail, and office space uses with substantial public open space, access to the Hudson River, and marina facilities.

Queens West Development Project, Avalon Bay Communities, Queens, NY

For over 20 years, AKRF has played a key role in advancing the Queens West development, which promises to transform an underused industrial waterfront property into one of largest and most vibrant mixed-use communities just across the East River from the United Nations. AKRF has prepared an **E**nvironmental Impact Statement (EIS) that examines issues pertaining to air quality, land use and community character, economic impacts, historic and archaeological resources, and infrastructure. Mr. Godick managed one of the largest remediation projects completed to date under the New York State Department of Environmental Conservation (NYSDEC) Brownfields Cleanup Program (BCP) that was contaminated by coal tar and petroleum. The remedy included the installation of a hydraulic barrier (sheet pile cut off wall), excavation of contaminated soil under a temporary structure to control odors during remediation, a vapor mitigation system below the buildings, and implementation of institution controls. The investigation, remediation design, and remedy implementation, and final sign-off (issuance of Certificate of Completion) were completed in two years. Total remediation costs were in excess of $13 million.

Williamsburg Waterfront Redevelopment, RD Management/L&M Equities/Toll Brothers, Brooklyn, NY

The project is one of the largest development projects in the Greenpoint/Williamsburg Rezoning Area, which includes the construction of nearly 1 million square feet of residential and retail space along the Williamsburg waterfront. The site had a variety of industrial uses, including a railyard, junk yard, and waste transfer station. As part of the City's rezoning, the site was assigned an E-designation for hazardous materials. Mr. Godick managed the preparation of the Phase I and II environmental site assessments, remedial action plan (RAP), and construction health and safety plan (CHASP). Mr. Godick obtained NYSDEC closure of an open spill associated with former underground storage tanks at the site. The NYCDEP-approved RAP and CHASP included provisions for reuse of the existing fill material, with the excess being disposed off-site, installation of a vapor barrier below the new buildings, installation of a site cap, and environmental monitoring during the construction activities. Mr. Godick is currently managing the environmental monitoring work that began in 2006. A Notice of Satisfaction has been issued by NYCDEP for the first phase of the development.

West 37th Street Redevelopment, Rockrose, New York, NY

The project is a redevelopment in the Hudson Yards Rezoning Area, which includes the construction of a 250,000 square foot residential/retail building in Manhattan. The site had several motor vehicle service operations, which resulted in a petroleum release to the underlying soil, bedrock, and groundwater. As part of the City's rezoning, the site was assigned an E-designation for hazardous materials. Mr. Godick managed the preparation of the Phase I and II environmental site assessments, remedial action plan (RAP), and construction health and safety plan (CHASP). Mr. Godick obtained approval for the RAP and CHASP by both the NYSDEC and NYCDEP. The RAP and CHASP included provisions for excavation of contaminated soil and bedrock, installation of waterproofing that will also serve as a vapor barrier for the new building, environmental monitoring during the construction activities, and post-development groundwater monitoring. Construction of the building is anticipated to be completed in 2009.

Landfill Closure & Compost Facility Application, White Plains, NY

Mr. Godick is currently managing the closure of a formal ash landfill, which is currently being utilized as a leaf and yard waste compost facility by the City of White Plains. The landfill closure requires additional assessment to define the extent of methane and solvent contamination, which will affect the design of the landfill cap and any additional remediation. Mr. Godick also managed the preparation of the compost facility permit application, which required modification to the facility's operations necessary to close the landfill and address other regulatory requirements.

Landfill Redevelopment – RD Management, Orangeburg, NY

Mr. Godick is currently managing the remediation of the former Orangeburg Pipe site under the Voluntary Cleanup Program. The site contains widespread fill material, which has fragments of Orangeburg pipe that is impregnated with asbestos and coal tar. The site is currently being redeveloped for retail use. The closure plan for the site provides for reuse of all fill material on-site. The fill management activities will include dust and sediment control measures and air monitoring to prevent airborne dust in accordance with a closure plan, stormwater pollution prevention plan (SWPPP), and construction health and safety plan (CHASP). In pervious areas, the site cap will consist of 2 feet of clean fill and a liner in larger areas. The site will be redeveloped for hotel and retail use.

Shaws Supermarket Redevelopment Project, New Fairfield, CT

Mr. Godick was the LEP of Record for the remediation of a shopping center site that was contaminated by on-site releases from former dry cleaning operations and off-site gasoline spills. A remediation plan was prepared and approved within one year to enable redevelopment work for a new supermarket and shopping center. The remediation was complicated by the use of groundwater as a potable source at the site and surrounding area. The remediation plan included the removal of contaminated soil and installation of a multi-well pump and treat system for the recovery of non-aqueous and dissolved phase contamination from two of the three aquifers. The soil removal activities and treatment system installation have been completed, and system operation, maintenance, and monitoring are ongoing.

National Grid – Halesite Manufactured Gas Plant Site, Town of Huntington, NY

Mr. Godick is managing the remedial design and engineering work associated with remediation of National Grid's former manufactured gas plant (MGP) located in the Town of Huntington. The site is situated in a sensitive location along the waterfront, surrounded by commercial and residential properties, and half the property where the remediation will be conducted is a steep slope. The remedy consists of soil removal, oxygen injection, and non-aqueous phase liquid recovery. Mr. Godick is responsible for the development of the remedial work plans, design/construction documents, landscape architecture, confirmatory sampling, air monitoring, supervision, and preparation of close-out documentation in accordance with NYSDEC requirements. Work is anticipated to be completed in 2009.

Site Investigation & Remediation–Former Manufactured Gas Plant (MGP), Confidential Client, Westchester County, NY

The site is currently an active retail shopping center. Previously, the site had been utilized as a large former MGP. The project entailed the implementation of a large-scale remedial investigation that addressed the assessment and remediation of occupied buildings, as well as the potential of future redevelopment of the site. Future remediation will consist of hot spot removal, product recovery, and groundwater containment measures. Other engineering and institution controls will also be implemented.

Underground Storage Tank Closure and Site Remediation–Program Management, Con Edison, New York, NY

Mr. Godick provided technical assistance to Con Edison in developing technical submittals and budgets associated with tank closures at over 50 facilities. Technical summaries were prepared for submittal of contractor-prepared closure reports to the NYSDEC. The summaries included a review of historic pre-closure assessments, tank closure data, and provided recommendations for additional assessment, remediation or closure. Subsequently, a three-year program budget was developed for implementation of the UST investigation/remedial program, which Con Edison utilized for internal budgeting purposes.

Site Investigation–Over 20 Facilities, Con Edison, New York, NY

Mr. Godick managed site investigations associated with petroleum, dielectric fluid, and PCB releases at over 20 Con Edison facilities including service centers, substations, generating stations, and underground transmission and distribution systems. Site investigations have included due diligence site reviews, soil boring installation, monitoring well installation, hydrogeologic testing, and water quality sampling. Risk-based closures have been proposed for several sites.

Site Investigation–7 World Trade Center Substation, Con Edison, New York, NY

Mr. Godick managed the site investigation at the former 7 World Trade Center Substation in an effort to delineate and recover approximately 140,000 gallons of transformer and feeder oil following the collapse of the building. The project involved coordination with several crews, Con Edison, and other site personnel.

Site Investigation–Former Manufactured Gas Plant (MGP) Facilities, Con Edison, New York, NY

Mr. Godick managed site investigations at four former MGP facilities. The investigations at three of the four sites were completed at a Con Edison substation, flush pit facility, and service center, respectively. The details associated with the fourth site are confidential. Site characterizations at the substation and flush pit facility were conducted in preparation of expansion at these locations. The findings from these characterizations were used by Con Edison to make appropriate changes to the design specifications and to plan for appropriate handling of impacted materials and health and safety protocols during future construction activities.

Ground Water Monitoring–Over 20 Facilities, Con Edison, New York, NY

Mr. Godick managed a multi-site contract for ground water monitoring at over 20 facilities throughout Con Edison's footprint at service centers, substations, generating stations, transmission/distribution, and major oil storage facilities (MOSF) sites.

Verizon, Investigation & Remediation, Various Locations, NY, PA and DE

Mr. Godick managed over 50 geologic/hydrogeologic assessments and site remediation projects related to petroleum releases at various facilities. Responsibilities included annual budgeting, day-to-day project management, development and implementation of soil and ground water investigation workplans, ground water modeling, risk evaluation, remedial action work plans, remedial design, system installation, waste disposal, well abandonment, and operation and maintenance. Many of the assessment and remedial projects followed a risk-based approach. Remedial technologies implemented included air sparging, soil vapor extraction, bioremediation, pump and treat, soil excavation, and natural attenuation.

Site Investigation, Risk Assessment and Remediation, Thermadyne Holding Company, Danvers, MA

Mr. Godick managed a remedial investigation and ground water remediation program for a former manufacturing facility in Massachusetts. The project included the design and installation of a ground water remedial system for chlorinated solvent impact within a complex fractured bedrock aquifer. Responsibilities included the review of historic data, collection of extensive new groundwater data, completion of pump testing, computer modeling of the bedrock aquifer, remedial system pilot testing, system design, O&M, waste disposal, and preparation of all necessary reports to the State. To facilitate the closure of the site, a Risk Characterization Report was prepared under the Massachusetts Contingency Plan.

Groundwater and Soil Remediation, BP Oil Company, Various Locations, NJ and PA

Mr. Godick provided support to environmental activities for BP Oil Company in Pennsylvania and New Jersey. Responsibilities included completion of remedial investigations, preparation of remedial action plans, quarterly ground water sampling, and reporting.

Multimedia Compliance and Remediation, Greenburgh Central School District No. 7, Hartsdale, NY

Mr. Godick implemented a multimedia program to address regulatory compliance and remediation at the transportation yard and other facilities. The compliance program included development of an environmental management system including periodic auditing, standard operating procedures, release reporting, and training. Designed and implemented engineering controls and monitoring to satisfy stormwater requirements. Remediation was conducted to address petroleum and solvent contamination from former underground storage tanks and dry wells, which included source removal and natural attenuation of groundwater. Provided support in connection with litigation from the adjoining property owner.

Preliminary Impact Assessment, Proposed Wildlife Refuge and Ecology Center, BASF Corporation, Kearny, NJ

Mr. Godick managed a preliminary environmental impact assessment at the location of a former BASF facility. Adjacent to the property is an expanse of mudflats that contained heavy metals, PAHs, PCBs, dioxins and other contaminants originating from numerous point and non-point sources. BASF proposed to cap these mudflats with clean sediments, and to develop a salt marsh wildlife refuge having an area of approximately 180 acres on the remediated portion. A workplan was developed and implemented, which included fish and benthic testing to evaluate whether winter flounder used the mudflat as a spawning area, and to evaluate whether winter flounder or summer flounder may utilize the mudflat as a juvenile rearing area. The benthic invertebrate and fish sampling data indicated that significant winter and summer flounder were not present at the subject site.

Environmental Assessment, Confidential Client, Flexible Packaging Division, Various Locations

Mr. Godick conducted Phase I ESAs and compliance reviews for a major international chemical company, which was divesting their flexible polyethylene packaging division. This program was completed by the seller to provide accurate and appropriate assessment information to a number of potential purchasers. All assessments were completed on a confidential basis with a completed report provided to the client within three weeks from the date of the first site visit.

Environmental Assessment, Polyurethane Foam Manufacturing Company, Various Locations

Mr. Godick conducted Phase I ESAs and compliance reviews at a major polyurethane and polystyrene foam manufacturer with locations throughout the U.S. The program evaluated all environmental aspects of the operation with a summary of potential and material liabilities provided to the client prior to the acquisition. Issues addressed, with estimates as to operational and remedial costs provided, included air emissions, regulatory compliance with historic consent orders, projected plant upgrades required for future compliance, and potential liabilities associated with identified environmental contamination.

Environmental Assessment, Copper Wire Manufacturer, Various Locations

Mr. Godick conducted Phase I ESAs and compliance reviews at multiple wire manufacturing sites, which were evaluated as part of an acquisition by an international manufacturing company. A comprehensive evaluation of each plant was performed with plant sizes ranging from 100,000 to 800,000 square feet. Final reports were delivered to the client within 30 days following the initial site visit.

Litigation Support & Remediation, Former Service Station, Brooklyn, New York

Mr. Godick took over management of remediation of an inactive service station (formerly conducted by another firm). His approach outlined additional characterization and remediation efforts which resulted in successful closure of the spill by NYSDEC within two years. Mr. Godick testified as an expert witness at a hearing in the New York State Supreme Court of Kings County to determine the adequacy of the remediation efforts.

Litigation Support & Remediation, Residential Heating Oil Spill, Cranford, New Jersey

Mr. Godick took over management of remediation of a heating oil spill in the basement of a single family residence on behalf of the insurance company. Up until Mr. Godick taking over the remediation, several hundred thousand dollars had been spent on remediation with no resolution of the spill with the NJDEP and homeowners. His approach outlined additional characterization and remediation efforts to expeditiously and cost-effectively resolve the spill.

Litigation Support, Cost Recovery Action, Town of Carmel, New York

Mr. Godick served as an expert witness representing the owner of a property in a landlord-tenant dispute, which was used as a gasoline station and oil change facility. Mr. Godick prepared exhibits, testified, and participated in meetings with NYSDEC to support the landlord's claim that the oil change tenant's practices were poor and were adversely affecting the environment and the overall facility systems at the site.

Litigation Support, Cost Recovery Action, New York State Superfund Site

Mr. Godick provided technical support for the former owner of a New York State Superfund site in upstate New York. Current owner of the property brought a cost recovery action against client as a potential responsibility party. Completed technical review of draft Remedial Investigation/Feasibility Study prepared by opposing party's consultant to develop more cost effective remedial strategy and to better position the client for liability allocation as part of future settlement negotiations. Developed cost allocation paper and model for settlement negotiations. Participated in mediation process.

Litigation Support, Cost Recovery Action, New York State Petroleum Spill Site, New York, NY

Mr. Godick provided technical support for the former owner of a New York City multi-unit residential apartment building. The State of New York brought a cost recovery action against our client as a result of a previous spill from a former underground storage tank. Reviewed invoices and project documentation to dispute work performed by the NYSDEC, which provided the basis for settlement at a fraction of the initial claim.

Cost Analysis, Environmental Insurance Claims, Various Locations

Mr. Godick provided technical support for cost analyses completed for a large national insurance company related to several former MGP and other industrial sites. Responsibilities included evaluation and development of cost-effective remedial strategies, as well as compilation of detailed costs for remedial action implementation and closure.

Litigation Support, Class Action Lawsuit, Confidential Client, NJ

Mr. Godick provided technical support for a class action suit involving a petroleum-impacted community water supply in southern New Jersey. The technical assistance included analysis of expert testimony and coordination with legal counsel in preparing for cross-examination of the opposing party's lead expert witness.

Storage Tank Management, Verizon, Various Locations, NY, PA, DE, and MA

Mr. Godick managed the removal and replacement of underground and aboveground storage tank systems for Verizon in New York, Pennsylvania, Delaware, and Massachusetts. Responsibilities included the management of design, preparation of specifications, contractor bidding, construction oversight, project budget, and documentation. For selected AST sites, managed the development of Spill Control, Contingency and Countermeasures (SPCC) plans.

Storage Tank Management, Citibank, N.A., New York, NY

Mr. Godick managed a storage tank replacement project for a facility located on Wall Street in New York City. The existing underground storage tank was closed in place and replaced with a field-constructed AST system within the building. The project required zero tolerance for service interruptions, disruptions to building operations, or disturbance to occupants of the office space neighboring the new tank location. Responsibilities included the management of design, preparation of specifications, contractor bidding, construction inspections, site assessment for closed-in-place UST, SPCC plan preparation, and responsibility for project budget and documentation.

KATHLEEN BRUNNER

TECHNICAL DIRECTOR

Kathleen Brunner is a Technical Director with more than 12 years of professional environmental consulting experience. She specializes in environmental site assessments and investigations, site remediation, and hazardous materials planning studies. Ms. Brunner has extensive experience performing Phase I and II environmental site assessments, directing and overseeing site remediation projects, and addressing the hazardous materials aspects of Environmental Impact Statements (EISs).

Ms. Brunner has managed complex remedial investigation and remedial action projects under the oversight of New York City Department of Environmental Protection and New York State Department of Environmental Conservation. Ms. Brunner has coordinated work and acted as a liaison between clients, property owners, subcontractors, and regulatory agencies on City, State and Federal levels. Her range of project experience includes preparation of proposals, sampling protocols, work plans, health and safety plans, site investigation reports, and closure requests, as well as project scheduling and budgeting. Ms. Brunner's experience also includes supervising the installation of soil borings and groundwater monitoring wells; sampling soil, groundwater, air and soil gas; maintaining and sampling groundwater remediation systems, and overseeing and directing construction-related soil management plans and environmental remediation projects.

Prior to joining AKRF, Ms. Brunner worked for a multidisciplinary consulting firm at their offices in Pewaukee, Wisconsin and New York, New York as an environmental scientist.

BACKGROUND

Education

B.A., Physical Geography, University of Wisconsin – Milwaukee, 1995

Licenses/Certifications

40-Hr Hazardous Waste Operations Site Worker, 1997 to present

Years of Experience

Year started in company: 2004

Year started in industry: 1996

RELEVANT EXPERIENCE

Laundry/Dry Cleaning Plant, New York, NY

Ms. Brunner is managing the assessment and cleanup of the only New York State Department of Environmental Conservation's (NYSDEC) listed hazardous waste site in Manhattan, a former laundry/dry cleaning plant in Harlem. Remedial investigation has included evaluation of soil, groundwater, soil vapor, indoor air, and building materials. Interim remediation completed to date has included the removal of contaminated building materials and operation of an innovative sub-slab vapor extraction system retrofitted into the existing building. The final Remedial Investigation/Feasibility Study (RI/FS) is expected to be approved in 2010.

C.E. Flushing Site, Flushing, NY

Ms. Brunner is managing and coordinating the investigation, remediation and post-remediation monitoring of a former industrial site in Flushing, Queens, NY as part of redevelopment of the property. The investigation included groundwater sampling, delineation of known areas of soil contamination, and delineating PCB-containing non-aqueous phase liquid (NAPL). Remedial activities included removal of aboveground and underground storage tanks, NAPL product removal, removal of on-site drainage structures, and excavation of delineated hot spots, including hazardous and non-hazardous waste streams. Ms. Brunner was responsible for developing work plans for approval by the NYSDEC and New York State Department of Health (NYSDOH), and preparation of summary reports for public comment under the Brownfield Cleanup Program (BCP). Remediation was completed in 2007 and Certificates of Completion under the BCP were issued in December 2007. Post-remediation monitoring includes oversight of construction-related soil disturbance, quarterly groundwater and vapor sampling, and continued annual reporting to NYSDEC and NYSDOH. Ms. Brunner also assisted coordination with the New York City Department of Environmental Protection (NYCDEP) due to an E-designation on the property. As part of the project, Ms. Brunner coordinated with the client, lawyers, architects and engineers of the planned development, tenants of a neighboring property, remediation and construction contractors, US Environmental Protection Agency (USEPA), NYSDEC, NYSDOH, and NYCDEP.

Brownfield Opportunity Area (BOA) Grant Program Services for the Town of Babylon, Wyandanch, NY

AKRF was retained by the Town of Babylon to prepare a blight study, market study, NYS BOA Step 2 Nomination, an Urban Renewal Plan, and a Generic Environmental Impact Statement (GEIS) as part of a revitalization and redevelopment effort for downtown Wyandanch. Ms. Brunner was responsible for overseeing the environmental data collection effort for the 226 brownfields identified in the 105-acre project area, and for identifying strategic sites for which site assessment funding should be sought. She also prepared the Hazardous Materials section of the Wyandanch Downtown Revitalization Plan (which incorporates the Nomination, Urban Renewal Plan, and GEIS), involving a summary of available environmental reports, a review of regulatory records, and limited street-level site inspections.

Bayside Fuel Oil Depot, Brooklyn, NY

Ms. Brunner is managing the site assessment for a major oil storage facility (MOSF) located on the Gowanus Canal waterfront. Work included follow-up investigation related to a petroleum release and preparation of a remedial action plan. Additional investigation and initial remedial activities are expected to be completed in 2010, and the site is being considered for redevelopment for retail and residential use.

Fresh Kills Park, Staten Island, NY

AKRF prepared the Generic Environmental Impact Statement (GEIS) for this large-scale, multi-phase project to turn the former Fresh Kills Landfill into a public park. The project involves New York City Department of Sanitation and Department of Parks with regulatory oversight and approval by both NYCDEP and NYSDEC. As part of the hazardous materials chapter for the GEIS, Ms. Brunner researched site history, performed a regulatory records review and prepared a data summary and recommendations for mitigation of potential future impacts.

Atlantic Yards Arena and Redevelopment Project, Brooklyn, NY

AKRF prepared the Environmental Impact Statement (EIS) and Blight Study for this ambitious and controversial land use initiative. The project, overseen by the Empire State Development Corporation (ESDC), calls for the redevelopment of an underutilized and underdeveloped 22-acre site in the Atlantic Terminal area of Brooklyn, adjacent to Downtown Brooklyn. The project includes a new arena for the Nets basketball team, along with mixed-income residential, commercial office, retail, hotel, and community facility uses. The total project cost is estimated at $4.5 billion. Key issues addressed in the EIS include: potential impacts on water quality in the Gowanus Canal and East River; concerns over land use compatibility and urban design; potential adverse traffic and air quality impacts; and potential adverse effects on socioeconomic conditions in the study area. In addition, the EIS presented a detailed description of construction activities and phasing, and an analysis of potential averse impacts during project construction. The FEIS was issued in December, 2006. Ms. Brunner served on a team of Hazmat staff conducting Phase I Environmental Site Assessments in accordance with ASTM E-1527-00 related to the potential development of up to 8 city blocks. As part of the study, Ms. Brunner coordinated with the client, property owners or their representatives, and tenants. Her work scope included site reconnaissance, site history and records review, interviews, report preparation, recommendations and data summary to be used in preparation of the EIS chapter.

Edgemere By the Sea, Rockaway, NY

Ms. Brunner performed a Phase I Environmental Site Assessment of 73 city lots located on nine blocks in accordance with ASTM E-1527-00 related to the potential development of the area. Her work scope included site reconnaissance, site history and records review, interviews, report preparation and recommendations. Based on the findings in the Phase I, Phase II was performed. Ms. Brunner coordinated and oversaw soil boring installation and collected soil and groundwater samples.

Fulton Street Transit Center, New York, NY

While working with another firm, Ms. Brunner worked with a multi-company project team assisting with work pertaining to subsurface environmental issues. Ms. Brunner provided general environmental oversight of soil borings, collected groundwater samples from wells, conducted rising head slug tests, and calculated hydraulic conductivity estimates. She prepared the Health and Safety Plan, environmental portions of the work plan, and the Environmental Subsurface Investigation Plan.

DaimlerChrysler, Kenosha, WI

While with another firm, Ms. Brunner assisted in multiple phases of work at an approximately 100-acre DaimlerChrysler manufacturing facility. During construction of a new building, Ms. Brunner observed excavation activities, directed contaminated soil excavation, and managed dewatering treatment and discharge. Post-construction, Ms. Brunner assisted in the reconstruction of two groundwater remediation systems and an SVE system, including plumbing an oil water separator and stripper, and installing appropriate venting and sampling ports. Ms. Brunner also assisted in equipment start-up and subsequent troubleshooting and sampling of influent and effluent. On a quarterly basis, routine and troubleshooting maintenance work was performed on the pumps, flow meters, strippers, oil/water separators and other system components for six remediation systems. Ms. Brunner also directed and documented monitoring well installation, collected groundwater samples from up to 50 monitoring wells and sumps, and air samples from soil vapor extraction systems, reviewed and summarized field and laboratory data, and assisted in writing semi-annual and annual reports for this facility. Report preparation included quality assurance calculations, determination of quantity of free product and dissolved phase contaminant removal, and project narrative of activities completed during the reporting period.

STEPHEN R. GRENS, JR.

ENVIRONMENTAL SPECIALIST

Stephen Grens, Jr. is an Environmental Specialist with expertise in Phase I and II site assessments and comprehensive asbestos surveys. He has completed assessments in New York, New Jersey, Connecticut, Pennsylvania, North Carolina, South Carolina, and Georgia. Mr. Grens is also actively involved in data interpretation and report preparation.

BACKGROUND

Education

B.S., Environmental Sciences, State University of New York (SUNY), Purchase, Expected Graduation Date: May 2010

Licenses/Certifications

New York State Certified Asbestos Inspector, Asbestos Project Monitor, and Air Sampling Technician, 1998

LIRR Roadway Worker, 2007

OSHA HAZWOPER Site Safety Supervisor , 2006

NYC Department of Buildings (DOB) Expediter, 2000

Years of Experience

Year started in company: 1996

Year started in industry: 1996

RELEVANT EXPERIENCE

Former Domino Sugar Refinery

The Refinery LLC is proposing to redevelop the former Domino Sugar site located along the Williamsburg waterfront in Brooklyn with residential and mixed-use buildings. The EIS must examine the full range of issues including land use, zoning and public policy and consistency with the Greenpoint-Williamsburg plan to the north, open space, coastal zone consistency, natural resources, traffic and parking, transit, air quality including any potential impacts from industrial sources and nearby major sources, noise and potential impacts from elevated locations (e.g., the Williamsburg Bridge), historic resources and industrial archeology, urban design and shadows. Mr. Grens performed environmental oversight for the installation of numerous groundwater monitor wells, soil borings and soil and groundwater sampling. Soil and groundwater sampling and monitoring are being performed in accordance with the NYCDEP approved workplan.

Triangle Parcel

Mr. Grens performed environmental oversight for the installation of numerous groundwater monitor wells, soil borings and soil and groundwater sampling. Soil and groundwater sampling and monitoring are being performed in accordance with the NYSDEC approved workplan.

Gedney Way Landfill, White Plains, NY

Mr. Grens performed environmental oversight for the installation of numerous groundwater monitor wells, soil gas vapor extraction points, test pits, soil removal and soil and groundwater sampling. Remedial activities at the landfill are being performed for landfill closure in accordance with the NYSDEC approved workplan.

Flushing Industrial Park, Flushing, NY

Mr. Grens performed environmental and remediation oversight including the implantation of the site specific health and safety plan (HASP) during excavation activities at the Flushing Industrial Park site. Approximately 22,762 tons of PCB contaminated soil and 55,629 tons of non-hazardous soil were remediated and disposed of at the appropriate receiving facilities. The environmental clean-up activities at the Flushing Industrial site were done in accordance with the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) under the Brownfields Clean-Up Program. Mr. Grens is currently overseeing the construction related remedial oversight activities at the Flushing Industrial Park site and will continue through 2008/2009.

Queens West Development Project, Long Island City, NY

For over 20 years, AKRF has played a key role in advancing the Queens West development, which promises to transform an underused industrial waterfront property into one of largest and most vibrant mixed-use communities just across the East River from the United Nations. AKRF has prepared an EIS that examines issues pertaining to air quality, land use and community character, economic impacts, historic and archaeological resources, and infrastructure. As part of the project, AKRF also undertook the largest remediation venture completed to date under the Brownfields Cleanup Program (BCP). Mr. Grens performed environmental oversight including the implantation of the site specific health and safety plan (HASP) during excavation activities at the site. The environmental clean-up activities were done in accordance with the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) under the Brownfields Clean-Up Program.

Sutphin Boulevard Underpass, Jamaica, Queens

Mr. Grens performed the Phase I Environmental Site Assessment, Phase II Subsurface Investigation and asbestos and lead-based paint surveys at the LIRR-owned Sutphin Boulevard site. Portions of the Phase I report were used in the Hazardous Materials Chapter of the Environmental Impact Statement. Mr. Grens reviewed previous environmental reports, performed oversight for the installation of soil gas points and soil borings, and performed the asbestos and lead paint surveys. The proposed redevelopment of the property included retail and commercial spaces.

Parkway Road Site, Bronxville, NY

Mr. Grens supervised and documented the removal of USTs, two hydraulic lifts, dry wells, and petroleum contaminated soil from a parcel that was formerly utilized as a gasoline service station. This site would eventually be redeveloped into multi-unit residential apartments.

Hanover Hall, Stamford, CT

Mr. Grens performed a remote camera observation of the sanitary sewer line to determine the presence of cracks associated with the contamination of surrounding soil. This procedure was implemented as a cost effective means to determine the precise location of possible soil and/or groundwater contamination.

East 135th Street Site, Bronx, NY

Mr. Grens supervised and documented the removal of approximately 8,000 tons of urban fill and metal-contaminated soil for the construction of a storage facility on the Harlem River. He was responsible for the delineation of contaminated areas, and subsequent confirmation soil sampling. Soil was delineated to the extent feasible in order to make way for the storage facility.

Montagano Oil Blending Facility, Pleasantville, NY

Mr. Grens supervised and documented the removal of numerous aboveground storage tanks (ASTs) and oil mixing kettles. Approximately ten 550-gallon aboveground fuel oil storage tanks were rendered free of their contents, cleaned, cut, and removed off-site for disposal. All removal activities were performed in accordance with applicable state and federal regulations. Additional on-site activities included the removal of a 1,000-gallon underground gasoline storage tank, and the installation of site-wide groundwater monitoring wells.

Bridgeport Municipal Stadium (Former Jenkins Valve Property), Bridgeport, CT

As part of the City of Bridgeport's revitalization program for the construction of a minor league baseball facility, Mr. Grens supervised and documented the removal of approximately 14,000 tons of solvent, petroleum, and metal-contaminated soil. He was responsible for the delineation of contaminated areas as well as subsequent confirmation soil sampling for the local sponsoring municipality. Additional on-site activities included the installation of groundwater monitoring wells, removal of underground storage tanks, and management of the current groundwater monitoring program.

Catskill/Delaware Water Treatment Facility, Mount Pleasant and Greenburgh, NY

Mr. Grens was responsible for the contaminated materials analysis as part of the Environmental Impact Statement (EIS) for the New York City Department of Environmental Protection (DEP). The analysis included the Phase I site assessment, a description of the chemicals to be used in the direct filtration process, and their alternatives. Mr. Grens also worked on the Electromagnetic Fields (EMF) analysis for this EIS. It included the interpretation of electromagnetic data from existing on-site sources, including transformers, high-voltage lines, and electrical panels.

East 75th/76th Street Development Site, New York, NY

As the designated health and safety officer (HSO), Mr. Grens' responsibilities included the personal well-being of all on-site personnel during Phase II activities. He managed and supervised the excavation, removal, and off-site disposal of numerous hazardous materials and petroleum-containing underground storage tanks, associated hazardous and contaminated soil, and stained bedrock. This site was formerly utilized as a dry-cleaning facility, parking garage, and automobile repair facility. It was classified as a hazardous waste site because of leaking underground storage tanks. Additional tasks at this site included the continuous monitoring of work-zone and community air and dust particulate levels, implementing the health and safety plan (HASP), and collecting soil and tank product samples in accordance with applicable New York State regulations. Remedial activities at the site began in December 2000 (prior to the demolition of the on-site buildings) and were successfully completed in May 2001. The construction of a new school is anticipated on the site in the near future.

Memorial Sloan Kettering Cancer Center, New York, NY

Mr. Grens has performed numerous noise impact studies on the east side of midtown Manhattan to assist in the determination of the various project scenarios within each site's respective EIS. Noise produced by mobile sources (automobiles, trucks, and trains), stationary sources (machinery, ventilation systems, and manufacturing operations), and construction activities can cause stress-related illness, disrupt sleep, and break concentration. The noise impact study for the Memorial Sloan Kettering Cancer Center was conducted to determine real time noise levels prior to renovations and construction activities. This provided a background level reference point for when construction activities started. Mr. Grens' tasks included collecting relevant noise data at numerous locations during morning, afternoon, and evening rush hours to determine real time noise levels utilizing a Larsen Davis decibel level indicator.

Supermarket Redevelopment, New Fairfield, CT

AKRF provided consulting services to the developer and owner of a 9-acre site included conducting a remedial investigation and remediation of a site contaminated from former dry cleaning operations and off-site gasoline spills. The investigation included the installation of monitoring wells in three distinct aquifers, geophysical logging, pump tests, and associated data analysis. Mr. Grens performed remediation oversight, including the excavation of solvent-contaminated soil and health and safety air monitoring for volatile organic compounds (VOCs). Additionally, Mr Grens performed weekly inspections of the groundwater treatment system, including the collection of groundwater samples as art of the operation and maintenance of the system.

Columbia University Manhattanville Academic Mixed-Use Development, New York, NY

Mr. Grens performed numerous Phase I Environmental Site Assessments for the Columbia Manhattanville re-zoning project. He also performed Phase II subsurface activities recommended in AKRF's Phase I reports. Phase II activities included the installation of soil borings and groundwater monitoring wells and the collection of soil and groundwater samples.

St. Agnes Hospital Redevelopment, White Plains, NY

AKRF is currently working for North Street Community, LLC on the former St. Agnes Hospital campus in White Plains, New York. The project involves redeveloping the property into an assisted living and nursing home facility. Some of the existing buildings and uses will remain and several new buildings will be built for the new facility. AKRF's assignment includes preparing the site plan package to accompany the Draft Environmental Impact Statement (DEIS) for the project. Mr. Grens performed a Phase I Environmental Site Assessments of the numerous structures located on the property.

Roosevelt Union Free School District, Roosevelt, NY

Mr Grens performed numerous inspections for asbestos-containing materials (ACM) in the site buildings. Asbestos samples were collected as part of the ACM survey. Remediation activities include removal/closure of contaminated dry wells and underground petroleum storage tanks, and excavation and off-site disposal of petroleum- and pesticide-contaminated soil.

Flushing Waterfront Development, Queens, NY

The Muss Development Company's 14-acre waterfront site in Downtown Flushing was previously a Consolidated Edison facility, and included transformer storage and repair and multiple fueling facilities. Other former site uses included a foundry, a paint house, and an incinerator. The site contained extensive PCB contamination including non-aqueous phase liquid (NAPL). The project required extensive investigation to design a remediation plan under the State's BCP program. Remediation, including removal of more than 100,000 tons of contaminated soil has been completed and foundation work is underway. By 2010, the site will be redeveloped with a 3 million square foot retail and residential complex. The project will transform a neighborhood blight into a spectacular mixed-use development that will help revitalize the Flushing economy. Mr. Grens acted as the on-site project manager during remediation and construction activities required under the BCP.

MARCUS SIMONS

SENIOR VICE PRESIDENT

Marcus Simons is a Senior Vice President of AKRF with 20 years of environmental consulting experience, specializing in the assessment and cleanup of contaminated sites, including federal and state superfund, RCRA, TSCA, brownfield, voluntary cleanup and spill sites. His expertise includes health risk assessment, development of sampling plans, economic evaluations of remedial alternatives, and regulatory analysis.

Mr. Simons directs much of AKRF environmental due diligence work (recently managing environmental due diligence on Tishman/Blackrock's Peter Cooper/Stuyvesant Town acquisition, reportedly the largest real estate transaction in US history), including supervising preparation of numerous Phase I and Phase II Environmental Site Assessments, as well as more complex multi-site and litigation-related projects. Mr. Simons manages preparation of the contaminated-materials portions of AKRF's Environmental Impact Statements and Environmental Assessments and has experience with procedures for hazardous material requirements under NEPA and New York SEQRA/CEQR and E-designation programs. He also has extensive experience in statistics, selection of sites for controversial facilities, and federal and state wetland regulations and waterfront permitting. In addition to analytical work, Mr. Simons has considerable experience in presenting results to regulatory agencies and the general public.

Mr. Simons has managed some of the most complex cleanup sites in New York State including: the recently completed cleanup of a 12-acre PCB-contaminated former utility property in Flushing, Queens where a 3 million square foot retail/residential building is nearing completion (remediation was performed under the State Brownfield Cleanup Program, though the site was also subject to City jurisdiction under its E-Designation program); cleanup of the nation's largest former dental factory in Staten Island for reuse as single family housing; the investigation of several former manufactured gas plants; and the investigation and remediation associated with the reconstruction of the West Side Highway and Hudson River Park in Manhattan (from the Battery to 59th Street). Mr. Simons also has extensive experience with transportation projects (Second Avenue Subway, MTA/LIRR East Side Access, Cross Harbor Freight Movement Study, Route 9A Reconstruction), large-scale rezoning projects (Long Island City, Downtown Brooklyn, Jamaica) and public and private redevelopment work (Atlantic Yards, School Construction Authority, Queens West)

BACKGROUND

Education

M.S., Engineering and Public Policy, Carnegie-Mellon University, 1988

M.A. and B.A. (Honors), Mathematics/Engineering, Cambridge University, England, 1986

Years of Experience

Year started in company: 1995

Year started in industry: 1988

RELEVANT EXPERIENCE

CE Flushing Site, Flushing, NY

Mr. Simons directed the remediation of a former industrial site in Flushing, Queens, NY prior to its redevelopment as a 3 million square foot retail/residential complex. The property was cleaned up under the NYS Department of

Environmental Conservation Brownfield Cleanup Program and the NYC Department of Environmental Protection's E-Designation requirements. The remedial measures included the removal of aboveground and underground storage tanks, excavation and off-site disposal of TSCA, RCRA and non-hazardous wastes, NAPL removal, and removal and investigation of on-site drainage structures. The remediation and subsequent construction involved obtaining (or obtaining waivers from) numerous permits including those for NYSDEC Tidal Wetlands, NYSDEC Long Island Wells, NYSDEC SPDES/Stormwater and NYCDEP Sewer Use.

Peter Cooper Village/Stuyvesant Town, New York, NY

Mr. Simons directed the purchaser's environmental due diligence efforts for the bidding and subsequent acquisition of this 80-acre property in Manhattan. Much of the 110-building complex is underlain by former manufactured gas plants and Con Edison entered the site into NYSDEC's Voluntary Cleanup Program. Going forward Mr. Simons will manage oversight of activities that involve disturbance of MGP-contaminated soils, as well as future testing and potentially remediation.

MTA New York City Transit Manhattan East Side Transit Alternative (MESA)/Second Avenue Subway, New York, NY

Mr. Simons directed the contaminated material assessment for this multi-billion dollar transit initiative that would provide subway service to Manhattan's East Side. The assessment identified several hundred facilities along the alignment that could have impacted soil and/or groundwater and could require special materials handling and enhanced health and safety procedures. Additional evaluation of these sites is underway.

Ferry Point Park, Bronx, NY

Mr. Simons developed the material acceptance criteria (soil standards for capping materials) for the development of Ferry Point Park (including a golf course) in the Bronx. The New York City Department of Environmental Protection DEP and the New York State Departments of Health (DOH) and Environmental Conservation (DEC) agreed for the first time to relax their strict (TAGM 4046) criteria for clean soil, based on statistical analyses of background conditions and risk-based modeling.

Prince's Point, Staten Island, NY

Mr. Simons managed the complex cleanup (including the relocation of a contaminated tidal creek) of the nation's largest former dental factory site on Staten Island's waterfront. The site was on the State Superfund list. The future use of the site as single-family residential property entailed extensive negotiations with NYSDEC and NYSDOH. The project required obtaining (or obtaining waivers from) numerous permits including those for NYSDEC Tidal and Fresh Water Wetlands, USACOE (Nationwide) Permits, NYSDEC Coastal Erosion Hazard Area, NYSDEC SPDES and Stormwater, FEMA Modifications to Land in Floodplain, and USEPA Notification of PCB Waste Activity.

Route 9A Reconstruction, New York, NY

AKRF directed extensive studies for the reconstruction in Lower Manhattan proposed by the New York State Department of Transportation (NYSDOT) in cooperation with the Federal Highway Administration (FHWA). The project is arguably the most complex environmental analyses performed for a federally funded transportation project in New York City in the last 10 years. The firm was responsible for all environmental tasks as well as the preparation for the Draft, Supplementary, and Final Environmental Impact Statements (EISs) and Section 4(f) Evaluation for this 5-mile $250 million reconstruction of Route 9A as part of the recovery effort following the events of September 11th, 2001. Mr. Simons managed the extensive hazardous materials investigations and prepared the contract specifications for contaminated soil and tank removal, including Health and Safety oversight.

Hudson River Park, New York, NY

Mr. Simons is managing hazardous materials issues for the ongoing Hudson River Park construction, located adjacent to the Route 9A roadway. Construction is ongoing and Mr. Simons directs health and safety oversight and remediation during construction.

Jamaica Rezoning, Queens, NY

As part of the preparation of an Environmental Impact Statement, Mr. Simons managed the hazardous materials assessment of a multi-block area. In addition to conducting the assessment, Mr. Simons made recommendation as to the properties where "E-Designations" (city-recorded institutional controls on future development) should be placed.

Outlet City, Long Island City, Queens, NY

In Long Island City, Mr. Simons managed the investigation and interim remediation of an old factory complex where large volumes of creosote were spilled. The investigations and interim remedial measures (IRMs) took place under the New York State's Voluntary Cleanup Program (VCP).

MTA/LIRR East Side Access Project, New York, NY

Mr. Simons managed the hazardous materials investigations for multiple sites in the Bronx, Manhattan, and Queens associated with the Environmental Impact Statement (EIS) for the Long Island Rail Road connection to Grand Central Terminal. Mr. Simons continues to be involved in health and safety oversight related to the construction of the project.

New York City Department of Transportation, Lead Paint Removal and Disposal on Bridges Project, New York, NY

Mr. Simons conducted a regulatory analysis of related to the removal of lead paint from nearly 800 bridges. This analysis included an evaluation of the regulatory compliance of various proposed procedures with federal and state hazardous and solid waste management requirements.

American Felt and Filter Company, New Windsor, NY

Mr. Simons prepared a Remedial Investigation (including exposure assessment) and Feasibility Study for the country's oldest active felt manufacturing facility, located in Orange County. This solvent-contaminated site is on the State Superfund List.