90-30 METROPOLITAN AVENUE SITE

REGO PARK, QUEENS, NEW YORK

Operation, Monitoring and Maintenance Plan

NYSDEC VCP Number: V00253-2

Prepared for:

Titan Management LP
And
DPSW Forest Hills LLC

Prepared by:

FPM group™

909 MARCONI AVENUE

RONKONKOMA, NEW YORK 11779

NOVEMBER 2009

OPERATION, MONITORING AND MAINTENANCE PLAN

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Acronym	Definition
1,1,1-TCA	1,1,1-trichloroethane
AGC	Annual Guidance Concentration
AKRF	AKRF, Inc.
AOC	Area of Concern
AS	Air sparging
ASP	Analytical Services Protocol
AST	Aboveground storage tank
CAMP	Community Air Monitoring Plan
CLP	Contract Laboratory Procedures
CP	Community Participation
DUSR	Data Usability Summary Report
ECs	Engineering Controls
ENB	Environmental Notice Bulletin
ES&E	Environmental Science and Engineering
FER	Final Engineering Report
FPM	FPM Group, Ltd.
HASP	Health and Safety Plan
HVAC	Heating/ventilation/air conditioning
ICs	Institutional Controls
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
Objectives	NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives
OM&M	Operation, Monitoring and Maintenance
PCE	Tetrachloroethene
PID	Photoionization detector
PPE	Personal protective equipment
PSA	Preliminary Site Assessment
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAOs	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
ROI	Radius of Influence
Roux	Roux Associates, Inc.
scfm	standard cubic feet per minute
SCGs	Standards, criteria and guidance
SGC	Short-Term Guidance Concentration

Acronym	Definition
Standards	NYSDEC Class GA Ambient Water Quality Standards
STL	Severn-Trent Laboratory
SVE	Soil vapor extraction
TAGM	Technical Administrative Guidance Memorandum
TCL	Target Compound List
ug/l	micrograms per liter
UST	Underground storage tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program
VOC	Volatile organic compound

OPERATION, MONITORING AND MAINTENANCE PLAN

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required for fulfillment of Remedial Action at 90-30 Metropolitan Avenue (hereafter referred to as the "Site") under the New York State (NYS) Voluntary Cleanup Program (VCP) administered by New York State Department of Environmental Conservation (NYSDEC). The Site is being remediated in accordance with the Voluntary Cleanup Agreement (VCA) Index # D2-0001-04-02, Site #V00253-2, which was issued on June 4, 2002.

1.1.1 General

Titan Management LP entered into a VCA with the New York State Department of Environmental Conservation (NYSDEC) in June 2002 and DPSW Forest Hills LLC became a co-Volunteer in May 2005, to investigate and remediate a 1.87-acre property located in Rego Park, Queens, New York. This BVCA required the Applicants to investigate and remediate contaminated media at the Site. The boundary of this 1.87-acre VCP Site is shown on the Site Plan in Attachment 1.

This Operation, Monitoring and Maintenance (OM&M) Plan was prepared to manage contamination at the Site. Construction of the remedial system was completed in August 2007. Operation of the remediation system is currently ongoing. All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This OM&M Plan was prepared by FPM Group, Ltd. (FPM), on behalf of Titan Management LP and DPSW Forest Hills LLC (Co-Volunteers), in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated December 2002, and the guidelines provided by NYSDEC. This OM&M Plan addresses the means for implementation of Engineering Controls (ECs) and Institutional Controls (ICs).

1.1.2 Purpose

The Site will be subject to remedial activity, as described in this OM&M Plan, and may contain contamination left after completion of the Remedial Action performed under the VCP.

ICs will be incorporated into the Site remedy to provide proper management of contamination in the future to ensure protection of public health and the environment. A Site-specific deed restriction will be recorded with the Queens County Clerk following the completion of remediation. It will require adherence to all ICs placed on this Site by the deed restriction. ICs will provide restrictions on Site usage. This OM&M Plan includes all methods necessary to ensure compliance with all ECs for contamination at the Site. The OM&M Plan has been approved by the NYSDEC, and compliance with this Plan is required by the NYSDEC. This plan is subject to change by NYSDEC.

OM&M is the last phase of the remedial process and is triggered by the approval of the Final Engineering Report (FER) by NYSDEC. OM&M continues until remediation system operation and monitoring are completed in accordance with the OM&M Plan.

The OM&M Plan provides a detailed description of all procedures required to remediate and manage contamination at the Site in accordance with the VCA with the NYSDEC. This includes: (1) development, implementation, and management of all Engineering and Institutional Controls; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain the treatment system (including an Operation and Maintenance Manual); (4) submittal of OM&M Reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to NYSDEC; and (5) defining criteria for termination of treatment system operation.

To address these needs, this OM&M Plan includes four plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of the remedial treatment system; and (4) an OM&M Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC.

OM&M activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually until groundwater remediation is completed.

Important notes regarding this OM&M Plan are as follows:

- This OM&M Plan defines Site-specific implementation procedures. The penalty for failure to implement the OM&M Plan is revocation of the VCA.
- The Voluntary Cleanup Agreement (Index #D2-0001-04-02; Site #V00253-02) for the Site requires conformance with an OM&M Plan in the event that the remedy

requires OM&M, and therefore, serves as a contractual binding authority under which this OM&M Plan is to be implemented.

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The Site is located in the County of Queens, New York City, New York and is identified as Block 3884 and Lot 34 on the Queens County Tax Map. The Site is an approximately 1.87-acre area bounded by Metropolitan Avenue to the north, 73rd Avenue to the south, Trotting Course Lane to the east, and a bowling alley to the west (see Figure 1.2.1.1). The boundary of the Site is more fully described in Appendix A of the FER.

1.2.2 Site History

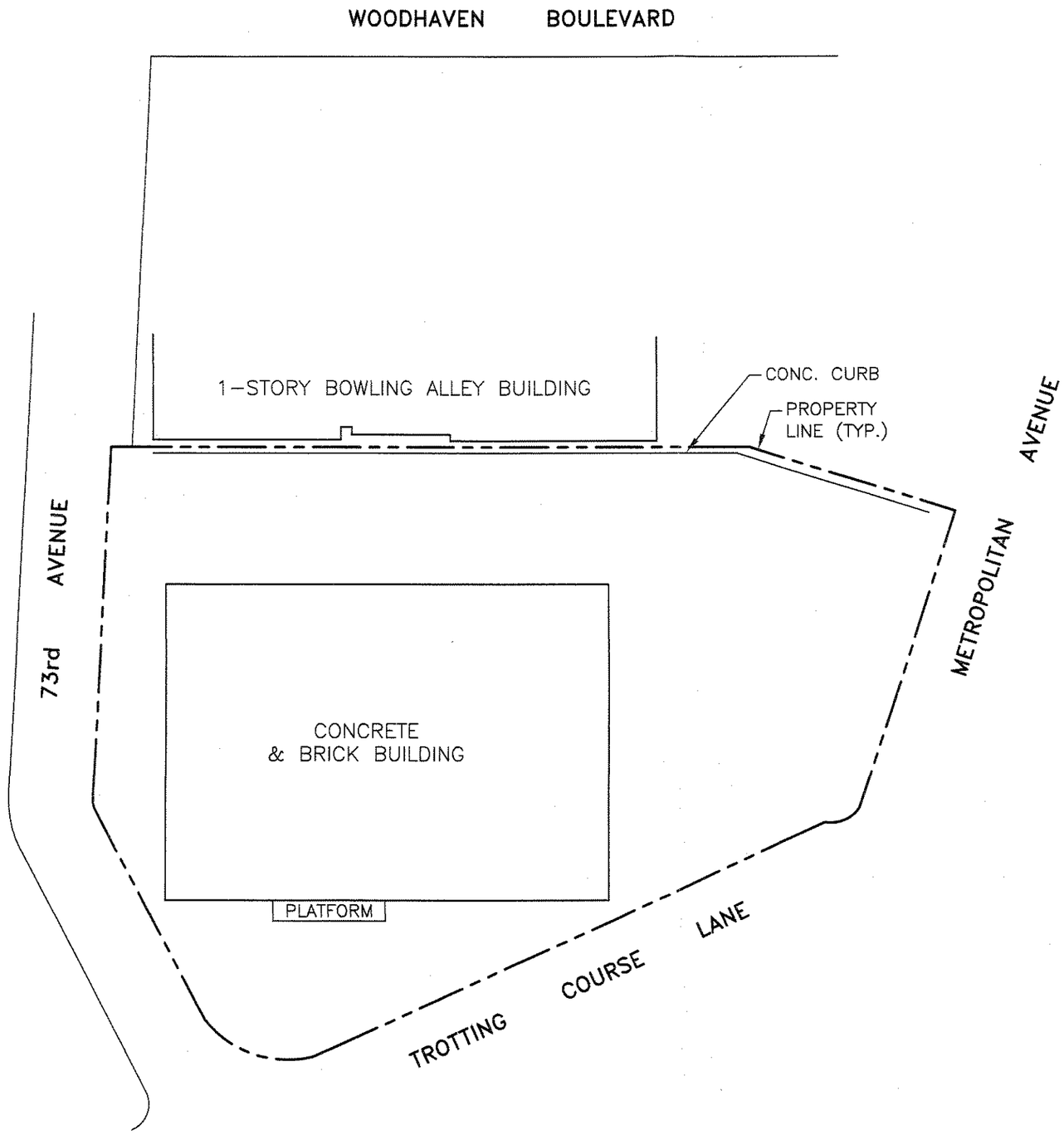
Up to 1950 the Site was occupied by various buildings associated with the residential estates and farming activities of the Vandeveer family, as shown on Sanborn maps. In the 1930s a paved road, 90th Place, was present between the Site and the adjoining bowling alley to the west.

The existing Site building was constructed in 1951 and was operated as a pharmaceutical distribution warehouse by Foremost-McKesson, Inc. until 1976. Between 1977 and 1988 the property was owned by Heidelberg Eastern, Inc., which manufactured and distributed printing presses and parts. The Site building was used primarily for administration, equipment repair, and warehousing rather than manufacturing. Heidelberg Eastern employees reported that kerosene was the only solvent used at the Site. Kerosene was reportedly used in a cleaning booth in the northeastern portion of the building.

A 7,500-gallon underground storage tank (UST) for #2 fuel oil for heating purposes was registered for the site and was confirmed to be present to the southeast of the building. An empty 550-gallon above-ground storage tank (AST) was also identified in the northeast loading dock area and was reported to be used for storage of waste kerosene or mineral spirits.

In late 1988 the New York City Industrial Development Agency took title to the property, although Heidelberg Eastern continued to operate at the Site. In 1993 Heidelberg Eastern became EAC USA. The Site building became vacant at about that time and remained vacant until 2007 when it was redeveloped for commercial (retail) use. Redevelopment activities began in 2006 and were completed in 2007.

In July 2005, prior to redevelopment, the 7,500-gallon fuel oil UST and the 550-gallon empty AST were removed from the property and properly disposed. No issues of potential environmental concern were identified with either of these tanks during their removal.



APPROXIMATE SCALE IN FEET:

0 30 60 120

SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

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FIGURE 1.2.1.1
SITE PLAN
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: J.S.	Checked By: B.C.	Date: 9/2/05

1.2.3 Geological Conditions

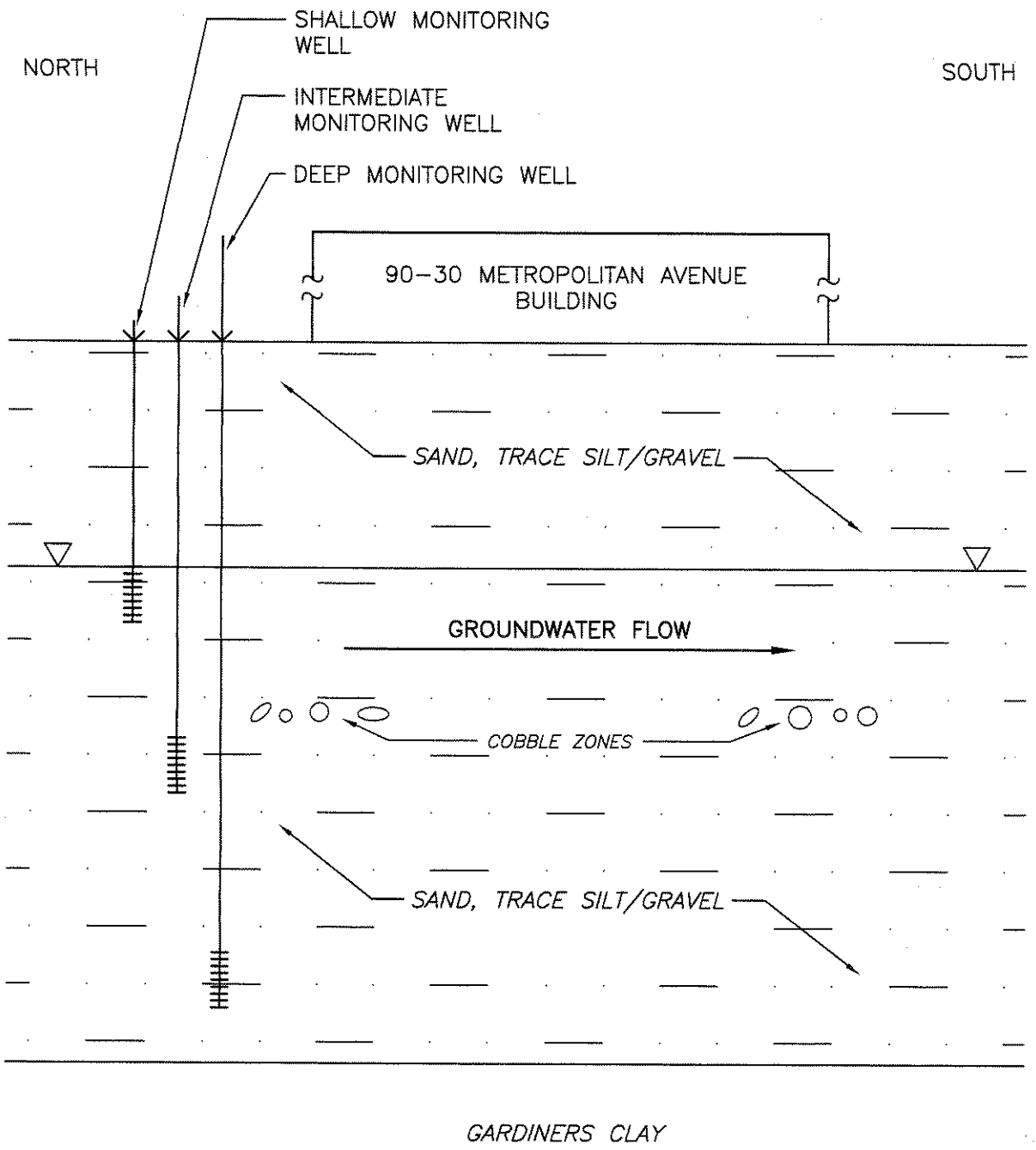
Geologic conditions beneath the site have been evaluated from published literature and from onsite soil borings. The site is underlain by Precambrian crystalline bedrock at an estimated depth of over 400 feet below grade. The bedrock is overlain, in turn, by the Cretaceous Raritan Formation (unconsolidated sands and clays), the Cretaceous Magothy Formation (unconsolidated sands and clays), the Pleistocene Jameco Gravel, and the Pleistocene Gardiner's Clay. The surface of the Gardiner's Clay is approximately 130 to 150 feet below grade in the site area. The more recent deposits at the site consist primarily of glacial moraine materials, including gravel, sand, and silt with some boulders and clay. The glacial moraine deposits form part of the Upper Glacial Aquifer. The deeper Raritan, Magothy, and Jameco deposits also contain aquifers.

Onsite soil borings have been conducted to up to approximately 150 feet below grade and have encountered medium to fine-grained sand and silt, with some gravel and trace clays to at least 150 feet below grade. The primary lithology in the unsaturated zone is sand with trace silt, trace silt and clay, and/or fine gravel. The gravel component ranges from less than 5% to up to approximately 50%. A cobble zone was identified from approximately 65 to 70 feet. No clays, silts or other lithologies with the potential to significantly impact air flow were noted in the unsaturated zone. In a few cases, silty sand was noted in the interval from approximately 7 to 11 feet below grade. A dense clay of low plasticity was recorded in some borings at depths around 130 to 150 feet and is thought to be the top of the Gardiner's Clay. Remediation is conducted above this clay layer. Soil development was found to be minimal beneath the site and no fill material has been identified. A geologic cross-section depicting the site stratigraphy is shown in Figure 1.2.3.1.

Groundwater is present in the Upper Glacial moraine deposits at a depth of approximately 45 feet below grade and generally flows to the south-southeast. A groundwater flow map is shown in Figure 1.2.3.2. Groundwater quality has been evaluated for the shallow (0 to 10 feet below the water table), intermediate (30 to 40 feet below the water table) and deep (65 to 80 feet below the water table) intervals in the Upper Glacial Aquifer, as discussed below.

1.3 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The FER and all Site documents, including the Remedial Investigation Report and Remedial Action Work Plan, are maintained by the NYSDEC (or successor agency). At the time of publication, these reports could be found at the Region 2 NYSDEC offices in Long Island City, New York.



APPROXIMATE VERTICAL SCALE: 1"=30'

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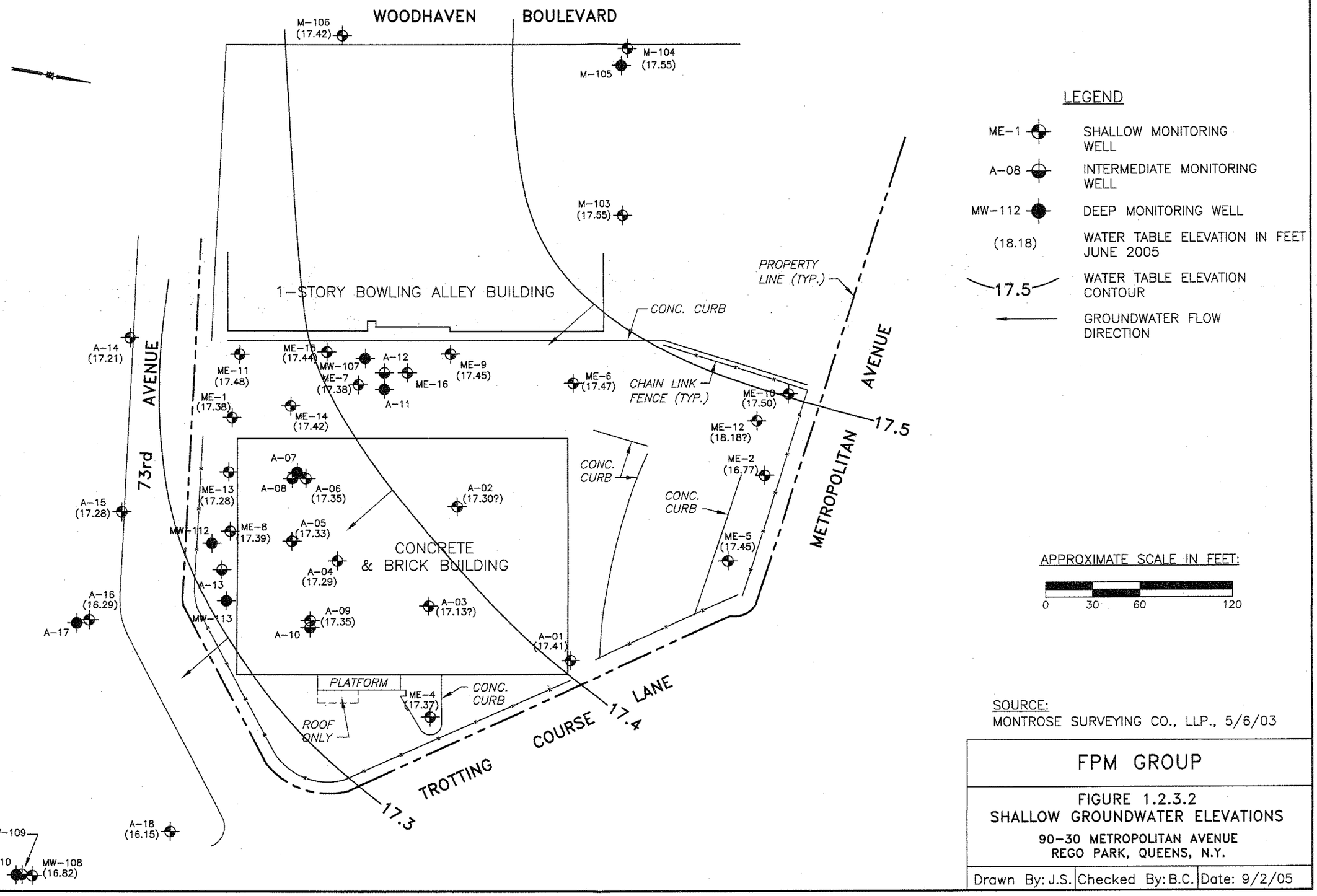
FIGURE 1.2.3.1
SUBSURFACE CROSS–SECTION
90–30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: J.S.	Checked By: S.D.	Date: 11/28/07



LEGEND

ME-1	SHALLOW MONITORING WELL
A-08	INTERMEDIATE MONITORING WELL
MW-112	DEEP MONITORING WELL
(18.18)	WATER TABLE ELEVATION IN FEET JUNE 2005
17.5	WATER TABLE ELEVATION CONTOUR
	GROUNDWATER FLOW DIRECTION

APPROXIMATE SCALE IN FEET:

0 30 60 120

SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

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FIGURE 1.2.3.2
SHALLOW GROUNDWATER ELEVATIONS
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: J.S.	Checked By: B.C.	Date: 9/2/05

1.3.1 Summary of Remedial Investigation Findings

Tetrachloroethene (PCE) was first detected in the groundwater beneath the Site in December 1992 during an investigation performed by Environmental Science and Engineering (ES&E) for Heidelberg Eastern. PCE was found in groundwater samples from the three wells installed onsite but was not detected in soil samples from above the groundwater surface.

Delineation of PCE impact in groundwater continued in 1995 when 13 additional groundwater monitoring wells were installed by Soil Mechanics. PCE was detected in groundwater throughout the southern portion of the Site and on the west and south sides of the building. However, no source material was located in soil samples. A soil gas survey was also performed on the south side of the Site building. Organic vapors were reported to have been detected in soil gas; soil gas was further evaluated during later investigations as discussed below.

Additional investigations were performed by Roux Associates, Inc. (Roux) in 1995 and 1996 for the purposes of delineating the extent of groundwater impact and to locate any onsite source areas through soil gas and soil sampling. Soil gas samples were collected from 114 locations in and around the Site building but only trace levels of PCE (up to 4.81 micrograms per liter, or ug/l), consistent with diffusion from the impacted groundwater, were detected. Soil sampling was performed in areas where PCE was detected in soil gas; however, no PCE was detected in these samples.

Roux performed additional soil and groundwater sampling in 1997. The results indicated a southeast direction of groundwater flow. The existing and newly-obtained data failed to identify an onsite source of PCE and, since PCE was present at elevated concentrations on the western (upgradient) side of the Site, it was concluded that the PCE source was located offsite.

IT performed additional soil, soil gas, and groundwater sampling at the Site and adjoining properties in 2000 and 2001. The groundwater flow direction was identified as southwest during this study. No source area was identified during the IT sampling. However, the southern portion of the Site building was a suspected source area based on elevated PCE levels in groundwater near the south wall of the building, the past use of the building for servicing printing machinery, and the groundwater flow direction. Therefore, further investigation of this area was performed during the RI, as discussed below.

An RI was performed at the Site by AKRF, Inc. (AKRF) in 2003 and included soil and groundwater sampling. The results were reported in an April 2004 RI Report. The groundwater flow direction was confirmed to be to the southeast at the eastern end of the Site and to the south at the western end of the Site. Groundwater data indicated the presence of two slightly overlapping plumes of PCE: one associated with the southern portion of the Site and one

associated with adjoining bowling alley to the west. Soil sampling was performed on the southern portion of the Site in an effort to identify a source area. However, no PCE source area was identified.

Additional groundwater sampling was performed in June 2005 and was reported in the RAWP (FPM, November 2005). These sample results are summarized below.

Pilot testing was performed to evaluate the suitability of air sparging/soil vapor extraction (AS/SVE) to address Site PCE contamination and to obtain necessary performance information to design a full-scale AS/SVE system. Pilot test results were described in the Pilot Test Report (FPM, September 2005).

The conceptul model of the site indicates that two separate plumes of PCE-impacted groundwater are present in the shallow, intermediate, and deep groundwater beneath the Site. The western-most plume extends from beneath the adjacent bowling alley property into the parking area located in the southwestern portion of the Site. The eastern-most plume is present beneath and to the south of the southern portion of the Site building. This plume appears to be commingling with the western plume and is generally contained onsite.

No significant concentrations of VOCs have been identified in any soil samples from the Site and no exceedances of the NYSDEC Recommended Soil Cleanup Objectives (TAGM 4046) have been noted. Therefore, no source soil has been identified. This is consistent with the absence of any identified PCE or other chlorinated solvent use at this site.

No source areas, or Areas of Concern (AOCs), have been identified at the site, based on historic site information and numerous soil borings. The contamination present on the site includes dissolved PCE in groundwater and potential soil vapor impacts associated with the groundwater.

Below is a summary of the Site conditions based on the findings of the Remedial Investigation and previous investigations:

1.3.1.1 Soil

Table 2.1.2.1 in the FER presents a summary of Site soil data from the RI. A low concentration (55 ug/kg) of PCE was noted in a soil sample from one boring situated within the vicinity of the southwest corner of the Site building and trace PCE (0.6 to 1.0 ug/kg) was also noted in three other borings, primarily in proximity to the water table. These concentrations are well below the NYSDEC Recommended Soil Cleanup Objectives (TAGM 4046) and are not indicative of a source. In addition, no significant concentrations of any other VOCs have been

identified in any previous soil samples from the Site and no exceedances of the NYSDEC Objectives have been noted.

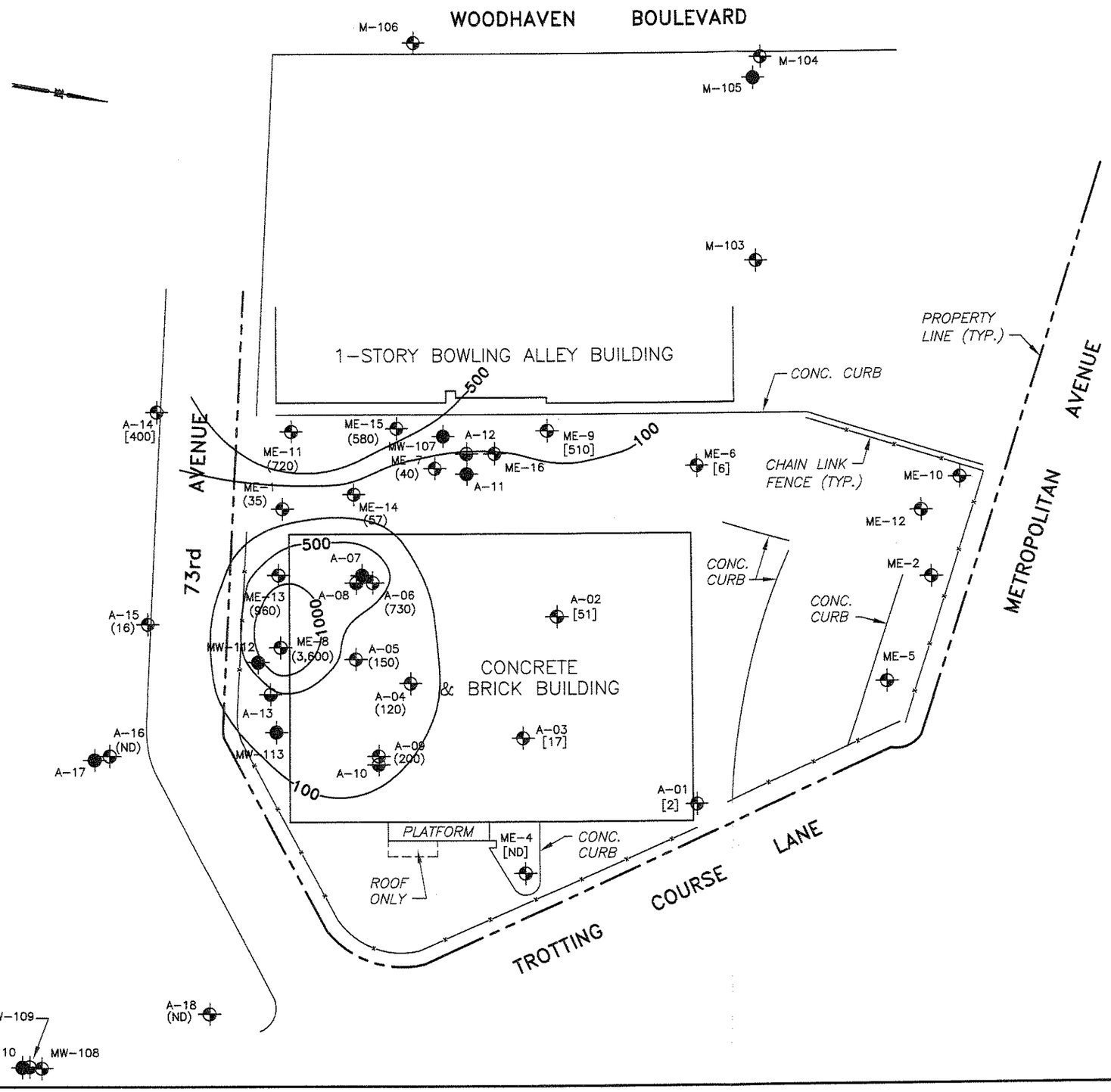
Although no source areas have been identified, in the unlikely event that impacted soil is present the implemented remedial measures have been designed to address potential on-site soil impacts in the areas where the groundwater is being remediated. The remedial measures are not designed or intended to address any off-Site sources that may be present.

1.3.1.2 Onsite Groundwater

Two separate plumes of PCE-impacted groundwater are present in the groundwater beneath the Site. The western-most plume extends from beneath the adjacent bowling alley property into the parking area located in the southwestern portion of the Site and is further discussed in Section 1.3.2 herein. The eastern-most plume is present beneath and to the south of the southern portion of the Site building. This plume appears to be commingling with the western plume and is generally contained onsite. Figure 1.3.1.2.1 depicts the configuration of the PCE plumes in the shallow groundwater in June 2005. The groundwater flow direction in the shallow water table is generally to the south and southeast and is consistent with the distribution of PCE in the groundwater, as shown in Figure 2.1.1.1 in the FER and discussed below.

PCE concentrations in the shallow groundwater in June 2005 ranged from non-detect to 3,600 ug/l, as shown on Table 1.3.1.2.1. Cis-1,2-dichloroethene (cis-1,2-DCE) was also detected in one sample at an estimated concentration of 48 ug/l. Intermediate-depth groundwater contained PCE at concentrations of 200 to 3,300 ug/l, as shown in Table 1.3.1.2.2. Deep-interval wells contained PCE at concentrations ranging from non-detect to 170 ug/l, as shown in Table 1.3.1.2.3. Other then the one detection of cis-1,2-DCE, no chlorinated solvent VOCs other than PCE were detected in the shallow, intermediate, or deep groundwater.

These data were compared to the most recent previous sampling results from these wells and generally indicated continuing significant decreases in VOC concentrations at nearly all of the onsite and offsite wells. Decreases in PCE were observed at all of the offsite downgradient wells and appear to reflect dispersion of the plumes since breakdown products have not been detected above trace levels and no increase in downgradient concentrations has been observed. In addition, the area of separation between the Site plume and the bowling alley plume has become more pronounced. Groundwater data continued to indicate the presence of two slightly overlapping plumes of PCE: one associated with the southern portion of the Site and one associated with adjoining bowling alley to the west. The June 2005 groundwater PCE concentration data were used in developing the remedial design implemented at the Site.



LEGEND

ME-1	SHALLOW MONITORING WELL
A-08	INTERMEDIATE MONITORING WELL
MW-112	DEEP MONITORING WELL
(35)	PCE CONCENTRATION IN MICROGRAMS PER LITER (JUNE 2005)
[35]	PCE CONCENTRATION IN MICROGRAMS PER LITER (MAY 2003)
100	PCE CONCENTRATION CONTOUR IN MICROGRAMS PER LITER (JUNE 2005)

APPROXIMATE SCALE IN FEET:

0 30 60 120

SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 1.3.1.2.1
PCE DISTRIBUTION IN SHALLOW GROUNDWATER
JUNE 2005
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: J.S.	Checked By: B.C.	Date: 9/2/05

TABLE 1.3.1.2.1
GROUNDWATER CHEMICAL ANALYTICAL DATA
SHALLOW WELLS, JUNE 2005
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Number	ME-1	ME-7	ME-8	ME-11	ME-13	ME-14	ME-15	A-04	A-05	A-06	A-09	A-15	A-16	A-18	NYSDEC Class GA Ambient Water Quality Standards
Sample Date	6/05	6/05	6/05	6/05	6/05	6/05	6/05	6/05	6/05	6/05	6/05	6/05	6/05	6/05	
Target Compound List Volatile Organic Compounds in micrograms per liter															
Acetone	ND	ND	ND	ND	15 J	ND	ND	ND	ND	20 JB	2.9 JB	ND	ND	ND	50
Methylene chloride	1.8 JB	0.51 JB	**54 JB**	**17 JB**	**17 JB**	0.49 JB	**16 JB**	1.8 JB	2.0 JB	**16 JB**	1.8 JB	ND	ND	0.40 JB	5
cis-1,2-Dichloroethene	ND	ND	ND	ND	**48 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
2-Butanone	ND	ND	ND	ND	ND	ND	ND	2.5 JB	ND	21 JB	ND	ND	ND	ND	50
Chloroform	ND	ND	ND	ND	ND	ND	ND	1.6 J	ND	ND	ND	1.3 J	0.74 J	ND	7
Tetrachloroethene	**35**	**40**	**3,600**	**720**	**960**	**57**	**580**	**120**	**150**	**730**	**200**	**16**	ND	ND	5
Total VOCs*	35	40	3,600	720	1,023	57	580	121.6	150	730	200	17.3	0.74	ND	-

Notes:

ND = Not detected

VOCs = Volatile Organic Compounds

*Excluding suspected field/lab contamination

Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standards

NYSDEC = New York State Department of Environmental Conservation

J = Estimated concentration below reporting limit

B = Analyte detected in an associated blank sample

- = Not established

TABLE 1.3.1.2.2
GROUNDWATER CHEMICAL ANALYTICAL DATA
INTERMEDIATE WELLS, JUNE 2005
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Number	A-08	A-10	A-12	A-13	NYSDEC Class GA Ambient Water Quality Standards
Sample Date	6/05	6/05	6/05	6/05	
Target Compound List Volatile Organic Compounds in micrograms per liter					
Acetone	**450 B**	3.0 JB	31 J	ND	50
Methylene chloride	**57 JB**	1.7 JB	**35 JB**	**8.0 JB**	5
Tetrachloroethene	**3,300**	**200**	**1,900**	**470**	5
Total VOCs*	3,300	200	1,931	470	-

Notes:

ND = Not detected

VOCs = Volatile Organic Compounds

*Excluding suspected field/lab contamination

Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standards

NYSDEC = New York State Department of Environmental Conservation

J = Estimated concentration below reporting limit

B = Analyte detected in an associated blank sample

- = Not established

TABLE 1.3.1.2.3
GROUNDWATER CHEMICAL ANALYTICAL DATA
DEEP WELLS, JUNE 2005
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Number	A-07	A-17	MW-107	MW-112	MW-113	NYSDEC Class GA Ambient Water Quality Standards
Sample Date	6/05	6/05	6/05	6/05	6/05	
Target Compound List Volatile Organic Compounds in micrograms per liter						
Acetone	3.2 JB	ND	ND	ND	ND	50
Methylene chloride	1.8 JB	0.57 JB	1.4 JB	0.75 JB	0.62 JB	5
2-Butanone	7.0 JB	ND	ND	ND	ND	50
Tetrachloroethene	**170**	ND	1.2 J	3.2 J	1.4 J	5
Total VOCs*	170	ND	1.2	3.2	1.4	-

Notes:

ND = Not detected

VOCs = Volatile Organic Compounds

*Excluding suspected field/lab contamination

Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standards

The Site-related eastern plume extends to the north side of 73rd Avenue. The detections of PCE in offsite downgradient wells are only slightly above the NYSDEC Class GA Ambient Water Quality Standard and have generally decreased in concentration. These detections are expected to continue to decline due to the remedial measures being implemented. The remedial measures are designed to reduce the potential for further offsite migration.

The western plume associated with the bowling alley extends offsite to at least the southern side of 73rd Avenue, as further described in Section 1.3.2. The remedial measures are designed to address the portion of this plume on the 90-30 Metropolitan Avenue Site only, as per the October 4, 2006 Addendum to the RAWP.

In accordance with the VCA for the Site, the remedial measures described herein are intended to address the existing contamination at the Site, which includes the portion of the adjoining PCE plume that is present on the Site as well as the onsite plume. However, the remediation is not intended to address any off-Site source material.

1.3.1.3 Soil Vapor

Soil gas sampling results prior to the remedial activities include shallow SVE pilot test effluent sampling results, which showed a maximum PCE concentration of 140 parts per billion by volume (ppbv) in the effluent from the shallow subsurface. Additional soil gas sampling and indoor air sampling were conducted in conjunction with the remedial measures described herein. These sampling results are discussed in Section 1.4.3. The remedial measures are designed to address potential onsite soil gas impacts.

1.3.1.4 Aboveground and Underground Storage Tanks

A 7,500-gallon UST for #2 fuel oil for heating purposes was registered for the site and was formerly present to the southeast of the building. An empty 550-gallon AST was formerly present in the northeast loading dock area and was reported to be used for storage of waste kerosene or mineral spirits.

In July 2005, prior to redevelopment, the 7,500-gallon fuel oil UST and the 550-gallon empty AST were removed from the property and properly disposed. The AST was found to be completely empty with no residual sludge, staining, or odors. This empty AST was removed and properly disposed.

The UST was emptied of its contents prior to removal from the ground. The removed UST was inspected, cut open, and cleaned. All wastes, including residual oil, tank bottoms, and cleaning waste, were properly removed and disposed offsite by licensed waste scavengers. The UST was inspected and found to be constructed of heavy-gage steel and was free of holes or

significant corrosion. Following inspection, the UST was removed from the site and properly disposed. An affidavit was filed with the NYC Fire Department to document this removal.

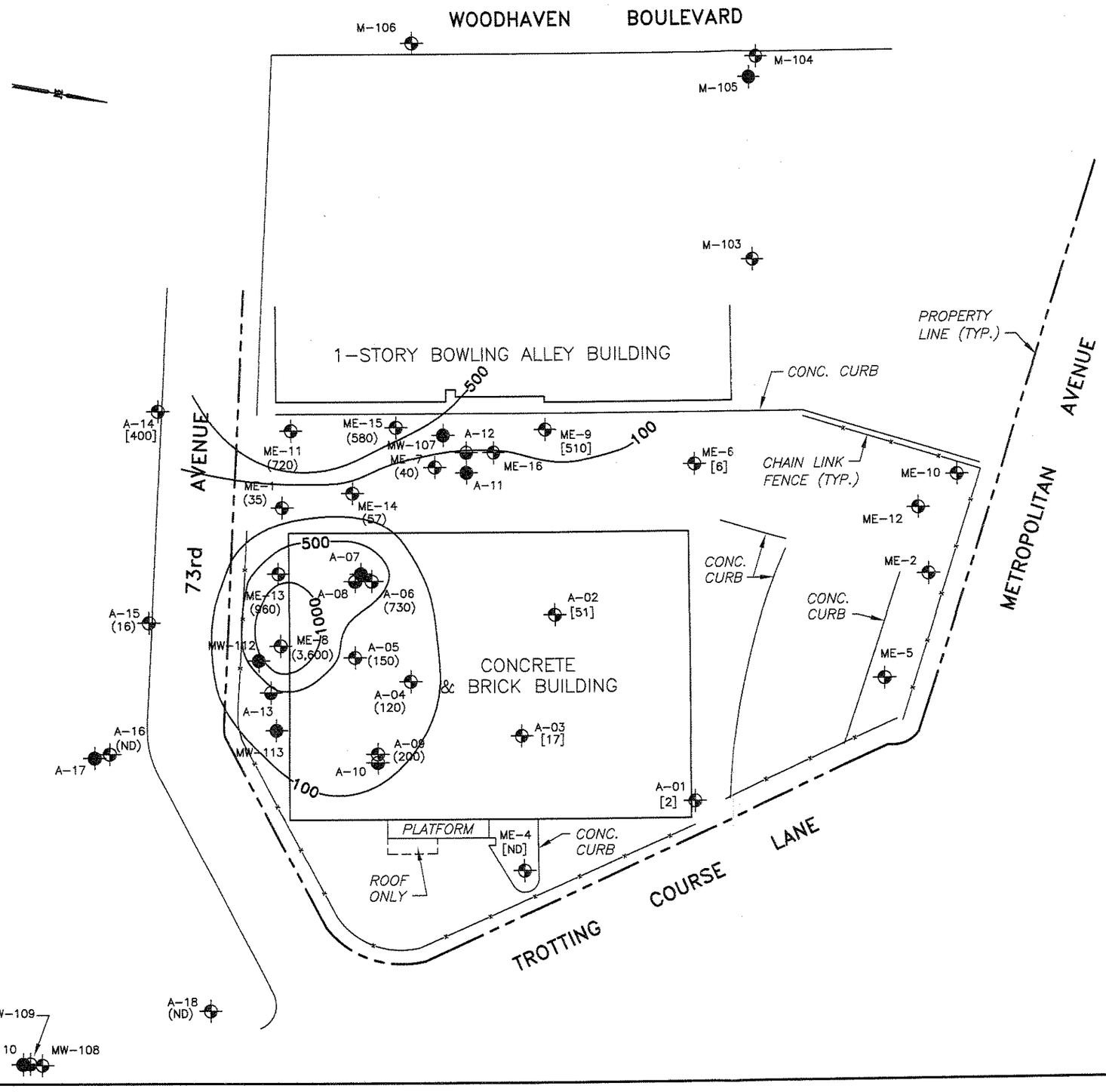
The UST excavation was visually examined to evaluate its condition and was screened with a calibrated photoionization detector (PID). No petroleum staining or odors or PID responses were noted in the excavation. Confirmatory samples were collected to document the condition of the remaining soil and were analyzed for NYSDEC STARS Table 2 compounds by a NYSDOH-certified laboratory. No VOCs were detected in any of the samples. Several semivolatile organic compounds (SVOCs) were detected in the west and south sidewalls of the excavation, but only one SVOC was noted to slightly exceed its NYSDEC Objective. This exceedance does not appear to be indicative of a petroleum release as there were no other indications of a potential petroleum release (odors, staining, or PID responses), and the detection was only slightly above its Objective. It appears that this SVOC is associated with the backfill material used during the original UST installation and does not present a concern.

1.3.2 Offsite Plume from Adjoining Property

In addition to the onsite plume beneath the south-central portion of the Site, the Site is also impacted by an offsite plume of PCE-impacted groundwater that is present beneath and downgradient of the adjacent bowling alley property. This plume extends into the parking area located on the southwestern portion of the Site where it commingles with the onsite plume. The general configuration of these two plumes on the Site is shown on Figure 1.3.2.1. This configuration is consistent with the groundwater flow direction in the Site vicinity, which is to the southeast, as shown in Figure 1.3.2.2.

A January 7, 1997 Voluntary Cleanup Site Assessment Report (Site Assessment Report) was prepared for the Site by Roux and was submitted to the NYSDEC. Soil samples collected from the 90-30 Metropolitan Avenue Site above the groundwater surface showed no detections of PCE, even though groundwater sampling conducted from 1992 to 1995 indicated the presence of PCE in groundwater at the Site. The Site Assessment Report also confirmed a southeasterly groundwater flow direction based on water table elevation data from 18 onsite and offsite wells (see Figure 1.3.2.3). Furthermore, the Site Assessment Report identified an offsite source for the PCE due to elevated PCE concentrations in wells on the upgradient side of the Site adjoining the bowling alley property and the absence of any indications of a potential onsite source (historic PCE usage or impacted soil).

A Supplemental Investigation was conducted on the 90-30 Metropolitan Avenue Site by Roux in 1997 following receipt of NYSDEC comments on the Site Assessment Report. Specifically, the NYSDEC requested additional onsite soil sampling, additional groundwater



LEGEND

ME-1 ⊕	SHALLOW MONITORING WELL
A-08 ⊕	INTERMEDIATE MONITORING WELL
MW-112 ⊕	DEEP MONITORING WELL
(35)	PCE CONCENTRATION IN MICROGRAMS PER LITER (JUNE 2005)
[35]	PCE CONCENTRATION IN MICROGRAMS PER LITER (MAY 2003)
—100—	PCE CONCENTRATION CONTOUR IN MICROGRAMS PER LITER (JUNE 2005)

APPROXIMATE SCALE IN FEET:

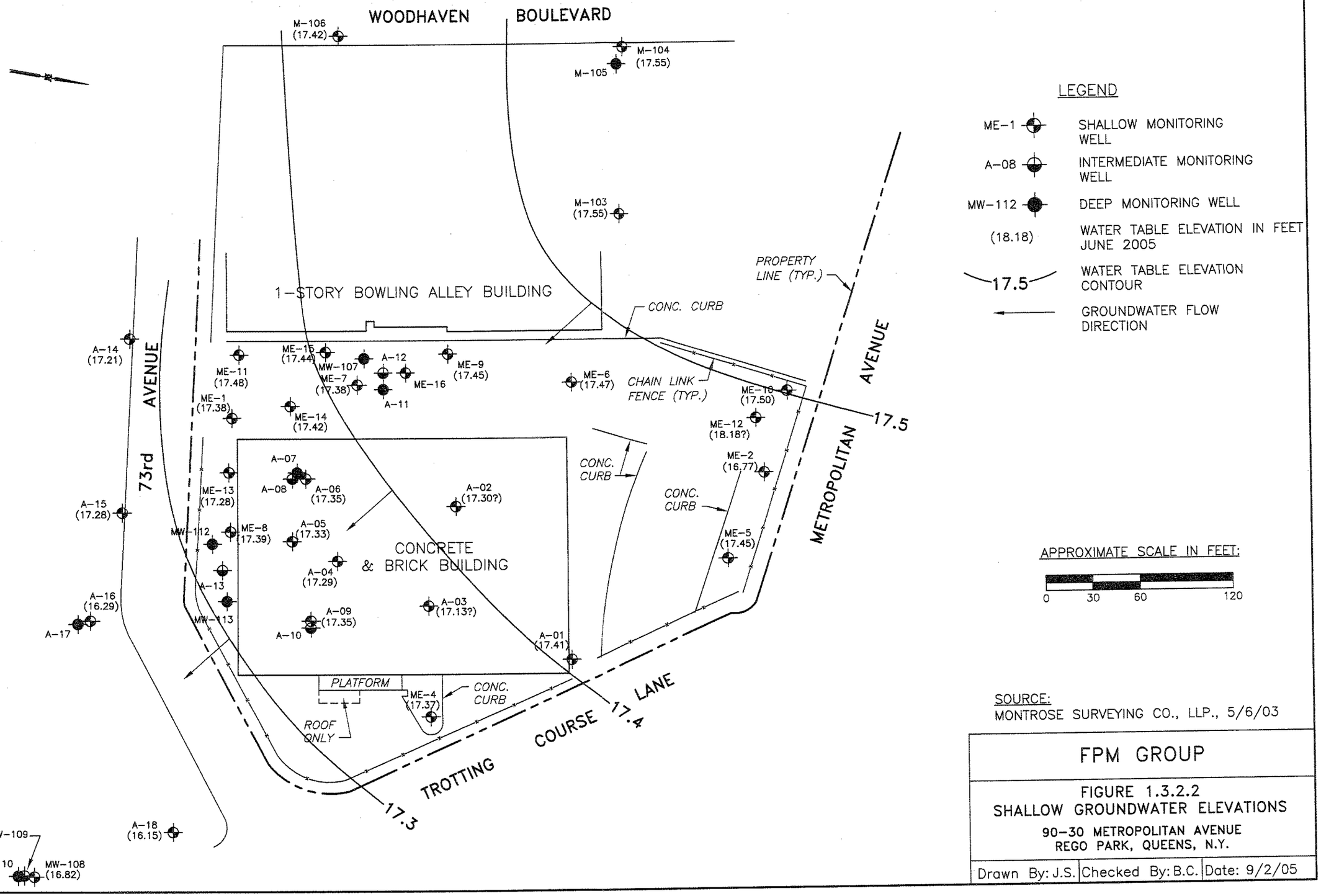
0 30 60 120

SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 1.3.2.1
PCE DISTRIBUTION IN SHALLOW GROUNDWATER
JUNE 2005
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: J.S. | Checked By: B.C. | Date: 9/2/05



LEGEND

ME-1	SHALLOW MONITORING WELL
A-08	INTERMEDIATE MONITORING WELL
MW-112	DEEP MONITORING WELL
(18.18)	WATER TABLE ELEVATION IN FEET JUNE 2005
17.5	WATER TABLE ELEVATION CONTOUR
	GROUNDWATER FLOW DIRECTION

APPROXIMATE SCALE IN FEET:

0 30 60 120

SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 1.3.2.2
SHALLOW GROUNDWATER ELEVATIONS
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: J.S. | Checked By: B.C. | Date: 9/2/05

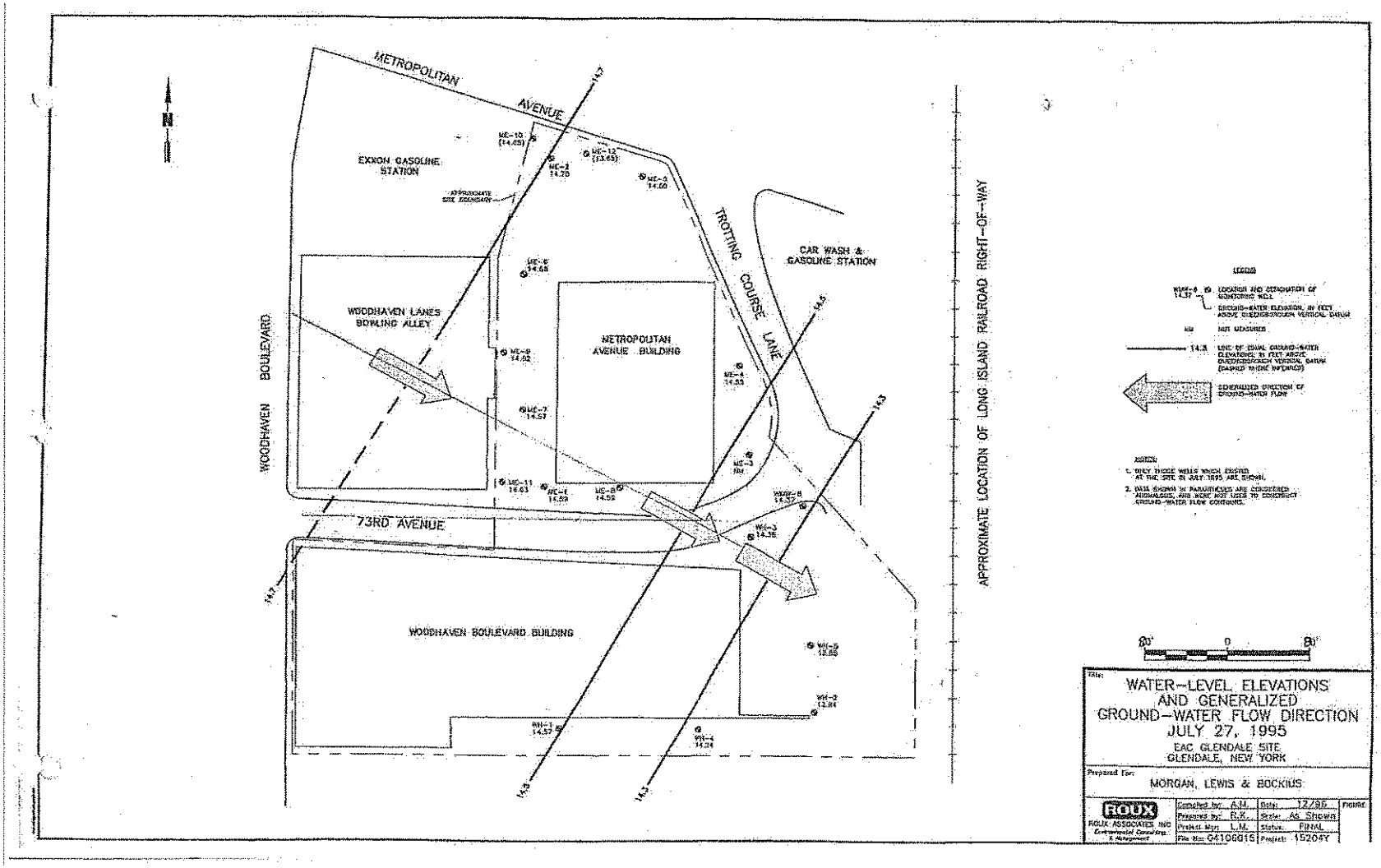

METROPOLITAN AVENUE
EXXON GASOLINE STATION
CAR WASH & GASOLINE STATION
WOODHAVEN LANES BOWLING ALLEY
METROPOLITAN AVENUE BUILDING
WOODHAVEN BOULEVARD
TROTTING COURSE LANE
73RD AVENUE
WOODHAVEN BOULEVARD BUILDING
APPROXIMATE LOCATION OF LONG ISLAND RAILROAD RIGHT-OF-WAY
N
LEGEND
NOTES:
WATER-LEVEL ELEVATIONS AND GENERALIZED GROUND-WATER FLOW DIRECTION JULY 27, 1995
EAC GLENDALE SITE GLENDALE, NEW YORK
Prepared For: MORGAN, LEWIS & BOCKIUS
ROUX ASSOCIATES, INC.
Compiled by: A.M.
Prepared by: R.K.
Project Mgr: L.M.
File No: G4106015
Date: 12/95
Scale: As Shown
Status: FINAL
Project: 15204Y

FIGURE 1.3.2.3

sampling, and additional water level measurements to allow for further evaluation of the onsite conditions and the potential for an offsite PCE source. No PCE was detected in any of the shallow or intermediate-depth onsite soil samples. PCE was found in only a few deep soil samples in proximity to the water table at very low levels (up to 0.04 ppm). These detections were in the areas where the highest PCE levels were observed in groundwater and it was concluded that the low levels of PCE seen in the soil samples resulted from volatilization from the impacted groundwater and did not originate from an onsite PCE source. It was concluded in the Supplemental Investigation Report submitted to the NYSDEC (Roux, June 23, 1997) that a plume of PCE-impacted groundwater was associated with the bowling alley.

The NYSDEC subsequently contracted with IT Engineering of New York, P.C. (IT) to perform a Preliminary Site Assessment (PSA) that included both the Site and the adjoining bowling alley property. The results of the PSA were reported to the NYSDEC in January 2002. The PSA report documented PCE use on the bowling alley property in the form of various bowling alley cleaning products that contained PCE. The groundwater flow direction was reported to range from southwest to southeast and elevated PCE concentrations were found in groundwater on both the east and west sides of the bowling alley property.

AKRF, Inc. (AKRF) prepared a Remedial Investigation (RI) Report for the 90-30 Metropolitan Avenue Site in April 2004. This RI report included groundwater data collected from the perimeter of the bowling alley property in 2003, as shown on Figure 1.3.2.4. AKRF concluded that two somewhat overlapping plumes of PCE-impacted groundwater are present in this area. The western (bowling alley) plume extends from the east side of Woodhaven Boulevard eastward under the bowling alley and onto the southwestern side of the Site. AKRF observed that there are relatively few monitoring wells on the bowling alley property and none under the bowling alley building (which occupies nearly the entire property) and, therefore, this plume is not well-defined. However, significant PCE concentrations were present on the north, west, south, and east sides of the bowling alley building, suggestive of a potential source beneath the building. As shown on Figure 1.3.2.4, the southern (downgradient) extent of the bowling alley plume is not well-defined by the 2003 data.

Figure 1.3.2.1 depicts the configuration of the PCE plumes in the shallow groundwater in June 2005, as documented in the Remedial Action Work Plan (RAWP) for the 90-30 Metropolitan Avenue Site (FPM, November 2005). The groundwater flow direction in the shallow water table in 2005 was generally to the south and southeast, as shown in Figure 1.3.2.2, and is consistent with the distribution of PCE in the groundwater at that time.

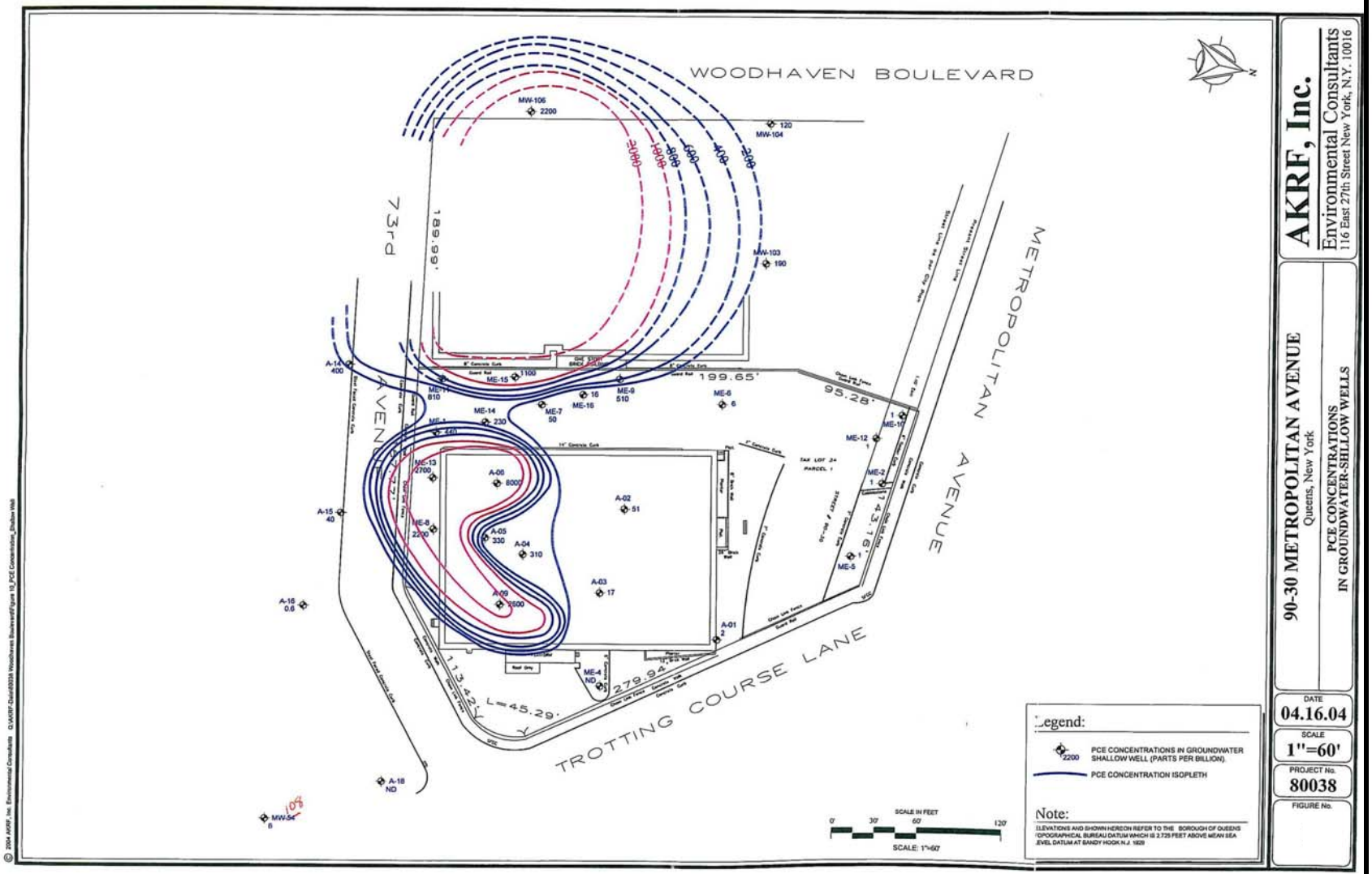

WOODHAVEN BOULEVARD
73rd AVENUE
METROPOLITAN AVENUE
TROTTING COURSE LANE
189.99'
199.65'
95.28'
113.42'
L=45.29'
279.94'
AKRF, Inc.
Environmental Consultants
116 East 27th Street New York, N.Y. 10016
90-30 METROPOLITAN AVENUE
Queens, New York
PCE CONCENTRATIONS
IN GROUNDWATER-SHILLOW WELLS
DATE
04.16.04
SCALE
1"=60'
PROJECT No.
80038
FIGURE No.
Legend:
PCE CONCENTRATIONS IN GROUNDWATER SHALLOW WELL (PARTS PER BILLION).
PCE CONCENTRATION ISOPLETH
Note:
SCALE IN FEET
SCALE: 1"=60'

FIGURE 1.3.2.4

In summary, several soil and groundwater investigations conducted on the perimeter of and in proximity to the bowling alley property have confirmed the presence of a plume of PCE-impacted groundwater that appears to originate beneath the bowling alley. This plume extended from the bowling alley property southward from at least the 1990s. This plume extends onto 90-30 Metropolitan Avenue Site beneath the parking area located in the southwestern portion of the Site. Although the source of this plume has not been confirmed, PCE use in the form of PCE-containing cleaning products has been documented on the bowling alley property by the NYSDEC's PSA contractor.

Although the remediation system at the 90-30 Metropolitan Avenue Site is designed to treat the portion of the bowling alley plume that extends onto the Site, it is not designed to address the source of this offsite plume. We are not aware of any remedial measures being undertaken to address the bowling alley plume and, therefore, it is anticipated that the bowling alley plume will continue to impact the Site.

1.4 DESCRIPTION OF REMEDIAL ACTIONS

Site remediation is in accordance with the scope of work presented in the NYSDEC-approved Remedial Action Work Plan dated November 2005, the May 3, 2006 Addendum to the Remedial Action Work Plan, the June 8, 2006 Second Addendum to the Remedial Action Work Plan, the June 6, 2006 Stipulation List, and the October 4, 2006 Third Addendum to the Remedial Action Work Plan.

Below is a summary of the Remedial Actions required by the Remedial Action Work Plan referenced above and implemented at the Site:

1. Installation of an AS/SVE remediation system;
2. Perform short-term monitoring of the AS/SVE system during startup and initial operation. This monitoring includes effluent sampling, pressure and flow checks, and other typical system operations;
3. Publication of an Operation, Maintenance and Monitoring Plan for long term management of contamination, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, operation and maintenance of the remediation system, and (3) reporting of the results;
4. Collection and analysis of sub-slab soil vapor and indoor air samples to evaluate the potential for soil vapor intrusion;
5. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;

6. Appropriate off-Site disposal of all soil removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;

7. Preparation of the FER to document the remedial activities; and

8. All responsibilities associated with the Remedial Action, including permitting requirements and monitoring requirements, addressed in accordance with all applicable Federal, State and local rules and regulations.

Remedial activities at the Site are being and will continue to be conducted in accordance with the NYSDEC-approved RAWP for the 90-30 Metropolitan Avenue Site, Rego Park, New York dated November 2005, the May 3, 2006 Addendum to the Remedial Action Work Plan, the June 8, 2006 Second Addendum to the Remedial Action Work Plan, the June 6, 2006 Stipulation List, and the October 4, 2006 Third Addendum to the Remedial Action Work Plan. The approved RAWP is included in Appendix A of the FER in digital format. All deviations from the RAWP are noted in Section 4.9 of the FER.

1.4.1 Removal of Soil from the Site

Soil removal was not performed as a remedial action at the Site since no impacted soil has been identified by either previous sampling programs or during the course of remedial system construction or property redevelopment. However, in accordance with the Stipulations, soil screening was performed by an environmental professional during all invasive remedial construction and property redevelopment activities and all excess soil to be removed from the property was properly characterized and disposed as regulated material in accordance with the Stipulations in the RAWP.

The soil screening procedures included visual observations and screening with a calibrated photoionization detector (PID). No indications of potential contamination were noted in association with any of the soil encountered onsite.

Once excess soil was identified onsite during the redevelopment process, waste characterization samples were collected and analyzed for the constituents required by the selected disposal facility, Clean Earth of Philadelphia. This proposed disposal facility, which is appropriately authorized by the state in which it is located, was identified in advance of soil removal. Waste characterization samples were collected at the frequency specified by the disposal facility and were analyzed for the required parameters. These results indicated that the soil was non-hazardous and that no VOCs were detected in the soil. Based upon the results of the waste characterization, a waste profile was prepared, including the chemical analytical results

and a description of the nature and origin of the soil. The waste profile was submitted to the proposed disposal facility and approval for disposal was obtained.

Soil to be removed from the site was stockpiled such that the soil removal was performed as a load-and-go operation. The stockpiled soil was segregated onsite, stored on plastic sheeting, and covered with secured plastic sheeting. All excavated soil was promptly transported off Site by a licensed waste hauler and delivered to the permitted waste disposal facility.

A waste manifest was prepared for each shipment of soil to be disposed. Completed manifests confirming the proper disposal of all material were obtained. Manifests are included on a CD in Appendix J of the FER. A summary showing the shipments to the facility is presented in Table 1.4.1.1. A total of 2,909.49 tons of soil was properly disposed offsite between December 2006 and April 2007.

TABLE 1.4.1.1
SOIL DISPOSAL SUMMARY
90-30 METROPOLITAN AVENUE, REGO PARK, NY

Facility	Tonnage
Clean Earth of Philadelphia	2,909.49
Total:	2,909.49

1.4.2 Air Sparge/Soil Vapor Extraction System

An air sparge/soil vapor extraction (AS/SVE) system was installed in accordance with the RAWP and is designed to remediate PCE-impacted groundwater along the southern and southwestern portions of the Site and to address soil vapor intrusion issues. The SVE portion of the system will also address any PCE-impacted soil that may be present in the system area. The VOC of concern in the groundwater is PCE, which is volatile and amenable to remediation by AS/SVE. System design and installation documents are provided in Appendix F of the FER.

The AS portion of the system is used to treat the PCE-impacted groundwater by volatilization processes. Air is injected below the water table at three different levels within the groundwater plume and the VOCs present in the groundwater will partition from the groundwater into the rising air bubbles and be carried upward to the vadose zone.

The SVE portion of the system is used to capture and remove soil vapors from the vadose zone. In addition, SVE will address subsurface soil gas that may be present. SVE is used to withdraw subsurface air from the open pores in the vadose zone soil. As the air passes through the soil, the vapors migrating from the groundwater to the vadose zone are captured and removed

from the subsurface. In addition, a localized vacuum is created in the vicinity of the SVE wells, which captures potential soil vapors beneath the Site building.

The general locations of the AS/SVE system wells and remedial system layout are shown on Figure 1.4.2.1. The generalized equipment setup is shown in Figure 1.4.2.2. A detailed site plan showing the remedial wells is included in Appendix F of the FER.

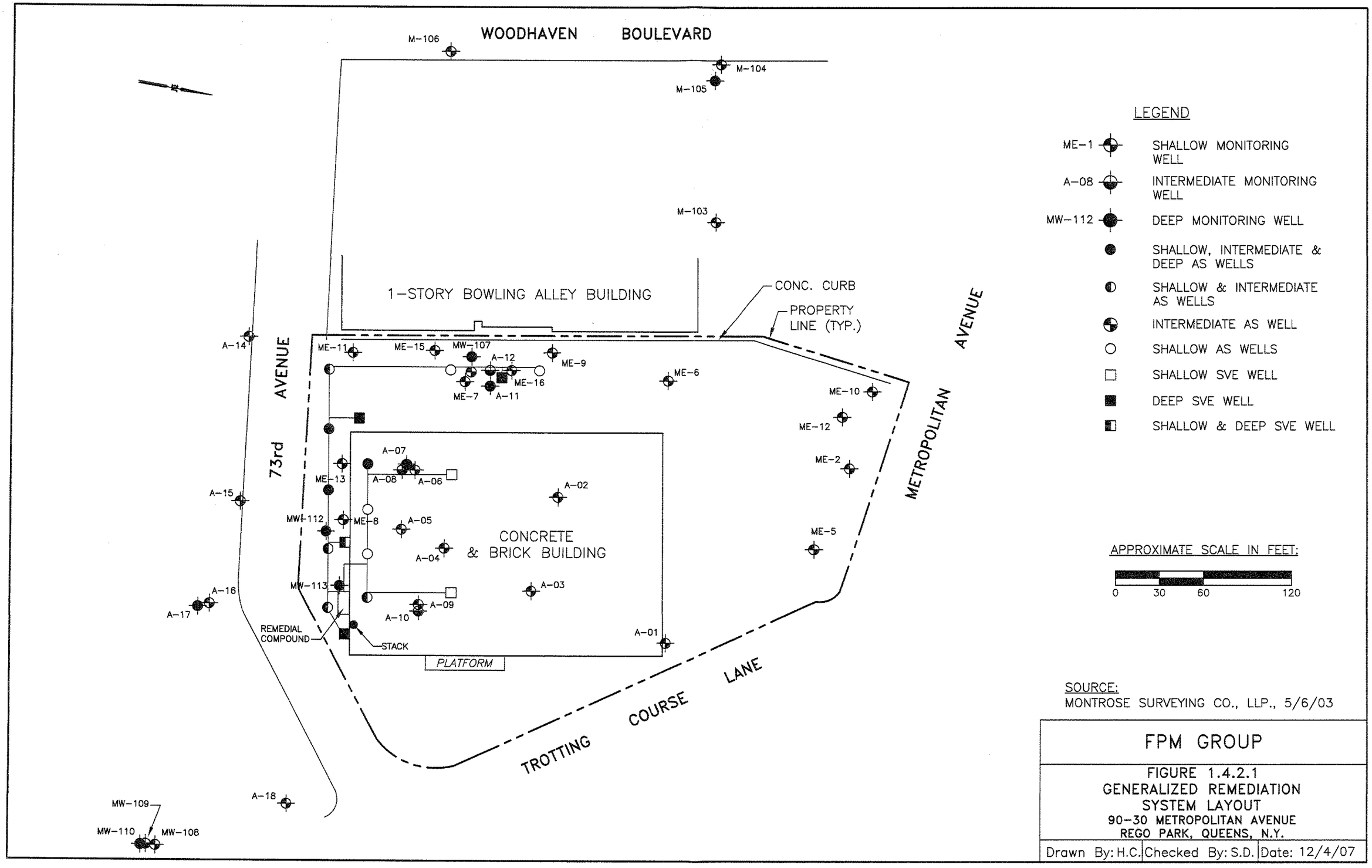
Twenty-four AS wells were installed and are positioned to treat the area of PCE-impacted groundwater beneath the southern end of the Site building and along the Site's southern and western boundaries. The AS wells are screened at various depths to treat the plume which extends from the water table, (approximately 50 feet below grade) to approximately 70 feet below the water table. The AS wells are constructed of one or one and a half-inch-diameter Schedule 40 PVC casing and 0.02-inch slotted screen. The screened interval for the shallow, intermediate, and deep AS wells extends from approximately 10 to 12, 43 to 45, and 68 to 70 feet below the water table, respectively. The well annuli were backfilled with Morie #2 well gravel to approximately two feet above the top of each screen and the balance of the annuli were backfilled with bentonite grout to grade. The tops of the wells were protected with traffic-rated manholes. Table 1.4.2.1 shows the AS wells and their completion depths.

Seven SVE wells were installed; three of these wells were installed at shallow depths to address potential vapor intrusion issues and four wells were installed at deeper depths to capture vapors migrating from the water table. The shallow-depth SVE wells are screened 15 to 20 feet below grade. The deep SVE wells are screened from 25 to 45 feet below grade. Table 1.4.2.2 shows the SVE wells and their completion depths.

Each SVE well annulus was gravel-packed to approximately two feet above the top of the screen, a two-foot bentonite seal was then placed, and the balance of the annulus was filled to just below grade with drill cuttings to allow for connection to the SVE system. The tops of the wells were protected with traffic-rated manholes.

The remediation system SVE above-grade components include the following items:

- A manifold for the SVE piping configured with shutoff valves, sampling ports, flow meters, and vacuum gages such that each SVE well may be monitored and operated separately;
- A 28.58-horsepower Nash Elmo blower (model 2BH1930-8AH6) rated for up to 1,500 scfm. The blower is affixed to the floor of the enclosure using shock mounts;
- A Gasho model GX-90 water knockout vessel equipped with a high-level float alarm light and valve shutoff, a vacuum relief valve, and a drain port;

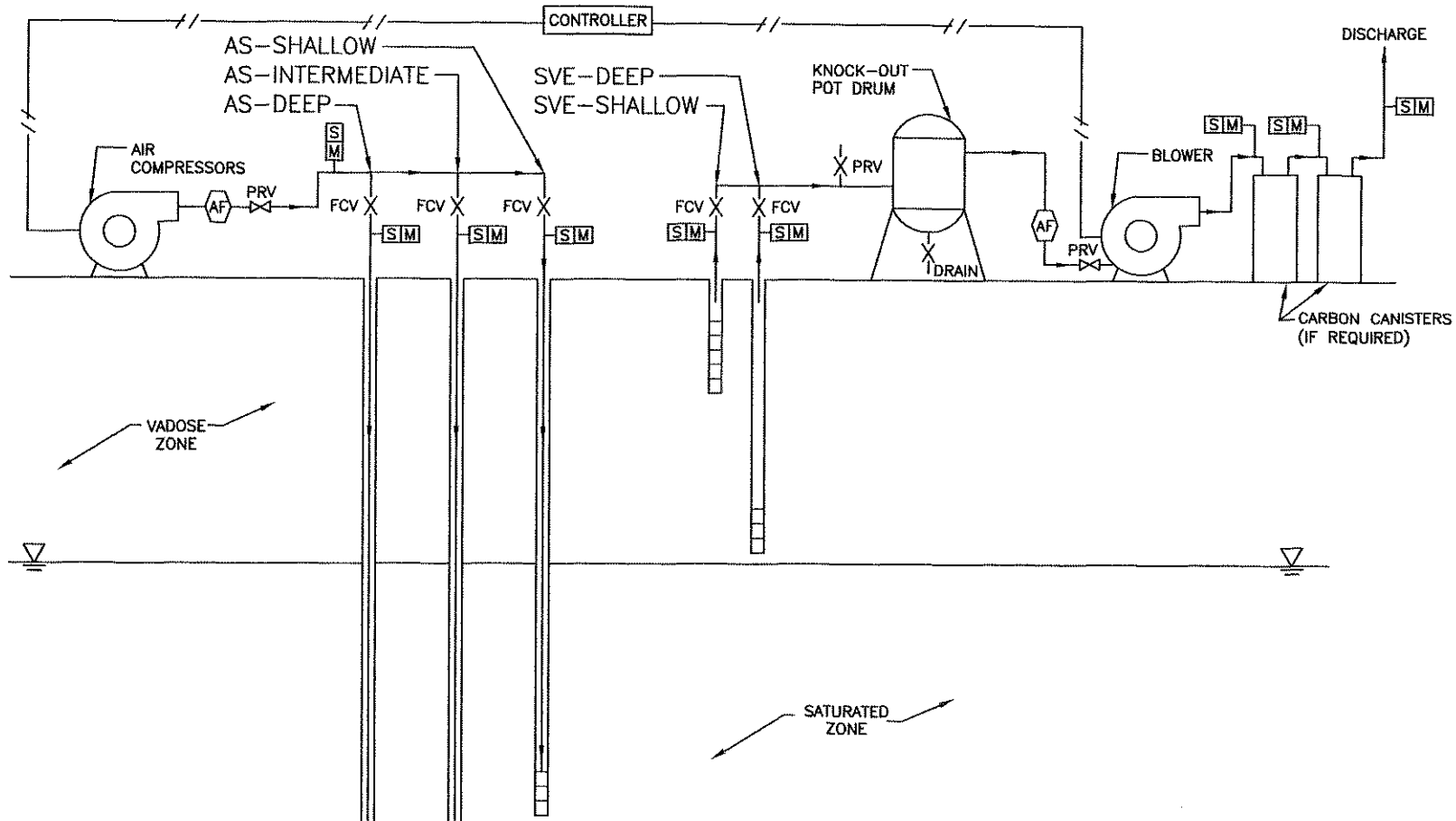


SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 1.4.2.1
GENERALIZED REMEDIATION SYSTEM LAYOUT
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: H.C.	Checked By: S.D.	Date: 12/4/07



LEGEND:

- PROCESS LINE
- CONTROL LINE
- WATER SURFACE
- AF — INLINE AIR FILTER
- PRV — PRESSURE RELIEF VALVE
- FCV — FLOW CONTROL VALVE
- SM — SAMPLE/MONITOR POINT

FPM GROUP

FIGURE 1.4.2.2
SCHEMATIC OF REMEDIATION SYSTEM SETUP
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, NEW YORK

Drawn By: H.C., J.S.	Checked By: S.D.	Date: 12/6/07

TABLE 1.4.2.1
AIR SPARGE WELLS
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Type	Shallow Screen	Intermediate Screen	Deep Screen
Screen Depth (feet below grade)	60-62	83-85	118-120
Screen Depth (feet below water table)	10-12	43-45	68-70
Well Number			
AS-1S	X		
AS-1I		X	
AS-1D			X
AS-2S	X		
AS-3S	X		
AS-4S	X		
AS-4I		X	
AS-5S	X		
AS-5I		X	
AS-6S	X		
AS-6I		X	
AS-7S	X		
AS-7I		X	
AS-7D			X
AS-8S	X		
AS-8I		X	
AS-8D			X
AS-9S	X		
AS-9I		X	
AS-10S	X		
AS-11I		X	
AS-12S	X		
AS-13S	X		
AS-13I		X	

TABLE 1.4.2.2
SOIL VAPOR EXTRACTION WELLS
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Type	Shallow Screen	Deep Screen
Screen Depth (feet below grade)	15-20	25-45
Well Number		
SVE1S	X	
SVE-2D		X
SVE-3S	X	
SVE-4S	X	
SVE-5D		X
SVE-6D		X
SVE-7D		X

- A Solberg model CSL-275P-600F particulate filter; and
- A vacuum relief valve;
- A manifold with camlock fittings and bypass valving to allow for carbon treatment, if necessary.
- Two Carbtrol G-3 carbon treatment canisters situated for rapid connection if needed;
- A PVC discharge stack affixed to the adjacent site building. The stack extends to five feet above the top of the site building and is supported so to withstand wind loads anticipated at the site.

The remediation system AS above-grade components include the following items:

- A manifold for the AS piping configured with shutoff valves, flow meters, pressure gages such that each AS well may be monitored and operated separately;
- An Orbit electric flow controller and corresponding valves to operate the AS wells in a sequential mode; and
- Three oil-free air compressors (two Becker model KDT 3.80 rotary vane compressors and one Powerex STS050 scroll compressor) with pressure relief valves. The compressors are affixed to the floor of the system enclosure with shock mounts. An alarm light system is connected to the compressors to indicate a shutdown condition

The remediation system is equipped with an electrical panel with separate circuits for major system components. A control panel is included to operate the system. Detailed electrical and control system design information is provided in Appendix F of the FER.

The remediation system is housed in a locked weatherproof enclosure with soundproofing to reduce noise, interior lighting, and a thermostatically-operated exhaust fan. The system is further secured by a locked chain-link fence enclosure.

The remediation system was initiated on August 23, 2007 and has since remained in continuous operation. System equipment is operated in accordance with manufacturer recommendations. System flow rates, vacuums, temperatures, and pressures were initially monitored on a daily to weekly basis for the first month of system operation. Monitoring of system operating parameters is now performed bi-weekly to monthly.

To confirm that the shallow-depth SVE wells have induced a negative pressure gradient between the sub-slab and the building interior, the vacuum at the shallow-depth SVE wells and at

the soil vapor implant locations was monitored. These monitoring results show that a negative pressure ranging from 0.02 to 0.11 inches of water was observed in interior shallow-depth monitoring wells and sub-slab implant locations. Therefore, a negative pressure gradient is induced beneath the building by the shallow SVE wells.

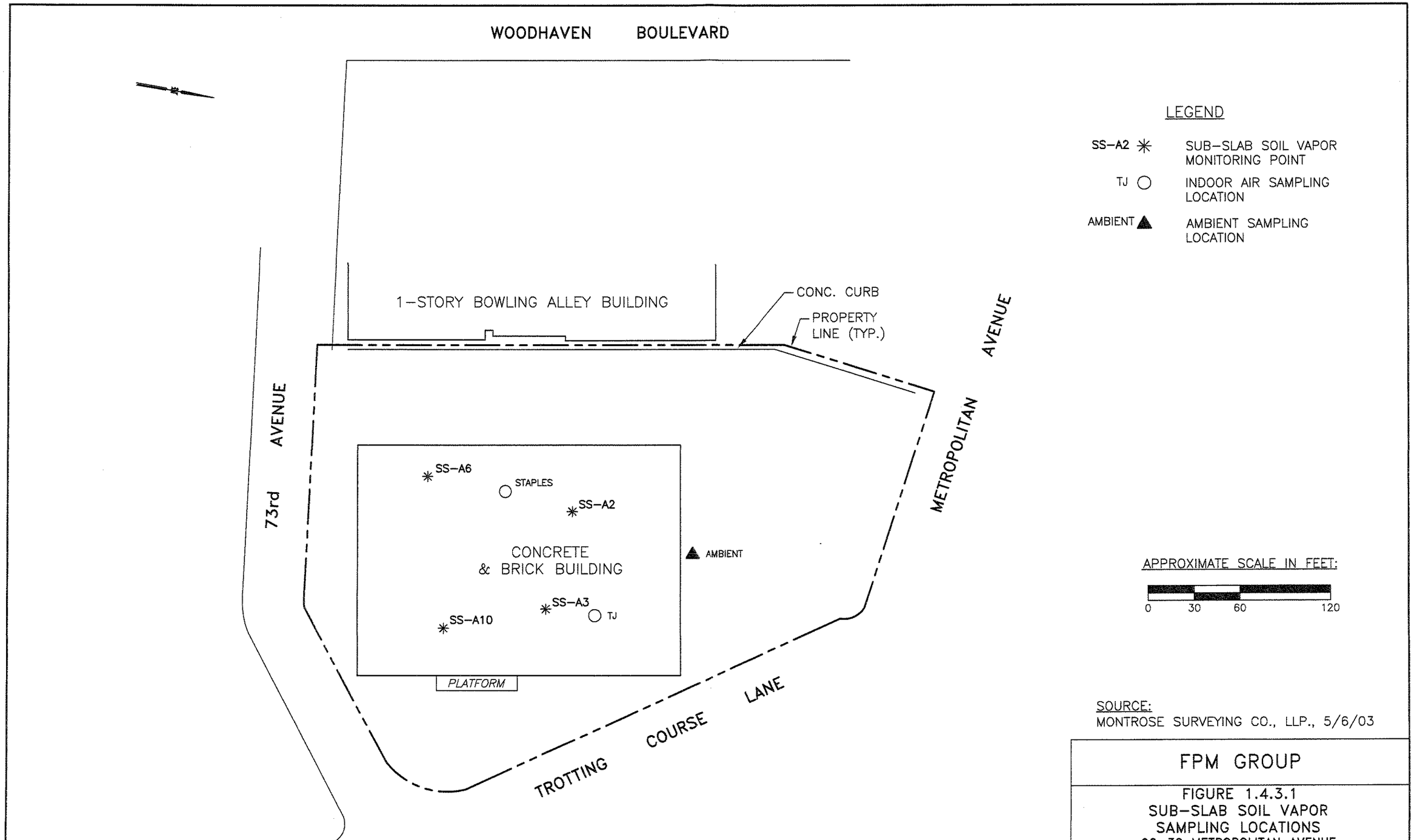
To ensure SVE system emissions compliance, effluent sampling was conducted on several occasions shortly after system startup. The maximum PCE concentration detected in the effluent samples was used, together with site-verified parameters, to calculate potential air impacts as outlined in Appendix B of the NYSDEC Division of Air Resources DAR-1 policy document entitled "Guidelines for the Control of Toxic Ambient Air Contaminants" (November 1997). These impacts were then compared with the corresponding Annual Guidance Concentration (AGC) or Short-Term Guidance Concentration (SGC) value, as applicable. This comparison indicated that the maximum concentration of PCE detected in the effluent is below its AGC and SGC values. Other compounds, including acetone, toluene, trichloroethylene and trichloroflouromethane, were also noted, but are also confirmed to be well below their respective AGC and SGC values.

Therefore, no SVE effluent treatment measures are necessary at this time. PCE levels in the effluent have been confirmed to be declining as the system operates. Effluent monitoring will be continued in accordance with the procedures in this OM&M Plan to ensure continued compliance.

1.4.3 Sub-Slab Soil Vapor and Indoor Air Sampling Results

Sub-slab soil vapor and indoor air sampling were conducted at the Site in accordance with the approved RAWP. Sub-slab soil vapor samples were collected at four locations (SS-A-2, SS-A-3, SS-A-6, and SS-A-10) in July 2007. Indoor air sampling was conducted concurrently within each of the two tenant spaces in the building, which was undergoing redevelopment at the time of sampling. One outdoor (ambient) air sample was also collected. The sampling was performed prior to building occupancy and prior to the remediation system being operable. In addition, the building had been fully enclosed but no HVAC system was operating at the time of sampling. Therefore, it is anticipated that the sampling was performed under "worst-case" conditions.

The sub-slab sampling locations are situated within the well boxes for wells A-2, A-3, A-6 and A-10, as shown on Figure 1.4.3.1. The approximate locations of the two indoor air samples and the ambient sample are also shown on this figure. Sub-slab sampling was performed using soil vapor implants, in accordance with the procedures in the NYSDOH February 2005 Soil Vapor Intrusion guidance document. The indoor and outdoor air samples



SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 1.4.3.1
SUB-SLAB SOIL VAPOR
SAMPLING LOCATIONS
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: H.C.	Checked By: B.C.	Date: 12/4/07

were collected into laboratory-provided batch-certified Summa canisters using flow controllers, also in accordance with NYSDOH procedures. The sampling results are summarized in Table 1.4.3.1 and the complete laboratory report is included on a CD in Appendix I of the FER.

PCE was detected in each of the sub-slab soil vapor samples at concentrations ranging from 200 to 2,800 ug/m^3, with the highest concentration near the southwest portion of the building in the area where the greatest onsite groundwater impact is present. PCE was not detected in any of the indoor air samples or in the outdoor (ambient) sample. These values were compared to the Matrix 2 values provided in the NYSDOH guidance document. Three of the sub-slab vapor results indicated a monitor response and one of the values indicated a mitigate response.

1,1,1-trichloroethane (1,1,1-TCA) was also detected in three of the sub-slab soil vapor samples but was not found in any of the indoor air samples or in the outdoor air sample. It should be noted that 1,1,1-TCA has not been detected in site groundwater or soil. Furthermore, the detected sub-slab levels indicate that no further action is required for 1,1,1-TCA.

Several other VOCs were noted in the indoor air samples. These VOCs were generally also found at comparable concentrations in the ambient air sample and do not appear to present a concern.

As discussed in the RAWP, the remediation system includes shallow-depth SVE wells beneath the building slab, which provide mitigation by capture of soil vapors present beneath the building and inducement of a downward pressure gradient, thereby reducing the potential for soil vapor intrusion. Monitoring of the sub-slab pressure and shallow-depth SVE wells beneath the building has confirmed the induced negative pressure beneath the building, as discussed above. Furthermore, the indoor air sampling results from this sampling event show that there is no impact to indoor air under the anticipated "worst-case" building conditions. Therefore, the current response to the sub-slab and indoor air sampling results is appropriate and protective.

1.4.4 Groundwater Monitoring Results

Groundwater monitoring was performed prior to the startup of the remediation system at the wells described in our November 29, 2005 correspondence to the NYSDEC regarding the proposed groundwater monitoring network. These wells are listed in Table 1.4.4.1. Certain wells were found to be damaged or missing and could not be sampled during this monitoring event. These wells include ME-1, ME-4, ME-14, A-02, and A-13. Certain wells were, therefore, added to the monitoring network to substitute for some of the missing wells where appropriate. These substitutions are as follows: added well A-03 to replace well ME-4. Wells A-02 and A-13 have since been located and confirmed to be functional. These wells will be

TABLE 1.4.3.1
SUB-SLAB SOIL VAPOR AND INDOOR AIR SAMPLE RESULTS
JULY 2007
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Sample Location	Sub-Slab				Indoor		Outdoor	NYSDOH Indoor Air Trigger Concentration*	NYSDOH Sub-Slab Trigger Concentration*	EPA BASE** Database (Homes & Offices)
Sample No	SS-A-2	SS-A-3	SS-A-6	SS-A-10	TJ	Staples	Ambient			
Sample Date	7/8/07	7/8/07	7/8/07	7/8/07	7/9/07	7/9/07	7/9/07			
TO-15 Volatile Organic Compounds in ug/m^3										
Dichlorodifluoromethane	ND	ND	ND	ND	2.4	ND	ND	-	-	4.8 - 32.9
Chloromethane	ND	ND	ND	1.1	1.2	ND	ND	-	-	2.1 - 4.4
Trichlorofluoromethane	15	5.6	ND	12	1.4	ND	17	-	-	ND - 54.0
Acetone	ND	ND	ND	26	76	140	110	-	-	32.4 - 120.2
Carbon Disulfide	6.5	4.0	ND	1.6	ND	ND	ND	-	-	ND - 6.4
Methylene Chloride	ND	ND	ND	ND	ND	15	ND	-	-	ND - 16.0
tert-Butyl Alcohol	ND	ND	ND	ND	ND	ND	28	-	-	-
n-Hexane	ND	ND	ND	ND	ND	2.7	ND	-	-	1.6 - 15.2
Methyl Ethyl Ketone	ND	ND	ND	7.1	12	91	16	-	-	3.3 - 13.5
Chloroform	4.5	ND	ND	36	ND	ND	ND	-	-	ND - 1.4
1,1,1-Trichloroethane	6.0	6.0	ND	3.7	ND	ND	ND	3	100	2.6 - 33.0
Cyclohexane	ND	ND	ND	0.96	1.1	1.7	ND	-	-	-
2,2,4-Trimethylpentane	ND	ND	ND	ND	0.79	ND	ND	-	-	-
Benzene	ND	ND	ND	ND	1.2	1.4	17	-	-	2.1 - 12.5
n-Heptane	ND	ND	ND	3.6	2.7	4.1	1.8	-	-	-
Toluene	53	4.9	17	12	16	100	28	-	-	10.7 - 70.8
Tetrachloroethene	**620**	**350**	**2,800**	**200**	ND	ND	ND	3	100	ND - 25.4
Ethylbenzene	100	11	28	15	3.0	2.2	2.7	-	-	ND - 7.6
Xylene (m,p)	480	42	110	48	9.1	5.2	8.3	-	-	4.1 - 28.5
Xylene (o)	91	8.7	25	10	3.6	2.2	2.3	-	-	ND - 11.2
Xylene (total)	610	52	140	61	13	7.8	10	-	-	-
Styrene	ND	ND	ND	5.1	31	37	1.7	-	-	ND - 4.3
4-Ethyltoluene	ND	ND	ND	1.2	4.0	ND	2.7	-	-	ND - 5.9
1,3,5-Trimethylbenzene	ND	ND	ND	1.4	1.8	ND	ND	-	-	ND - 4.6
1,2,4-Trimethylbenzene	4.4	2.6	ND	2.7	5.4	1.7	2.3	-	-	1.7 - 13.7

Notes:

Only compounds detected in one or more samples are reported herein. See lab report for complete data.
ug/m^3 = micrograms per cubic meter.
ND = Not detected.
* = From NYSDOH Matrix 1 or Matrix 2, NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006).
- = Not established.
** = USEPA Indoor Air Quality Study of homes and offices (BASE 1994-1996), 25th to 95th percentiles.
Please note that the 100 Duffy Avenue samples are labeled as 102 due to recent address changes.
Bold values = monitor response (matrix 1/2).
Bold shaded values = mitigate response (matrix 1/2).

TABLE 1.4.4.1
MONITORING WELL NETWORK
90-30 METROPOLITAN AVENUE, REGO PARK, QUEENS, NEW YORK

Well Number	Total Depth (feet)	Top of Casing Elevation (feet)	Wells to be Monitored	Depth to Water in feet, June 2005	Water Table Elevation in feet, June 2005
Shallow Wells					
ME-1	49.31	60.18	X*	42.80	17.38
ME-2	51.00	57.67		40.90	16.77
ME-4	49.70	58.66	X*	41.29	17.37
ME-5	50.30	57.73		40.28	17.45
ME-6	50.00	58.81		41.34	17.47
ME-7	50.66	59.61	X	42.23	17.38
ME-8	55.00	59.60	X	42.21	17.39
ME-9	54.76	59.03		41.58	17.45
ME-10	54.00	58.28		40.78	17.50
ME-11	54.88	59.64	X	42.16	17.48
ME-12	52.05	58.38		40.20	18.18
ME-13	55.15	59.60	X	42.32	17.28
ME-14	54.70	59.60	X*	42.18	17.42
ME-15	54.86	59.55	X	42.11	17.44
ME-16	54.85	59.19		-	-
A-01	53.48	58.05		40.64	17.41
A-02	58.75	61.45	X	44.15	17.30
A-03	57.40	61.57	+	44.44	17.13
A-04	60.30	61.29		44.00	17.29
A-05	57.60	61.54	X	44.21	17.33
A-06	59.80	61.59	X	44.24	17.35
A-09	58.75	61.29	X	43.94	17.35
A-14	53.20	59.47	X	42.26	17.21
A-15	52.60	59.46	X	42.18	17.28
A-16	51.80	58.99	X	42.70	16.29
A-18	50.50	58.70	X	42.55	16.15
MW-103	60.70	58.60		41.05	17.55
MW-104	58.90	59.40		41.85	17.55
MW-106	48.30	57.92		40.50	17.42
MW-108	55.00	58.74		41.92	16.82
Intermediate Wells					
A-08	84.35	61.53	X	45.70	15.83
A-10	85.1	61.16	X	45.40	15.76
A-12	78.17	59.46	X	43.42	16.04
A-13	83.9	59.59	X	43.75	15.84
MW-109	85	59.38	X	43.42	15.96
Deep Wells					
A-07	115	61.28	X	45.40	15.88
A-11	110	59.64	X	43.73	15.91
A-17	110	59.11	X	42.86	16.25
MW-105	98.6	59.39		43.38	16.01
MW-107	127	59.46		43.52	15.94
MW-110	110	59.38	X	43.35	16.03
MW-112	129.5	61.94	X	46.08	15.86
MW-113	131	59.71	X	43.85	15.86

Notes:

* Indicates damaged/missing well.
\+ Indicates added well.

sampled during future monitoring events. Wells ME-1 and ME-14, which are both shallow wells, remain missing. These wells are both on the west side of the Site between the Site plume and the plume from the adjoining bowling alley. Several other shallow wells, including ME-7 and ME-11, are present in this area and will continue to be monitored.

The sampling and analytical procedures applied were in accordance with procedures previously used at this site, as described in Section 4.4.1 of the FER. Sampling was performed in July 2007, approximately one month prior to the startup of the remediation system.

The data from the July 2007 sampling event are summarized in Tables 1.4.4.2 through 1.4.4.4 together with the data from the two previous monitoring events. The laboratory data from the July 2007 event are included on a CD in Appendix H of the FER. Site plans showing exceedances of the SGCs for groundwater in the shallow, intermediate, and deep sampling intervals are presented in Figures 1.4.4.1. through 1.4.4.3, respectively.

The shallow groundwater generally shows a continuing decrease in the level of exceedances of the SCGs for PCE. PCE continues to be the only groundwater contaminant detected in excess of the SCGs. PCE concentrations decreased in all of the shallow wells sampled with the exceptions of A-14, ME-7 and ME-15. At ME-7 and ME-15, the concentrations remained comparable to those of the previous sampling event in 2005. At offsite shallow well A-14 a moderate increase in PCE was noted. This well is downgradient of the PCE plume associated with the adjoining bowling alley property to the west of the site.

The intermediate groundwater also shows PCE as the only contaminant that exceeds its SCGs, with decreasing PCE concentrations noted in all wells except A-08, where a minor increase was noted.

The deep groundwater results show PCE exceeding the SCGs at only two locations. The concentration decreased at A-07 and increased very slightly at MW-113.

No PCE detections exceeding the SCGs were noted at offsite wells downgradient of the southeastern portion of the site. A low-level exceedance (20 ug/l) was noted at well A-15, downgradient of the south-central portion of the site. This detection is lower than previous detections in this well. At well A-14, which is downgradient of the southwest corner of the site, and also downgradient of the adjoining bowling alley (which also has a PCE plume), showed a moderate increase in PCE relative to the most recent previous sampling.

In summary, the July 2007 groundwater monitoring results show a generally decreasing trend of PCE concentrations in onsite and offsite groundwater at the shallow, intermediate, and deep levels. Increases were noted only at onsite wells A-08 and MW-113 and at offsite well

TABLE 1.4.4.2
GROUNDWATER CHEMICAL ANALYTICAL DATA
SHALLOW WELLS
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Number	ME-7			ME-8			ME-11			ME-13			ME-15			NYSDEC Class GA Ambient Water Quality Standards
Sample Date	5/03	6/05	7/07	5/03	6/05	7/07	5/03	6/05	7/07	5/03	6/05	7/07	5/03	6/05	7/07	
Target Compound List Volatile Organic Compounds in micrograms per liter																
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	15 J	ND	ND	ND	ND	50
Methylene chloride	ND	0.51 JB	ND	**16 JB**	**54 JB**	ND	ND	**17 JB**	ND	59 JB	**17 JB**	ND	4 JB	**16 JB**	ND	5
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**48 J**	ND	ND	ND	ND	5
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	ND	ND	0.88 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7
Tetrachloroethene	**50**	**40**	**41**	**2,200**	**3,600**	**250**	**810**	**720**	**290**	**2,700**	**960**	**54**	**1,100**	**580**	**480**	5
Total VOCs*	50	40	41.88	2,200	3,600	250	810	720	290	2,700	1,023	54	1,100	580	480	-

Notes:

ND = Not detected

VOCs = Volatile Organic Compounds

*Excluding suspected field/lab contamination

Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standards

NYSDEC = New York State Department of Environmental Conservation

J = Estimated concentration below reporting limit

B = Analyte detected in an associated blank sample

- = Not established

TABLE 1.4.4.2 (CONTINUED)
GROUNDWATER CHEMICAL ANALYTICAL DATA
SHALLOW WELLS
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Number	A-02	A-03		A-05			A-06			A-09			NYSDEC Class GA Ambient Water Quality Standards
Sample Date	7/07	5/03	7/07	5/03	6/05	7/07	5/03	6/05	7/07	5/03	6/05	7/07	
Target Compound List Volatile Organic Compounds in micrograms per liter													
Acetone	ND	ND	ND	ND	ND	ND	ND	20 JB	ND	ND	2.9 JB	ND	50
Methylene chloride	ND	ND	ND	ND	2.0 JB	ND	ND	**16 JB**	ND	**15 JB**	1.8 JB	ND	5
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
2-Butanone	ND	ND	ND	ND	ND	ND	ND	21 JB	ND	ND	ND	ND	50
Chloroform	ND	**9**	1.4	2 J	ND	ND	ND	ND	ND	ND	ND	ND	7
Tetrachloroethene	**32**	**17**	**14**	**330**	**150**	**39**	**8,000**	**730**	**290**	**2,600**	**200**	**23**	5
Total VOCs*	32	26	15.4	332	150	39	8,000	730	290	2,600	200	23	-

Notes:

ND = Not detected

VOCs = Volatile Organic Compounds

*Excluding suspected field/lab contamination

Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standards

NYSDEC = New York State Department of Environmental Conservation

J = Estimated concentration below reporting limit

B = Analyte detected in an associated blank sample

- = Not established

TABLE 1.4.4.2 (CONTINUED)
GROUNDWATER CHEMICAL ANALYTICAL DATA
SHALLOW WELLS
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Number	A-14		A-15			A-16			A-18			NYSDEC Class GA Ambient Water Quality Standards
Sample Date	5/03	7/07	5/03	6/05	7/07	5/03	6/05	7/07	5/03	6/05	7/07	
Target Compound List Volatile Organic Compounds in micrograms per liter												
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Methylene chloride	5 JB	ND	ND	ND	ND	ND	ND	ND	ND	0.40 JB	ND	5
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	ND	ND	ND	1.3 J	ND	ND	0.74 J	ND	ND	ND	ND	7
Tetrachloroethene	**400**	**470**	**40**	**16**	**10**	0.6 J	ND	ND	ND	ND	ND	5
Total VOCs*	400	470	40	17.3	10	0.6	0.74	ND	ND	ND	ND	-

Notes:

ND = Not detected
VOCs = Volatile Organic Compounds
*Excluding suspected field/lab contamination
Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standards
NYSDEC = New York State Department of Environmental Conservation
J = Estimated concentration below reporting limit
B = Analyte detected in an associated blank sample
- = Not established

TABLE 1.4.4.3
GROUNDWATER CHEMICAL ANALYTICAL DATA
INTERMEDIATE WELLS
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Number	A-08			A-10			A-12			MW-109		NYSDEC Class GA Ambient Water Quality Standards
Sample Date	5/03	6/05	7/07	5/03	6/05	7/07	5/03	6/05	7/07	5/03	7/07	
Target Compound List Volatile Organic Compounds in micrograms per liter												
Acetone	ND	**450 B**	**97 J**	ND	3.0 JB	ND	ND	31 J	ND	ND	ND	50
Methylene chloride	ND	**57 JB**	ND	ND	1.7 JB	ND	**9 JB**	**35 JB**	ND	ND	ND	5
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7
Tetrachloroethene	**8,500**	**3,300**	**4,400**	**630**	**200**	**10**	**1,900**	**1,900**	**1,800**	5 J	2.6 J	5
Total VOCs*	8,500	3,300	4,400	630	200	10	1,900	1,931	1,800	5	2.6	-

Notes:

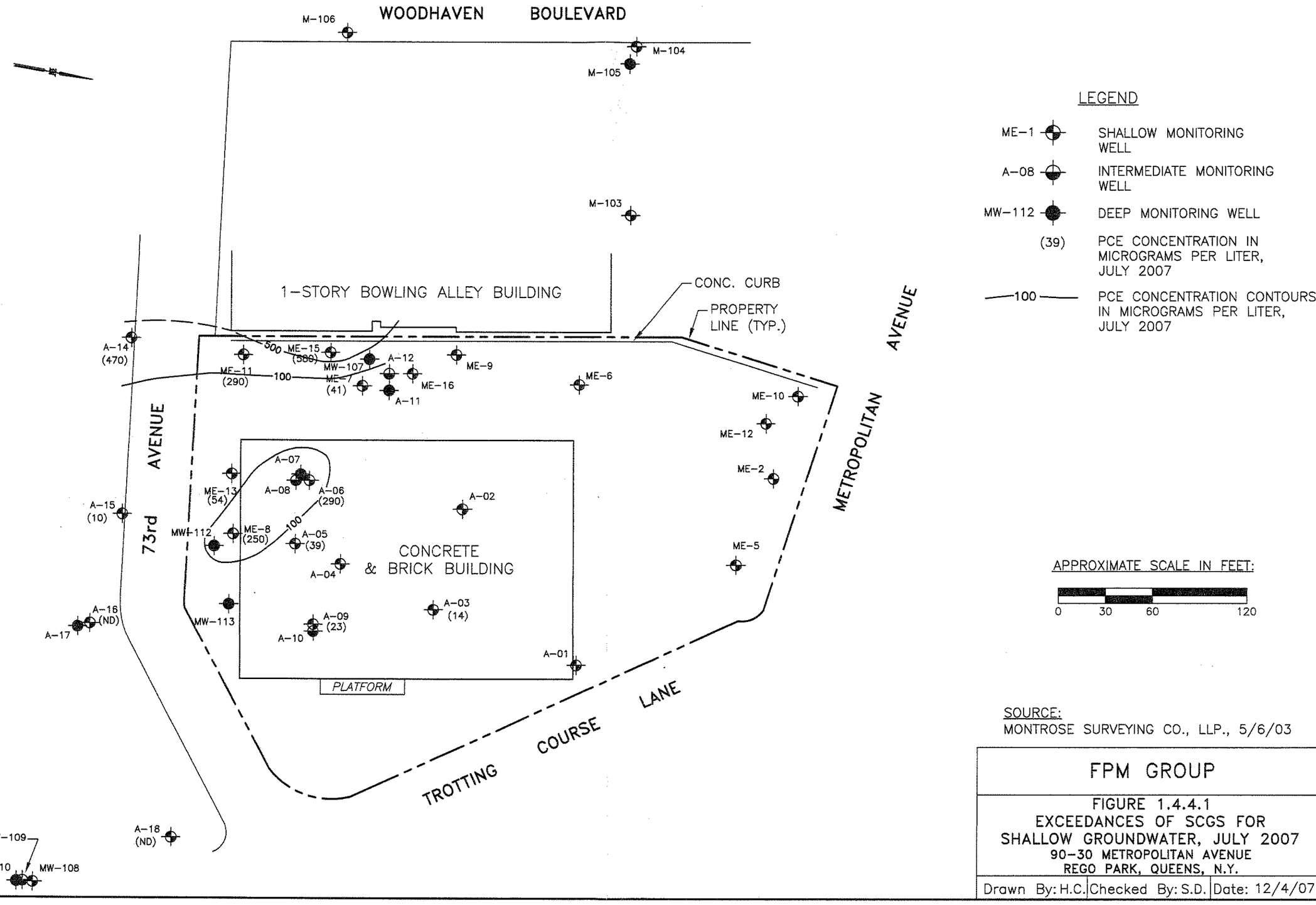
ND = Not detected
VOCs = Volatile Organic Compounds
*Excluding suspected field/lab contamination
Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standards
NYSDEC = New York State Department of Environmental Conservation
J = Estimated concentration below reporting limit
B = Analyte detected in an associated blank sample
- = Not established

TABLE 1.4.4.4
GROUNDWATER CHEMICAL ANALYTICAL DATA
DEEP WELLS
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Number	A-07			A-11		A-17			MW-110		MW-112			MW-113		NYSDEC Class GA Ambient Water Quality Standards
Sample Date	5/03	6/05	7/07	5/03	7/07	5/03	6/05	7/07	5/03	7/07	5/03	6/05	7/07	6/05	7/07	
Target Compound List Volatile Organic Compounds in micrograms per liter																
Acetone	ND	3.2 JB	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.4 JB	50
Methylene chloride	**13 JB**	1.8 JB	ND	ND	ND	ND	0.57 JB	ND	ND	ND	ND	0.75 JB	ND	0.62 JB	ND	5
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
2-Butanone	ND	7.0 JB	26	14	ND	43	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Tetrachloroethene	**1,600**	**170**	**41**	5	0.78	0.5 J	ND	0.79	ND	ND	**72**	3.2 J	1.3 J	1.4 J	**8.7**	5
1,1,2,2-Tetrachloroethane	**18 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Total VOCs*	1,618	170	67	19	0.78	43.5	ND	0.79	ND	ND	72	3.2	1.3	1.4	8.7	-

Notes:

ND = Not detected
VOCs = Volatile Organic Compounds
*Excluding suspected field/lab contamination
Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standards
NYSDEC = New York State Department of Environmental Conservation
J = Estimated concentration below reporting limit
B = Analyte detected in an associated blank sample
- = Not established

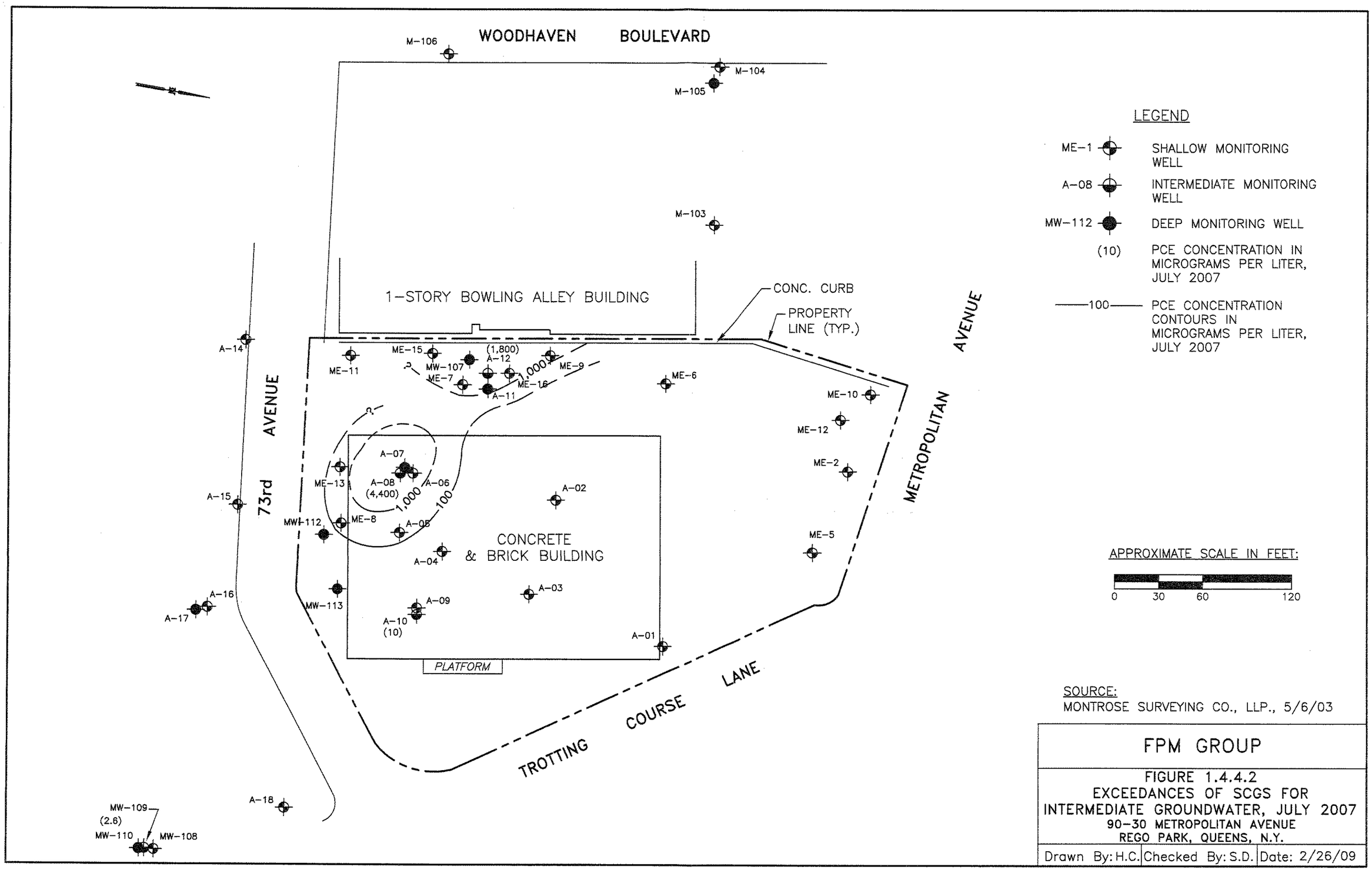


SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 1.4.4.1
EXCEEDANCES OF SCGS FOR SHALLOW GROUNDWATER, JULY 2007
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: H.C. | Checked By: S.D. | Date: 12/4/07

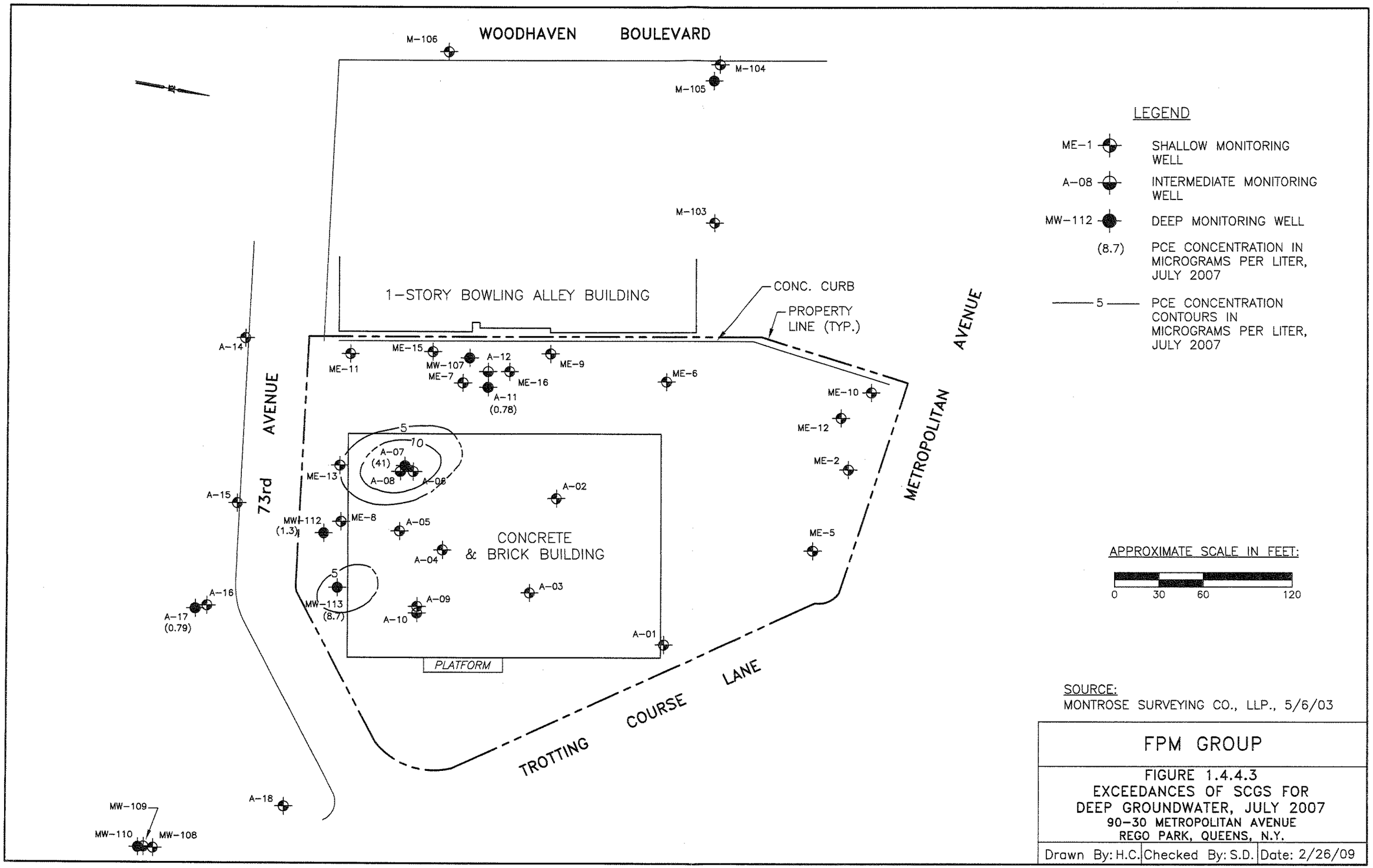


SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 1.4.4.2
EXCEEDANCES OF SCGS FOR INTERMEDIATE GROUNDWATER, JULY 2007
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: H.C.	Checked By: S.D.	Date: 2/26/09



SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 1.4.4.3
EXCEEDANCES OF SCGS FOR DEEP GROUNDWATER, JULY 2007
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: H.C. | Checked By: S.D. | Date: 2/26/09

A-14, which is also downgradient of the PCE plume associated with the adjoining bowling alley property.

Groundwater monitoring will continue to be performed on the wells in the monitoring network in accordance with the procedures in the Monitoring Plan included herein.

1.4.5 Residual Contamination

Contamination remains present beneath the site in the form of groundwater and soil vapor impacted with PCE.

Table 1.4.5.1 summarizes the exceedances of the groundwater SCGs based on the July 2007 groundwater monitoring data described above. Previously-presented Figures 1.4.4.1 though 1.4.4.4 summarize the exceedances of the groundwater SCGs for the shallow, intermediate and deep groundwater intervals.

Sub-slab soil vapor data were previously presented in Table 1.4.3.1, which shows the concentrations of PCE in sub-slab soil vapor in July 2007, approximately one month before remediation system startup.

1.4.6 Engineering and Institutional Controls

Since contaminated groundwater and soil vapor exist beneath the Site, Institutional and Engineering Controls (ECs/ICs) are required to protect human health and the environment.

The Site has one primary EC: the AS/SVE system. OM&M procedures are required to implement, maintain and monitor this EC. The OM&M procedures include the following:

- The EC must be operated and maintained as specified in this OM&M Plan;
- The EC on the Site must be inspected and certified at a frequency and in a manner defined in this OM&M Plan;
- Groundwater monitoring must be performed as defined in this OM&M Plan;
- Data and information pertinent to OM&M must be reported at the frequency and in a manner defined in this OM&M Plan;
- On-Site environmental monitoring devices, including but not limited to, groundwater monitor wells, must be protected and replaced as necessary to ensure continued functioning in the manner specified in this OM&M Plan.

TABLE 1.4.5.1
GROUNDWATER EXCEEDANCES OF SCGs, JULY 2007
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Number	ME-7	ME-8	ME-11	ME-13	ME-15	A-03	A-05	A-06	NYSDEC Class GA Ambient Water Quality Standard
Sample Date	7/07	7/07	7/07	7/07	7/07	7/07	7/07	7/07	
Tetrachloroethene	**41**	**250**	**290**	**54**	**580**	**14**	**39**	**290**	5

Well Number	A-09	A-14	A-15	A-16	A-18	A-08	A-10	A-12	NYSDEC Class GA Ambient Water Quality Standard
Sample Date	7/07	7/07	7/07	7/07	7/07	7/07	7/07	7/07	
Tetrachloroethene	**23**	**470**	**10**	ND	ND	**4,400**	**10**	**1,800**	5

Well Number	MW-109	MW-110	A-07	A-11	A-17	MW-112	MW-113	NYSDEC Class GA Ambient Water Quality Standard
Sample Date	7/07	7/07	7/07	7/07	7/07	7/07	7/07	
Tetrachloroethene	2.6 J	ND	**41**	0.78	0.79	1.3 J	**8.7**	5

Notes:

ND = Not detected

Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standards (SCGs)

NYSDEC = New York State Department of Environmental Conservation

J = Estimated concentration below reporting limit

SCGs = Standards, Criteria and Guidance.

After remediation is complete, the Site will have a series of ICs in the form of Site restrictions. Adherence to these ICs will be required under the deed restriction to be recorded following the completion of remediation. Site restrictions that are anticipated to apply to the Site are:

- The Site Owner shall continue in full force and effect the ICs required and maintain such controls unless the Owner first obtains permission to discontinue such controls from the NYSDEC;
- The deed restriction shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Site. The deed restriction shall provide that the Owner and its successors and assigns consent to enforcement by the NYSDEC of the prohibitions and restrictions contained in such deed restriction which shall be recorded, and covenant not to contest the authority of the NYSDEC to seek enforcement;
- Any deed of conveyance of the Site, or any portion thereof, shall recite, unless the NYSDEC has consented to the termination of such covenants and restrictions, that said conveyance is subject to the deed restriction;
- Use of groundwater underlying the Site will be prohibited without treatment rendering it safe for the intended purpose; and
- The Site may be used for commercial use only (to exclude day care, child care, and medical care uses) unless express written waiver of this covenant is provided by the NYSDEC.

These EC/ICs should:

- Prevent migration of VOC contaminants that originate from the Site, to the extent practicable, that would result in groundwater contamination.
- Reduce or eliminate VOC contamination that originates from the Site, to the extent practicable, that would result in groundwater and/or soil vapor contamination.
- Prevent soil vapor intrusion into the building.
- Prevent inhalation of VOCs associated with onsite groundwater.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Remedial activities at the Site are being and will continue to be conducted in accordance with the NYSDEC-approved RAWP for 90-30 Metropolitan Avenue, Rego Park, New York dated November 2005, the May 3, 2006 Addendum to the Remedial Action Work Plan, the June 8, 2006 Second Addendum to the Remedial Action Work Plan, the June 6, 2006 Stipulation List, and the October 4, 2006 Third Addendum to the Remedial Action Work Plan. The remedial strategies implemented at the Site pursuant to the NYSDEC-approved RAWP referenced above are summarized as follows:

- Installation of an AS/SVE remediation system;
- Perform short-term monitoring of the AS/SVE system during startup and initial operation. This monitoring includes effluent sampling, pressure and flow checks, and other typical system operations;
- Publication of an OM&M Plan for long term management of contamination, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, operation and maintenance of the remediation system, and (3) reporting of the results;
- Collection and analysis of sub-slab soil vapor and indoor air samples to evaluate the potential for soil vapor intrusion;
- Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during intrusive Site work;
- Appropriate off-Site disposal of all soil removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
- Preparation of an FER to document the remedial activities; and
- All responsibilities associated with the Remedial Action, including permitting requirements and monitoring requirements, addressed in accordance with all applicable Federal, State and local rules and regulations.

Since contaminated groundwater and soil vapor exist beneath the Site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the

environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the Site. The EC/IC Plan is one component of the OM&M Plan and is subject to revision by NYSDEC.

2.1.2 Purpose

The purpose of this Plan is to provide:

- A description of all EC/ICs on the Site;
- The basic operation and intended role of each implemented EC/IC;
- A description of the key components of the ICs to be included in the deed restriction;
- A description of the features that should be evaluated during each annual inspection and compliance certification period;
- A description of plans and procedures to be followed for implementation of EC/ICs; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROL COMPONENTS

2.2.1 Air Sparge/Soil Vapor Extraction System

2.2.1.1 Conceptual Remedial Approach

An air sparge/soil vapor extraction (AS/SVE) system was installed in accordance with the RAWP and is designed to remediate PCE-impacted groundwater along the southern and southwestern portions of the Site and to address soil vapor intrusion issues. The SVE portion of the system will also address any PCE-impacted soil that may be present in the system area. The VOC of concern in the groundwater is PCE, which is volatile and amenable to remediation by AS/SVE. System design and installation documents are provided in Appendix F of the FER and are included in Attachment 2 hereto.

The AS portion of the system is used to treat the PCE-impacted groundwater by volatilization processes. Air is injected below the water table at three different levels within the groundwater plume and the VOCs present in the groundwater will partition from the groundwater into the rising air bubbles and be carried upward to the vadose zone.

The SVE portion of the system is used to capture and remove soil vapors from the vadose zone. In addition, SVE will address subsurface soil gas that may be present. SVE is used to

withdraw subsurface air from the open pores in the vadose zone soil. As the air passes through the soil, the vapors migrating from the groundwater to the vadose zone are captured and removed from the subsurface. In addition, a localized vacuum is created in the vicinity of the SVE wells, which captures potential soil vapors beneath the Site building.

2.2.1.2 AS/SVE System Design and Installation

The general locations of the AS/SVE system wells and remedial system layout are shown on previously-presented Figure 1.4.2.1. The generalized equipment setup is shown in previously-presented Figure 1.4.2.2. A detailed site plan showing the remedial wells is included in Appendix F of the FER; a copy of this site plan is included in Attachment 1 hereto.

Twenty-four AS wells were installed and are positioned to treat the area of PCE-impacted groundwater beneath the southern end of the Site building and along the Site's southern and western boundaries. The AS wells are screened at various depths to treat the plume which extends from the water table, (approximately 50 feet below grade) to approximately 70 feet below the water table. The AS wells are constructed of one or one and a half-inch-diameter Schedule 40 PVC casing and 0.02-inch slotted screen. The screened interval for the shallow, intermediate, and deep AS wells extends from approximately 10 to 12, 43 to 45, and 68 to 70 feet below the water table, respectively. The well annuli were backfilled with Morie #2 well gravel to approximately two feet above the top of each screen and the balance of the annuli were backfilled with bentonite grout to grade. The tops of the wells were protected with traffic-rated manholes. Table 2.2.1.2.1 shows the AS wells and their completion depths.

Seven SVE wells were installed; three of these wells were installed at shallow depths to address potential vapor intrusion issues and four wells were installed at deeper depths to capture vapors migrating from the water table. The shallow-depth SVE wells are screened 15 to 20 feet below grade. The deep SVE wells are screened from 25 to 45 feet below grade. Table 2.2.1.2.2 shows the SVE wells and their completion depths.

Each SVE well annulus was gravel-packed to approximately two feet above the top of the screen, a two-foot bentonite seal was then placed and the balance of the annulus was filled to just below grade with drill cuttings to allow for connection to the SVE system. The tops of the wells were protected with traffic-rated manholes.

The remediation system SVE above-grade components include the following items:

- A manifold for the SVE piping configured with shutoff valves, sampling ports, flow meters, and vacuum gages such that each SVE well may be monitored and operated separately;

TABLE 2.2.1.2.1
AIR SPARGE WELLS
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Type	Shallow Screen	Intermediate Screen	Deep Screen
Screen Depth (feet below grade)	60-62	83-85	118-120
Screen Depth (feet below water table)	10-12	43-45	68-70
Well Number			
AS-1S	X		
AS-1I		X	
AS-1D			X
AS-2S	X		
AS-3S	X		
AS-4S	X		
AS-4I		X	
AS-5S	X		
AS-5I		X	
AS-6S	X		
AS-6I		X	
AS-7S	X		
AS-7I		X	
AS-7D			X
AS-8S	X		
AS-8I		X	
AS-8D			X
AS-9S	X		
AS-9I		X	
AS-10S	X		
AS-11I		X	
AS-12S	X		
AS-13S	X		
AS-13I		X	

TABLE 2.2.1.2.2
SOIL VAPOR EXTRACTION WELLS
90-30 METROPOLITAN AVENUE, REGO PARK, NEW YORK

Well Type	Shallow Screen	Deep Screen
Screen Depth (feet below grade)	15-20	25-45
Well Number		
SVE1S	X	
SVE-2D		X
SVE-3S	X	
SVE-4S	X	
SVE-5D		X
SVE-6D		X
SVE-7D		X

- A 28.58-horsepower Nash Elmo blower (model 2BH1930-8AH6) rated for up to 1,500 scfm. The blower is affixed to the floor of the enclosure using shock mounts;
- A Gasho model GX-90 water knockout vessel equipped with a high-level float alarm light and valve shutoff, a vacuum relief valve, and a drain port;
- A Solberg model CSL-275P-600F particulate filter; and
- A vacuum relief valve;
- A manifold with camlock fittings and bypass valving to allow for carbon treatment, if necessary.
- Two Carbtrol G-3 carbon treatment canisters situated for rapid connection if needed;
- A PVC discharge stack affixed to the adjacent site building. The stack extends to five feet above the top of the site building and is supported so to withstand wind loads anticipated at the site.

The remediation system AS above-grade components include the following items:

- A manifold for the AS piping configured with shutoff valves, flow meters, pressure gages such that each AS well may be monitored and operated separately;
- An Orbit electric flow controller and corresponding valves to operate the AS wells in a sequential mode; and
- Three oil-free air compressors (two Becker model KDT 3.80 rotary vane compressors and one Powerex STS050 scroll compressor) with pressure relief valves. The compressors are affixed to the floor of the system enclosure with shock mounts. An alarm light system is connected to the compressors to indicate a shutdown condition

The remediation system is equipped with an electrical panel with separate circuits for major system components. A control panel is included to operate the system. Detailed electrical and control system design information is provided in Appendix F of the FER; a copy of this information is included in Attachment 2 hereto.

The remediation system is housed in a locked weatherproof enclosure with soundproofing to reduce noise, interior lighting, and a thermostatically-operated exhaust fan. The system is further secured by a locked chain-link fence enclosure.

The remediation system was initiated on August 23, 2007 and has since remained in continuous operation.

2.2.1.3 AS/SVE System Operation, Maintenance and Monitoring

The procedures for operating and maintaining the AS/SVE system are documented in the Operation and Maintenance Plan (Section 4 of this OM&M Plan). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this OM&M Plan). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the Site, has occurred.

2.2.2 Criteria for Completion of Remediation/Termination of AS/SVE System

There are two overlapping plumes of PCE in the groundwater at the Site; one is associated with the south-central portion of the Site ("main site plume") and the other plume is associated with the adjoining bowling alley to the west ("western bowling alley plume"). The AS/SVE system is designed to treat both plumes on the Site. The AS/SVE system is not intended to address offsite, upgradient source material. The criteria for termination of the AS/SVE system are established based on specific aspects of each plume and the requirements for this Site, as described below.

The western bowling alley plume extends from the bowling alley onto the western portion of the site and was detected by wells ME-15, ME-9, A-12, and MW-107 based on data available in 2007. The western bowling alley plume originates from upgradient and offsite. The extent of this plume has not been defined. Nevertheless, in an attempt to reduce onsite contaminant levels near the bowling alley building, the AS/SVE system has been extended to this area but is not designed to remediate the offsite portion of the western bowling alley plume. As a result, it is likely that PCE-impacted groundwater associated with the western bowling alley plume will continue to migrate onsite despite operation of the AS/SVE system. Accordingly, any assessment of the completion of remediation must take into account the continuing contribution to onsite groundwater contamination from the adjoining bowling alley property.

In accordance with the above-described information, the AS/SVE system for the main site plume will be discontinued after any of the following occur:

1) PCE in groundwater is below NYSDEC standards and remains below NYSDEC Standards following shutdown of the AS/SVE system for a period of six months; or

2) PCE in groundwater is reduced from its pre-remediation levels, becomes asymptotic, and remains at asymptotic levels following shutdown of the AS/SVE system for a period of six months; or

3) To the extent that PCE in groundwater remains above NYSDEC Standards or does not become asymptotic after two years of operation of the AS/SVE system, an evaluation of the contribution of groundwater contaminants from the western bowling alley plume will be conducted. The continued operation of the AS/SVE system treating the main site plume will be evaluated based on the continuing contribution from offsite and upgradient. Pulsing of the system will be considered during this evaluation. The evaluation of pulsing of the AS/SVE system to address the main site plume will include an assessment of the groundwater conditions in the main site plume (including flow direction, constituent concentrations and trends, and vertical and lateral distributions of constituents), SVE effluent levels, and other factors that may affect the efficacy of pulsing. Pulsing modes (number and distribution of wells, frequency, and duration) and confirmation monitoring would also be assessed with the objective of developing a pulsing plan intended to result in an efficient improvement in the main site plume.

Regarding the western bowling alley plume, if the PCE concentrations meet the requirements as described in 1 or 2 immediately above, the portion of the AS/SVE system treating this plume will be terminated. However, if the PCE concentrations are not below NYSDEC Standards, are not asymptotic, or do not remain below NYSDEC Standards or at asymptotic levels following shutdown of the AS/SVE system and the system has operated for two years, then the operation of the system treating the western bowling alley plume will be terminated by the Volunteer.

An assessment of these scenarios will be based on PCE levels in groundwater collected from monitoring wells within the two plumes. The monitoring activities will adhere to the procedures outlined in the monitoring plan section of this OM&M plan.

The potential for soil vapor intrusion after system shutdown for the main site plume will also be evaluated. This evaluation will include conducting sub-slab soil vapor sampling. This sampling would be performed following shutdown of the AS/SVE system that addresses the main site plume and the results would be used to evaluate the potential for soil vapor intrusion. This evaluation will consider the conversion of select SVE wells to sub-slab depressurization wells if onsite sub-slab soil vapor concentrations indicate the need for mitigation.

2.3 INSTITUTIONAL CONTROLS COMPONENTS

Institutional Controls will be required for the Site in the form of Site restrictions. Adherence to these ICs will be required under a Declaration of Covenants and Restrictions ("deed restriction") substantially similar to Exhibit E of the June 4, 2002 VCA (Index # D2-0001-04-02) except that there shall be no restriction on soil disturbance and no requirement to maintain a cap covering the property. Site restrictions that are anticipated to apply to the Site are:

- The Site Owner shall continue in full force and effect the ICs required and maintain such controls unless the Owner first obtains permission to discontinue such controls from the NYSDEC;
- The deed restriction shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Site. The deed restriction shall provide that the Owner and its successors and assigns consent to enforcement by the NYSDEC of the prohibitions and restrictions of such deed restriction which shall be recorded, and covenant not to contest the authority of the NYSDEC to seek enforcement;
- Any deed of conveyance of the Site, or any portion thereof, shall recite, unless the NYSDEC has consented to the termination of such covenants and restrictions, that said conveyance is subject to the deed restriction;
- Use of groundwater underlying the Site will be prohibited without treatment rendering it safe for the intended purpose; and
- The Site may be used for commercial use only (to exclude day care, child care, and medical care uses) unless express written waiver of this covenant is provided by the NYSDEC.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all systems installed on-Site will be conducted at the frequency specified in the OM&M Plan Monitoring Plan schedule. The inspections will determine and document the following:

- Whether the EC continues to perform as designed;
- If the EC continues to be protective of human health and the environment;

- Compliance with the requirements of this OM&M Plan;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If Site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring systems;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this OM&M Plan (Section 3). The reporting requirements are outlined in the OM&M Reporting Plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of the EC occurs, an inspection of the Site will be conducted by a qualified environmental professional (as determined by the NYSDEC) to verify the effectiveness of the EC implemented at the Site.

2.4.2 Notifications

2.4.2.1 NYSDEC-Acceptable Electronic Database

The following information is presented in Attachment 3 in an electronic database format:

- A Site summary;
- The name of the current Site owner and/or the remedial party implementing the OM&M Plan for the Site;
- The location of the Site;
- The current status of Site remedial activity; and
- A contact name and phone number of a person knowledgeable about the Site requirements, in order for NYSDEC to obtain additional information, as necessary.

This information should be: 1) modified as conditions change; (2) revised in Attachment 3 of this document; and, (3) submitted to NYSDEC in the Annual OM&M Report. The deed restriction will be provided in the Site Summary in the Annual OM&M Report once it is recorded. Should the deed restriction be modified or terminated, the copy of the revised deed restriction will also be updated in this manner.

2.4.2.2 Non-Routine Notifications

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

- 60-day advance notice of any proposed changes in Site use that are inconsistent with the terms of the deed restriction.
- Notice within 48-hours of any damage or defect that reduces or has the potential to reduce the effectiveness of the Engineering Control and likewise any action taken to mitigate the damage or defect.
- Notice within 48-hours of any emergency, such as a fire, flood, or earthquake, which reduces or has the potential to reduce the effectiveness of the Engineering Control in place at the Site, including a summary of action taken and the impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the EC.

3.0 MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the implemented EC in reducing or mitigating contamination at the Site. The EC at the Site is an AS/SVE system. This Monitoring Plan is subject to revision by NYSDEC.

All monitoring will be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) presented in Attachment 8. The HASP procedures are in accordance with applicable federal, state and local regulations.

3.1.2 Purpose

This Monitoring Plan describes the methods to be used for:

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

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

- Sampling locations, protocol, and frequency;
- Information on the groundwater monitoring system (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells; and
- Monitoring well decommissioning procedures.

Quarterly groundwater monitoring will be conducted for the first two years. The frequency thereafter may be modified. Proposed modifications will be presented in the Annual OM&M Report and modifications will not be made without the approval of the NYSDEC.

Trends in contaminant levels in groundwater in the affected areas will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 3.1.2.1 and outlined in detail in Sections 3.2 through 3.8 below.

Table 3.1.2.1
Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Groundwater	Quarterly, first two years	Groundwater	TCL VOCs
SVE System	Quarterly	SVE Effluent (air)	TCL VOCs
AS/SVE	Monthly	System Operation	-

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

3.2 ENGINEERING CONTROL SYSTEM MONITORING

3.2.1 AS/SVE System Monitoring

An AS/SVE system has been installed to treat PCE-impacted groundwater present beneath a portion of the Site. The AS/SVE system design is described in the Engineering and Institutional Control Plan, and as-built drawings for the AS/SVE system are located in Attachment 2. Monitoring of the AS/SVE system will include operational monitoring and maintenance and monitoring of the SVE effluent. Monitoring procedures and frequencies are discussed below.

3.2.1.1 Monitoring Schedule

The operation of the AS/SVE system will be inspected on a monthly basis. More frequent inspections may be conducted if system operation or other factors indicate that more frequent inspection is necessary to keep the system in good operating condition.

Monitoring of the SVE system effluent will be conducted on a quarterly basis. Effluent monitoring to date has shown that no effluent treatment is needed, as discussed in Section 4.3.4 of the FER. The effluent monitoring results have also shown that PCE concentrations in the effluent are decreasing with time, as anticipated. Each round of effluent monitoring results will be reviewed to confirm that these conditions continue. If a change in SVE effluent concentrations is noted that indicates the need for more frequent monitoring, then the monitoring frequency may be increased.

The inspection frequency is subject to change by NYSDEC and NYSDOH. Unscheduled inspections and/or sampling may take place when a suspected failure of the AS/SVE system has

been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the AS/SVE system are specified later in this Plan.

3.2.1.2 AS/SVE Equipment Monitoring

A visual inspection of the complete AS/SVE system will be conducted during each monitoring event. AS/SVE system components to be monitored include, but are not limited to, the following:

- The discharge pressure and temperature for each of the two AS compressors;
- The vacuums and temperature at the three monitoring points for the SVE blower;
- The well head pressure or vacuum, as applicable, and flow rate for each of the AS and SVE wells; and
- The flow rate for each AS well and the SVE system total flow rate.

A complete list of the AS/SVE components to be checked is provided in the System Checklist, presented in Attachment 4. If any equipment readings are not within their typical range, or any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan are required immediately, and the AS/SVE system restarted.

3.2.1.3 AS/SVE System Monitoring Devices and Alarms

The AS/SVE system is equipped with a high-level alarm and shutdown switch in the moisture separator. At a high-level condition in the moisture separator, the switch activates, shutting down the AS/SVE system. An alarm light is activated to alert maintenance personnel to this high-level condition. The appropriate maintenance operation is to empty the moisture separator and re-start the AS/SVE system. These procedures are described in Section 4, Operation and Maintenance Plan.

The AS/SVE system is also equipped with a low vacuum alarm, which automatically shuts down the AS system when the SVE system is not operating properly.

The AS/SVE system has the above-described warning devices to indicate that the system is not operating properly. In the event that a warning device is activated, applicable maintenance and repairs will be conducted, as specified in the Operation and Maintenance Plan, and the AS/SVE system restarted. Operational problems will be noted in the Annual OM&M Report.

3.2.1.4 SVE Effluent Sampling Event Protocol

SVE effluent sampling will be conducted on a quarterly basis to ensure SVE system emissions compliance. Each SVE effluent sample will be collected from the SVE system sample port downstream of the blower using a Tedlar air sampling bag. Tedlar bags shall be new single-use bags and shall be filled to capacity with each sample. The filled Tedlar bags will be labeled to identify the sampling location, sample date and time, the analysis to be performed, and the sampler's name and affiliation. A chain-of-custody form shall be filled out to document the sequence of sample possession. The filled Tedlar bags shall be transported, together with the chain of custody document, via overnight courier to a NYSDOH-approved laboratory. Each sample shall be analyzed for VOCs by EPA Method T0-14 or T0-15.

3.2.1.5 SVE Effluent Discharge Evaluation

Following receipt of the analytical data and using site-verified parameters, the PCE concentration detected in each SVE effluent sample shall be used to calculate potential air impacts as outlined in Appendix B of the NYSDEC Division of Air Resources DAR-1 policy document entitled "Guidelines for the Control of Toxic Ambient Air Contaminants" (November 1997). These impacts will then be compared with the corresponding Annual Guidance Concentration (AGC) or Short-Term Guidance Concentration (SGC) value, as applicable. This comparison will be used to confirm that the PCE detected in the effluent is below its AGC and SGC values. If other VOCs are noted at elevated levels in the effluent, the potential air impacts from these VOCs shall also be calculated in a similar manner to confirm that these detected concentrations are below their AGC and SGC values.

All effluent sampling results and associated AGC/SGC evaluations shall be reported in the Annual OM&M Report. If exceedances of the AGCs and/or SGCs are noted, then effluent treatment shall be initiated or the system operation shall be modified as necessary to reduce effluent levels to below the AGC and SGC values. Any system modifications or effluent treatment requirements shall be reported in the Annual OM&M Report.

3.3 GROUNDWATER MONITORING PROGRAM

Groundwater monitoring will be performed on a regular basis to assess the performance of the AS/SVE system.

3.3.1 Monitoring System Design

The network of monitoring wells is designed to monitor both up-gradient and down-gradient groundwater conditions at the Site. The network of groundwater monitoring wells has been located so as to evaluate groundwater quality in and downgradient of the remediation

system area of influence, to evaluate the quality of groundwater migrating onto the Site, to evaluate groundwater impacts to the Site from the adjoining offsite bowling alley plume, and to assess groundwater quality downgradient of the Site.

Groundwater monitoring wells are installed at shallow, intermediate, and deep depths in the aquifer. Table 3.3.1.1 lists the monitoring wells in the network and their completion depths. The site plan in Attachment 1 shows the locations of the groundwater monitoring wells. Figures 3.3.1.1 through 3.3.1.3 show the PCE concentrations at shallow, intermediate and deep groundwater monitoring wells in July 2007, immediately prior to the startup of the AS/SVE system.

3.3.2 Groundwater Well Construction

Groundwater monitoring wells are installed at shallow, intermediate, and deep depths in the aquifer. Table 3.3.1.1 lists the monitoring wells in the network and their depths. Available well logs for the groundwater monitoring well network are included in Attachment 5.

3.3.3 Monitoring Schedule

Groundwater monitoring will be performed on a quarterly basis for the first two years of system operation at the designated wells in the groundwater monitoring well network. Thereafter, the Owner may modify the groundwater monitoring frequency. Proposed modifications to the monitoring frequency will be presented in the Annual OM&M Report. The OM&M Plan will be modified to reflect changes in sampling plans approved by NYSDEC. Deliverables for the groundwater monitoring program are specified below.

3.3.4 Sampling Event Protocol

All well sampling activities will be recorded in a field book and a groundwater well sampling log, a copy of which is presented in Attachment 5. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

At each well to be sampled, the depth to the static water level and depth of the well will be measured using an interface probe. If any non-aqueous fluids are present, they will be noted and their depths measured. Any well exhibiting non-aqueous fluids will not be sampled.

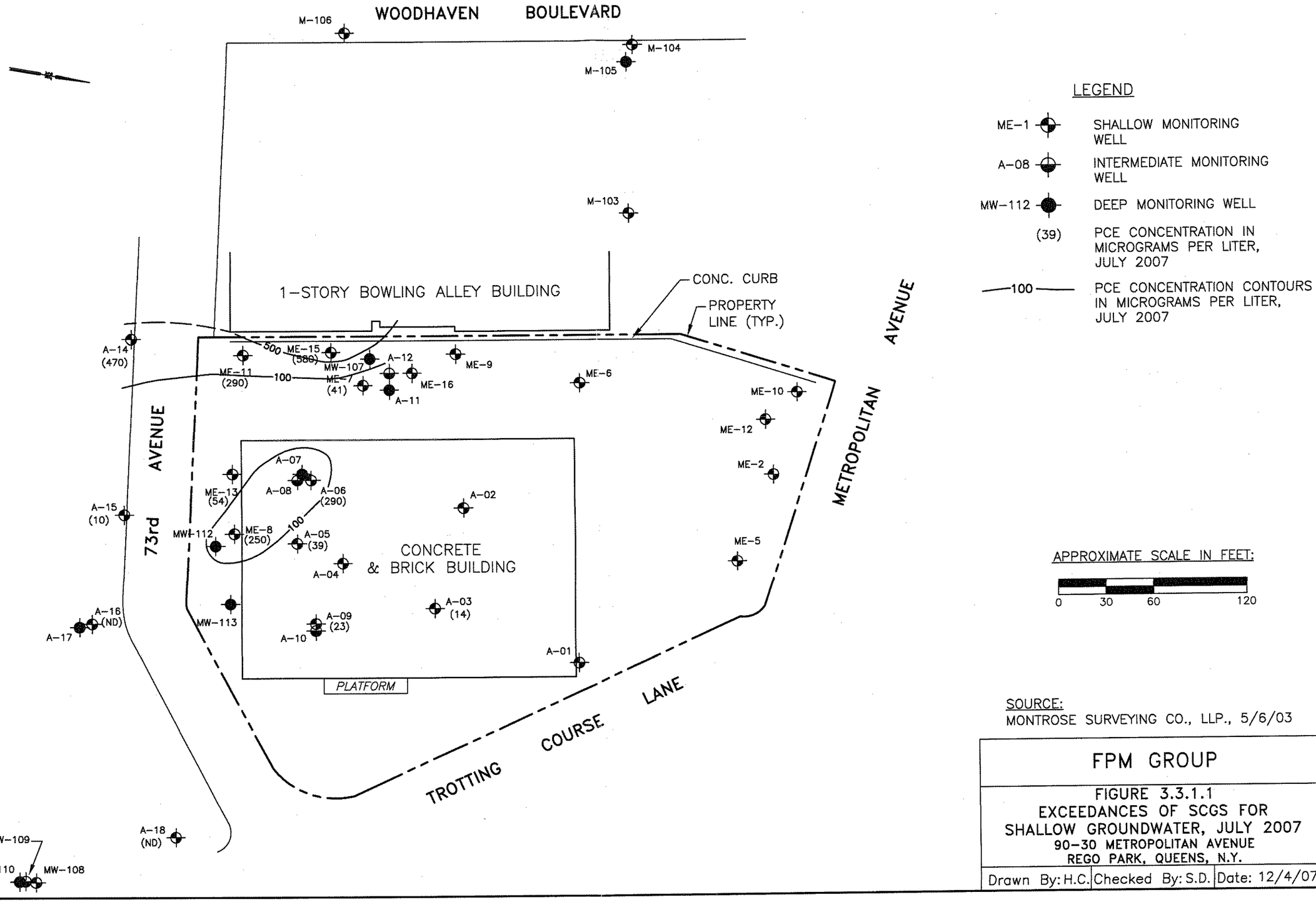
A decontaminated low-flow submersible pump will be used to purge a minimum of three to a maximum of five casing volumes of water from each well, if feasible. Following the removal of each casing volume, field parameters, including pH, turbidity, specific conductivity, and temperature, will be monitored. When all stability parameters varied by less than 10 percent between the removal of successive casing volumes, the wells will be sampled. Well sampling

TABLE 3.3.1.1
MONITORING WELL NETWORK
90-30 METROPOLITAN AVENUE, REGO PARK, QUEENS, NEW YORK

Well Number	Total Depth (feet)	Top of Casing Elevation (feet)	Wells to be Monitored	Depth to Water in feet, June 2005	Water Table Elevation in feet, June 2005
Shallow Wells					
ME-1	49.31	60.18	X*	42.80	17.38
ME-2	51.00	57.67		40.90	16.77
ME-4	49.70	58.66	X*	41.29	17.37
ME-5	50.30	57.73		40.28	17.45
ME-6	50.00	58.81		41.34	17.47
ME-7	50.66	59.61	X	42.23	17.38
ME-8	55.00	59.60	X	42.21	17.39
ME-9	54.76	59.03		41.58	17.45
ME-10	54.00	58.28		40.78	17.50
ME-11	54.88	59.64	X	42.16	17.48
ME-12	52.05	58.38		40.20	18.18
ME-13	55.15	59.60	X	42.32	17.28
ME-14	54.70	59.60	X*	42.18	17.42
ME-15	54.86	59.55	X	42.11	17.44
ME-16	54.85	59.19		-	-
A-01	53.48	58.05		40.64	17.41
A-02	58.75	61.45	X	44.15	17.30
A-03	57.40	61.57	+	44.44	17.13
A-04	60.30	61.29		44.00	17.29
A-05	57.60	61.54	X	44.21	17.33
A-06	59.80	61.59	X	44.24	17.35
A-09	58.75	61.29	X	43.94	17.35
A-14	53.20	59.47	X	42.26	17.21
A-15	52.60	59.46	X	42.18	17.28
A-16	51.80	58.99	X	42.70	16.29
A-18	50.50	58.70	X	42.55	16.15
MW-103	60.70	58.60		41.05	17.55
MW-104	58.90	59.40		41.85	17.55
MW-106	48.30	57.92		40.50	17.42
MW-108	55.00	58.74		41.92	16.82
Intermediate Wells					
A-08	84.35	61.53	X	45.70	15.83
A-10	85.1	61.16	X	45.40	15.76
A-12	78.17	59.46	X	43.42	16.04
A-13	83.9	59.59	X	43.75	15.84
MW-109	85	59.38	X	43.42	15.96
Deep Wells					
A-07	115	61.28	X	45.40	15.88
A-11	110	59.64	X	43.73	15.91
A-17	110	59.11	X	42.86	16.25
MW-105	98.6	59.39		43.38	16.01
MW-107	127	59.46		43.52	15.94
MW-110	110	59.38	X	43.35	16.03
MW-112	129.5	61.94	X	46.08	15.86
MW-113	131	59.71	X	43.85	15.86

Notes:

* Indicates damaged/missing well.
\+ Indicates added well.

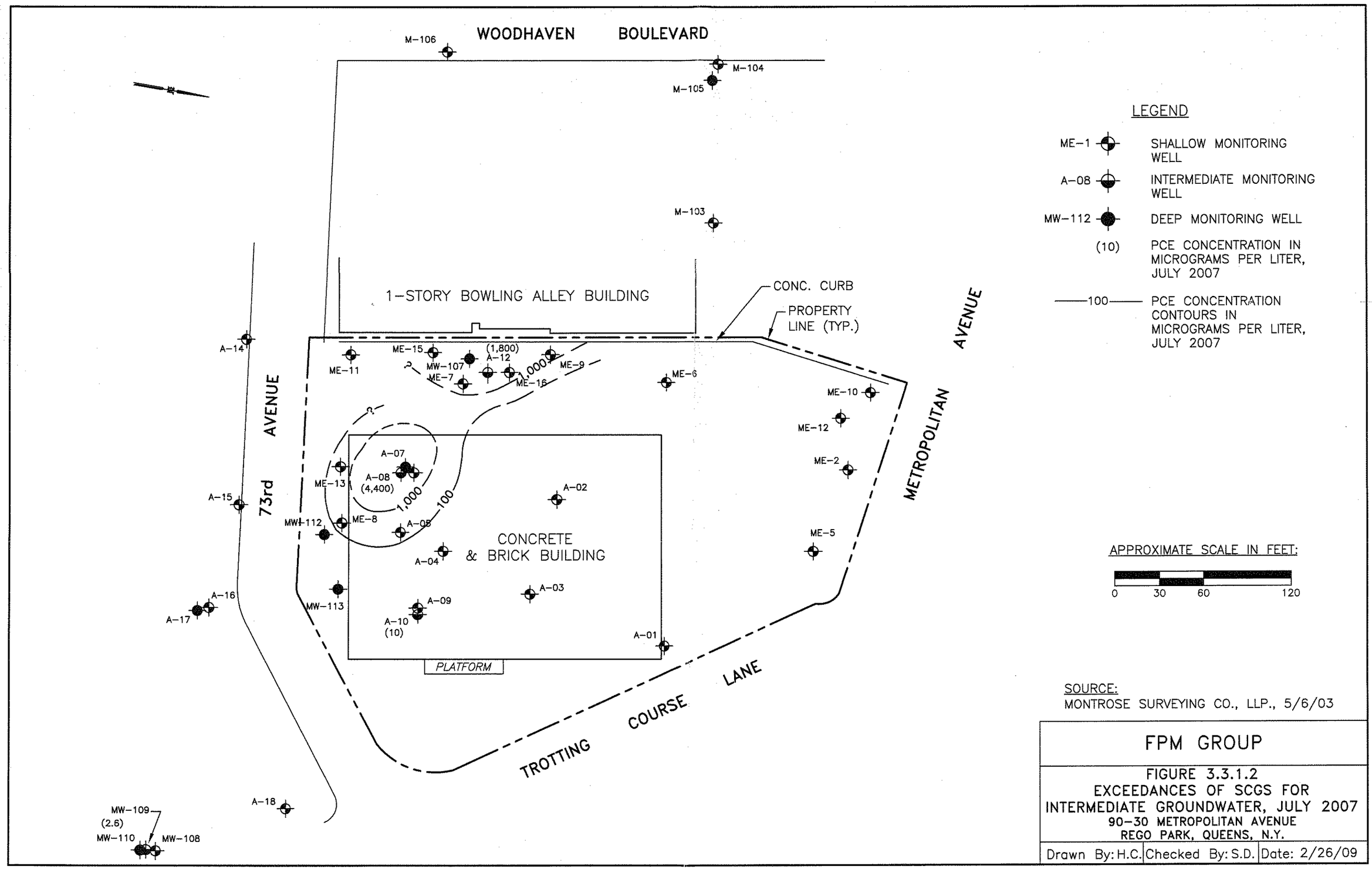


SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 3.3.1.1
EXCEEDANCES OF SCGS FOR SHALLOW GROUNDWATER, JULY 2007
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: H.C. | Checked By: S.D. | Date: 12/4/07



SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

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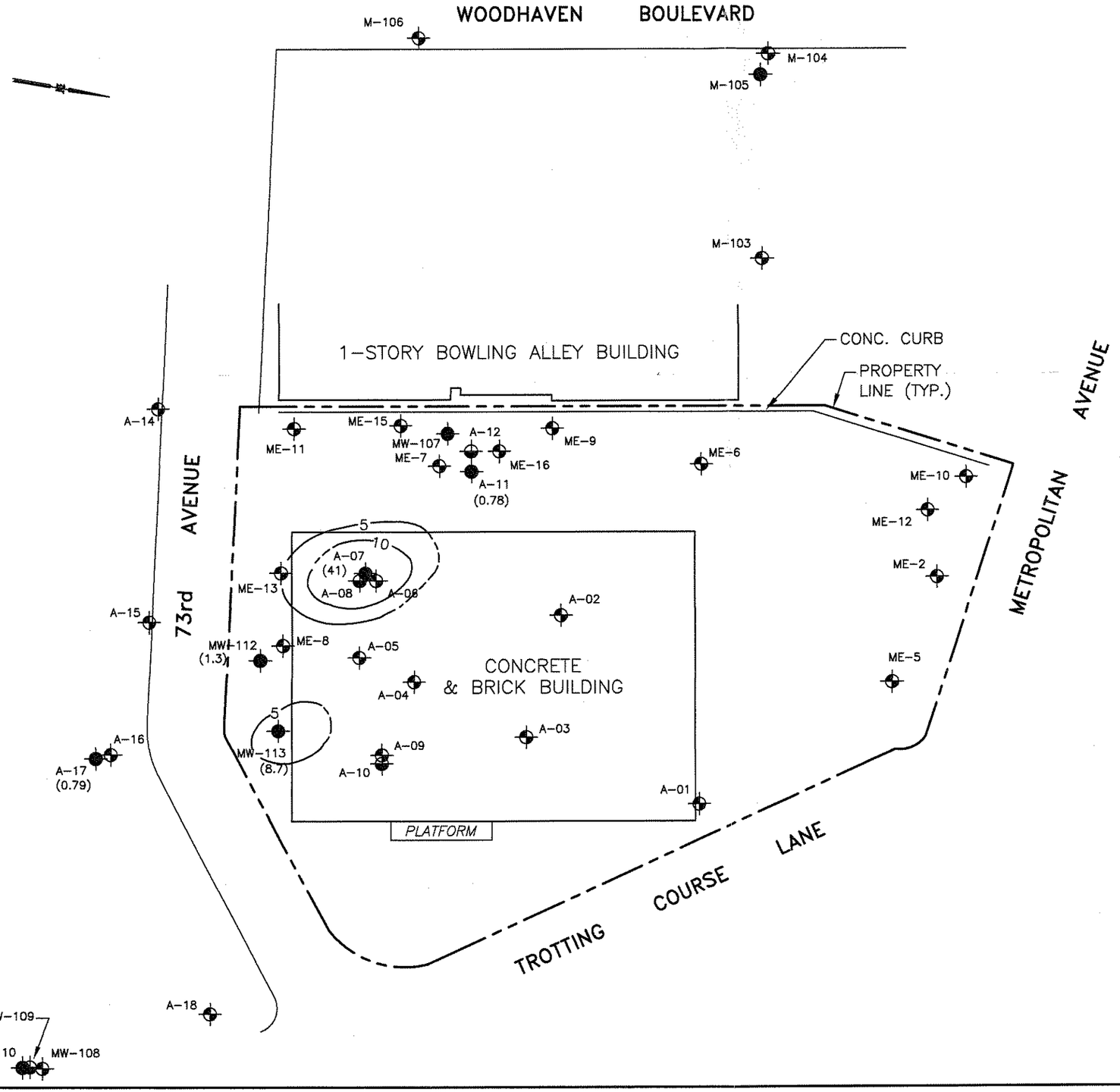
FIGURE 3.3.1.2
EXCEEDANCES OF SCGS FOR INTERMEDIATE GROUNDWATER, JULY 2007
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: H.C. | Checked By: S.D. | Date: 2/26/09



LEGEND

ME–1 ⊕	SHALLOW MONITORING WELL
A–08 ⊕	INTERMEDIATE MONITORING WELL
MW–112 ⊕	DEEP MONITORING WELL
(8.7)	PCE CONCENTRATION IN MICROGRAMS PER LITER, JULY 2007
5	PCE CONCENTRATION CONTOURS IN MICROGRAMS PER LITER, JULY 2007

APPROXIMATE SCALE IN FEET:

0 30 60 120

SOURCE:
MONTROSE SURVEYING CO., LLP., 5/6/03

FPM GROUP

FIGURE 3.3.1.3
EXCEEDANCES OF SCGS FOR
DEEP GROUNDWATER, JULY 2007
90-30 METROPOLITAN AVENUE
REGO PARK, QUEENS, N.Y.

Drawn By: H.C. | Checked By: S.D. | Date: 2/26/09

forms documenting the well purging and sampling procedures will be completed and provided in the Annual OM&M Report.

Following purging, groundwater sampling will be performed. Samples will be obtained using dedicated disposable polyethylene bailers. The retrieved samples will be decanted into laboratory-supplied sample containers. A groundwater sampling matrix is shown on Table 3.3.4.1 and indicates the rationale for sampling, the types of sample containers, preservatives and handling, the analyses to be performed, and the laboratory deliverables. This sampling matrix will be used to guide groundwater sampling activities in the field and will be adjusted as necessary as wells are removed from the monitoring program.

All non-disposable downhole sampling equipment will be decontaminated by washing in a potable water and Alconox solution and rinsing in potable water prior to use at each location to reduce the potential for cross-contamination. All sampling equipment will be either dedicated disposable equipment or will be decontaminated prior to use at each location. The decontamination procedures utilized for all non-disposable sampling equipment will be as follows:

- The equipment will be scrubbed in a bath of potable water and low-phosphate detergent;
- The equipment will then be rinsed with potable water; and
- The equipment will be allowed to air dry, if feasible, and wrapped for storage and transportation.

In the event that petroleum or other materials are encountered that may not be amenable to decontamination with water-based decontamination fluids, then lab-grade methanol and/or hexane may be utilized as necessary to properly decontaminate the equipment. Use of methanol and/or hexane will be documented in the field logbook.

All samples will be consistently identified in all field documentation, chain-of-custody documents and laboratory reports using an alphanumeric code. The designation "MS" will be added at the end of the designation for matrix spike/matrix spike duplicate samples. The field duplicate samples will be labeled with a dummy sample location to ensure that they are submitted as blind samples to the laboratory. The dummy identification will consist of the sample type followed by a letter. Trip blanks and field blanks will be identified with "TB" and "FB", respectively.

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

- Project identification

TABLE 3.3.4.1
GROUNDWATER SAMPLING MATRIX
90-30 METROPOLITAN AVENUE SITE, REGO PARK, NEW YORK

Sample Type	Sample Name	Sampling Protocol	Analytes	Laboratory Deliverables	Sample Containers	Preservation
Primary Samples	ME-1 through MW-113 (as per Table 3.3.1.1)	If no free-phase product, purge and sample.	TCL VOCs	Category B	Two VOA vials for VOCs	HCl, cool to 4°C
QA/QC Samples	Equipment Blank	One per day per matrix sampled	Same as matrix	Category B	Two VOA vials for VOCs	HCl, cool to 4°C
	Trip Blank	One per cooler containing VOC samples	TCL VOCs	Category B	Two VOA vials (filled by lab)	HCl (by lab), cool to 4°C
	Blind Duplicate	One per 10 environmental samples per matrix	Same as matrix	Category B	Same as matrix	Same as matrix

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

Once the groundwater samples are collected and labeled, they will be placed in ice-filled coolers and stored in a cool area away from direct sunlight to await shipment to the laboratory. The completed COC form will accompany the cooler. Samples will be shipped overnight (e.g., via Federal Express) or transported by a laboratory courier. All coolers shipped to the laboratory will be sealed with mailing tape and a COC seal to ensure that the coolers remain sealed during delivery.

Field personnel will be responsible for maintaining the sample coolers in a secured location until they are delivered 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 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 at sample check-in.

All groundwater samples collected during monitoring activities will be analyzed using the most recent NYSDEC ASP. Analytical data will be submitted in complete ASP Category B data packages including documentation of laboratory QA/QC procedures that will provide legally defensible data in a court of law.

The laboratory proposed to perform the analyses will be certified through the NYSDOH ELAP to perform CLP analyses and Solid Waste and Hazardous Waste analytical testing on all media to be sampled. Where appropriate, trip blanks, field blanks, field duplicates, and MS/MSD samples will be collected at a frequency of 5% (1 set of QA/QC samples per 20 field samples), and will be used to assess the quality of the data.

3.4 WELL REPLACEMENT/REPAIRS AND DECOMMISSIONING

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance. Well decommissioning, for the purpose of replacement, should be reported to NYSDEC prior to performance and will be included in the annual report. Well decommissioning without replacement must receive prior approval by NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are

decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC and NYSDOH.

3.5 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year during remediation and the post-remediation monitoring period. A Site-wide inspection should also be performed after all severe weather conditions that may affect the EC or monitoring devices. During these inspections, an inspection form will be completed (Attachment 6). The form will compile sufficient information to assess the following:

- Compliance with the IC, including Site usage;
- An evaluation of the condition and continued effectiveness of the EC;
- General Site conditions at the time of the inspection;
- The OM&M activities being conducted;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that Site records are up to date.

3.6 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the Site (Attachment 7). The main components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
    - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with the NYSDEC ASP requirements.
    - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:

- All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
- The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.

- Analytical Procedures;
- Data Reduction and Validation:
  - Data validation will be performed in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:
    - Verification of 100% of all QC sample results (both qualitative and quantitative);
    - Verification of the identification of 100% of all sample results (both positive hits and non-detects);
    - Recalculation of 10% of all investigative sample results; and
    - A Data Usability Summary Report (DUSR) which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

3.7 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file with the Remediation Engineer. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Annual OM&M Report, as specified in the Reporting Plan of the OM&M Plan.

All monitoring results will be reported to NYSDEC on an annual basis in the OM&M Report. A report or letter will be prepared for submission, if required by NYSDEC, subsequent to each sampling event. The report (or letter) will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected;
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (also to be submitted electronically in the NYSDEC-identified format);
- A copy of the laboratory certification;
- Any observations, conclusions, or recommendations; and
- A determination as to whether plume conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized in Table 3.7.1 below.

Table 3.7.1
Monitoring/Inspection Deliverables

Task	Frequency*	Annual Reporting Requirement
Groundwater Monitoring	Quarterly for first two years	X
SVE Effluent Monitoring	Quarterly during SVE system operation	X
Site-Wide Inspection	Annual for duration of remediation and groundwater monitoring	X
AS/SVE System Inspection	Monthly for duration of system operation	X

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

3.8 CERTIFICATIONS

Site inspections and sampling activities will take place as outlined above. Frequency of inspection is subject to change by NYSDEC. Inspection certification for all ECs will be submitted to NYSDEC on a calendar year basis and must be submitted by March 1 of the following year. A qualified environmental professional, as determined by NYSDEC, will perform inspection and certification. Further information on the certification requirements are outlined in the Reporting Plan of the OM&M Plan.

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

The Operation and Maintenance Plan describes the measures necessary to operate and maintain the mechanical components of the remedy selected for the Site (i.e. the AS/SVE system). This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Site to operate and maintain the AS/SVE system;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in Site conditions or the manner in which the AS/SVE system is operated and maintained.

A copy of this Operation and Maintenance Plan, along with the complete OM&M Plan, will be kept with the Remediation Engineer. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the OM&M Plan. The Operation and Maintenance Plan is subject to NYSDEC revision.

4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

The Site is equipped with one EC: an AS/SVE system designed to remediate PCE-impacted groundwater along the southern and southwestern portions of the Site and to address soil vapor intrusion issues. The SVE portion of the system will also address any PCE-impacted soil that may be present in the system area. The VOC of concern in the groundwater is PCE, which is volatile and amenable to remediation by AS/SVE. System design and installation documents are provided in Attachment 2.

4.2.1 Scope of AS/SVE System

The general locations of the AS/SVE system wells and remedial system layout are shown on previously-presented Figure 1.4.2.1. The generalized equipment setup is shown in previously-presented Figure 1.4.2.2. A detailed site plan showing the remedial wells is included in Attachment 1 hereto.

Twenty-four AS wells were installed and are positioned to treat the area of PCE-impacted groundwater beneath the southern end of the Site building and along the Site's southern and western boundaries. The AS wells are screened at various depths to treat the plume which extends from the water table, (approximately 50 feet below grade) to approximately 70 feet below the water table. The AS wells are constructed of one or one and a half-inch-diameter Schedule 40 PVC casing and 0.02-inch slotted screen. The screened interval for the shallow,

intermediate, and deep AS wells extends from approximately 10 to 12, 43 to 45, and 68 to 70 feet below the water table, respectively. The well annuli were backfilled with Morie #2 well gravel to approximately two feet above the top of each screen and the balance of the annuli were backfilled with bentonite grout to grade. The tops of the wells were protected with traffic-rated manholes. Previously-presented Table 2.2.1.2.1 shows the AS wells and their completion depths.

Seven SVE wells were installed; three of these wells were installed at shallow depths to address potential vapor intrusion issues and four wells were installed at deeper depths to capture vapors migrating from the water table. The shallow-depth SVE wells are screened 15 to 20 feet below grade. The deep SVE wells are screened from 25 to 45 feet below grade. Previously-presented Table 2.2.1.2.2 shows the SVE wells and their completion depths.

Each SVE well annulus was gravel-packed to approximately two feet above the top of the screen, a two-foot bentonite seal was then placed, and the balance of the annulus was filled to just below grade with drill cuttings to allow for connection to the SVE system. The tops of the wells were protected with traffic-rated manholes.

The remediation system SVE above-grade components include the following items:

- A manifold for the SVE piping configured with shutoff valves, sampling ports, flow meters, and vacuum gages such that each SVE well may be monitored and operated separately;
- A 28.58-horsepower Nash Elmo blower (model 2BH1930-8AH6) rated for up to 1,500 scfm. The blower is affixed to the floor of the enclosure using shock mounts;
- A Gasho model GX-90 water knockout vessel equipped with a high-level float alarm light and valve shutoff, a vacuum relief valve, and a drain port;
- A Solberg model CSL-275P-600F particulate filter; and
- A vacuum relief valve;
- A manifold with camlock fittings and bypass valving to allow for carbon treatment, if necessary.
- Two Carbtrol G-3 carbon treatment canisters situated for rapid connection if needed;
- A PVC discharge stack affixed to the adjacent site building. The stack extends to five feet above the top of the site building and is supported so to withstand wind loads anticipated at the site.

The remediation system AS above-grade components include the following items:

- A manifold for the AS piping configured with shutoff valves, flow meters, pressure gages such that each AS well may be monitored and operated separately;
- An Orbit electric flow controller and corresponding valves to operate the AS wells in a sequential mode; and
- Three oil-free air compressors (two Becker model KDT 3.80 rotary vane compressors and one Powerex STS050 scroll compressor) with pressure relief valves. The compressors are affixed to the floor of the system enclosure with shock mounts. An alarm light system is connected to the compressors to indicate a shutdown condition

The remediation system is equipped with an electrical panel with separate circuits for major system components. A control panel is included to operate the system. Detailed electrical and control system design information is provided in Appendix F of the FER; a copy of this information is included in Attachment 2 hereto.

The remediation system is housed in a locked weatherproof enclosure with soundproofing to reduce noise, interior lighting, and a thermostatically-operated exhaust fan. The system is further secured by a locked chain-link fence enclosure.

4.2.2 AS/SVE System Start-Up and Testing

The remediation system was initiated on August 23, 2007 and has since remained in continuous operation. At the time of system startup the following checks were performed:

- AS compressors checked to confirm that pressures and flow rates were within manufacturer's specifications;
- SVE blower flow rates and vacuums were checked to confirm they were within manufacturer's specifications;
- All above-grade piping and fittings checked for leaks;
- All warning devices checked for proper operation;
- All safety shutoff equipment checked for proper operation according to manufacturer's instructions;
- Flow rate and vacuum/pressure in each AS and SVE well checked to confirm balanced system; and
- SVE effluent sampled.

Any necessary adjustments were made to the system at that time to assure proper operation. The system testing described above will be conducted if, in the course of the AS/SVE system lifetime, significant changes are made to the system and the system restarted.

4.2.3 AS/SVE System Operation: Routine Operation Procedures

Routine AS/SVE operation procedures are checked during each monthly system inspection. These routine procedures include a visual check and monitoring of certain system components.

A visual inspection of the AS/SVE system is conducted during each ~~the~~ monitoring event. The visual inspection includes the above-grade piping and the components inside of the remediation compound to observe their condition and note any changes or obvious deficiencies. Any changes or deficiencies will be further investigated to evaluate their cause and determine if corrective measures are necessary.

AS/SVE system components to be monitored include, but are not limited to, the following:

- The discharge pressure and temperature for each of the two AS compressors;
- The vacuums and temperature at the three monitoring points for the SVE blower;
- The well head pressure or vacuum, as applicable, and flow rate for each of the AS and SVE wells; and
- The flow rate for each AS well and the SVE system total flow rate.

A complete list of the AS/SVE components to be checked is provided in the AS/SVE System Checklist, presented in Attachment 4. If any equipment readings are not within their typical range, or any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan are required immediately, and the AS/SVE system restarted.

4.2.4 AS/SVE System Operation: Routine Equipment Maintenance

The following routine maintenance operations are required:

- Checking and emptying, if required, the SVE moisture separator;
- Replacement of the filter element in the SVE air filter;
- Replacement of the inlet air filters to the AS compressors; and

- Inspection of the compressor vanes, v-belt, safety valve and pressure gage on the AS compressors, as applicable.

Additional information regarding routine maintenance activities and minimum schedules for these activities are included in the manufacturer's documentation for the AS/SVE system components included in Attachment 2.

4.2.5 AS/SVE System Operation: Non-Routine Equipment Maintenance

Non-routine equipment maintenance may periodically be required to restore the operation of AS/SVE system components. Certain non-routine maintenance, such as compressor vane replacement or replacement of minor components of the remediation system may be accomplished by environmental professionals using the equipment manufacturer's instructions included in Attachment 2. However, certain non-routine equipment maintenance may require the services of an electrician, professional equipment personnel, or other specialists. If a non-routine equipment problem develops, the equipment manuals in Attachment 2 should be reviewed to determine the appropriate course of action. The non-routine maintenance should be completed promptly and the AS/SVE system restarted and checked for proper operation. Any non-routine equipment maintenance will be reported in the Annual OM&M Report.

4.3 GROUNDWATER MONITORING WELL MAINTENANCE

If biofouling or silt accumulation has occurred in the groundwater monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable.

4.4 MAINTENANCE REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the Site will be kept on-file at the office of the Remedial Engineer. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Annual OM&M Report, as specified in Section 5 of this OM&M Plan.

4.4.1 Routine Maintenance Reports

Checklists or forms (see Attachment 4) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;

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

4.4.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

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

4.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions. Emergencies that may occur during groundwater monitoring, AS/SVE system operation or monitoring, or associated inspections will be managed in accordance with the procedures outlined below.

4.5.1 Emergency Telephone Numbers

In the event of any environmentally-related situation or unplanned occurrence requiring assistance, the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to the qualified environmental professional.

These emergency contact lists will be maintained in an easily accessible location within the remediation compound at the Site.

Table 4.5.1.1
Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
Stephanie Davis, FPM Group Project Manager	(631) 737-6200, ext. 228
Vadim Brevdo, NYSDEC Project Manager	(718) 482-4891

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

4.5.2 Map and Directions to Nearest Health Facility

Site Location: 90-30 Metropolitan Avenue, Rego Park, New York

Nearest Hospital Name: Jamaica Hospital Medical Center

Hospital Location: 8900 Van Wyck Expressway, at the corner of the Van Wyck Expressway Service Road and 89th Avenue

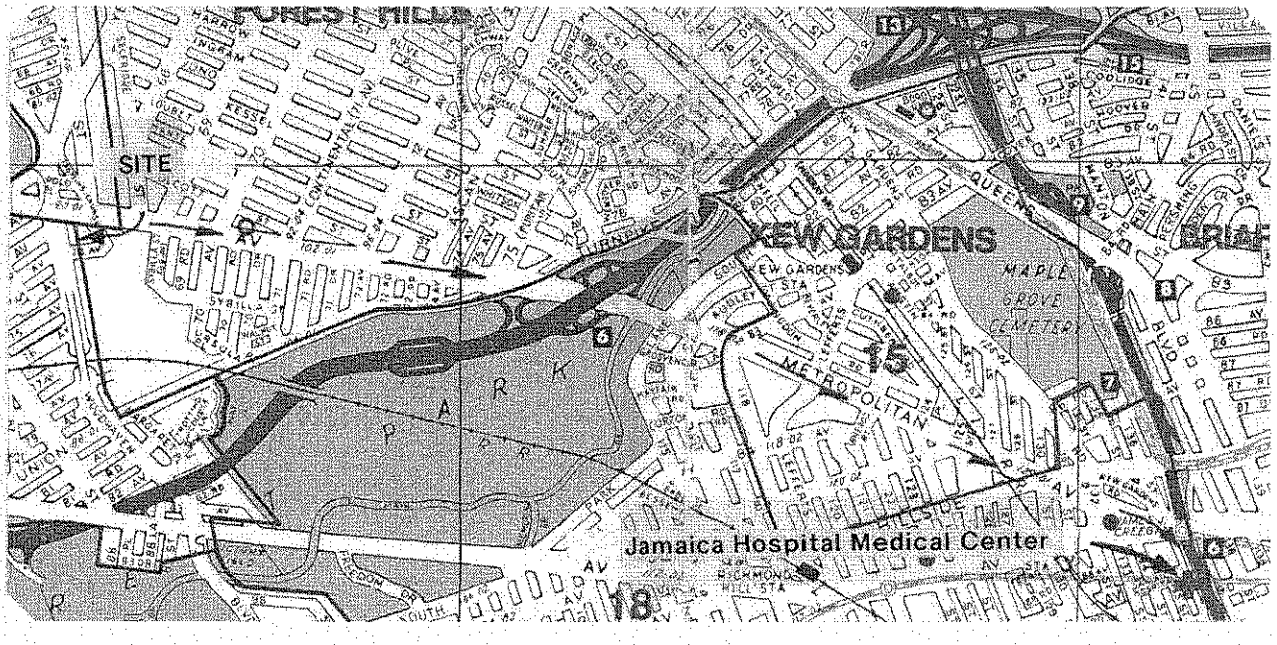
Hospital Telephone: 718-206-6000

Directions to the Hospital:

1. Exit the Site onto Metropolitan Avenue and turn right (east) towards the Van Wyck Expressway. Travel about one mile;
2. Make a right turn onto the Van Wyck Expressway Service Road; and
3. The hospital is located on the right at the corner of the Van Wyck Expressway Service Road, and 89th Avenue.

Total Distance: About one mile

Total Estimated Time: About five minutes



4.5.3 Response Procedures

4.5.3.1 Emergency Contacts/Notification System

As appropriate, the fire department and other emergency response groups will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 4.5.1.1). The list is also posted prominently within the remediation compound at the Site and made readily available to all remedial personnel at all times.

If a petroleum spill occurs on the Site the following procedures will be implemented:

- Spill reporting to the NYSDEC Spill Hotline (800-457-7362) will be conducted as necessary;
- The petroleum will be contained and removed from the Site surface by a petroleum remediation contractor in accordance with federal, state and local regulations;
- If Site soil is affected, then grossly contaminated soil will be excavated, stockpiled, and managed in accordance with the soil management procedures presented in the stipulations to the FER;

Copies of correspondence with disposal facilities concerning classification of materials, testing results, and permits/approvals will be maintained by the project manager and will be submitted to the NYSDEC as part of a spill close-out report.

This Contingency Plan may be amended if Site conditions change. Amendments to the Contingency Plan will be made as needed and approved by the NYSDEC and will be included in the Annual OM&M Report.

5.0 OM&M REPORTING PLAN

5.1 INTRODUCTION

An Annual OM&M Report will be submitted to NYSDEC by March 1 following the calendar year reporting period. The OM&M Report will be prepared in accordance with NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation requirements. This OM&M Reporting Plan and its requirements are subject to revision by NYSDEC.

This report will include the following:

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

The OM&M Reporting Plan is subject to NYSDEC revision.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

Information of EC/ICs can be found in the Engineering and Institutional Control Plan portion of this OM&M Plan. Inspection of the EC will occur at a frequency described in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan. After the last inspection of the reporting period, a qualified environmental professional will sign and certify the document. The document will certify, to the extent feasible, that:

- On-Site ECs are unchanged from the previous certification;
- They remain in-place and effective;
- The system is performing as designed;
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment;

- Nothing has occurred that would constitute a violation or failure to comply with any operation and maintenance plan for such controls;
- Access is available to the Site by NYSDEC and NYSDOH to evaluate continued maintenance of such controls; and
- Site usage is compliant with the deed restriction, if applicable.

The signed certification will be included in the Annual OM&M Report (see Section 5.3).

5.3 SITE INSPECTIONS

5.3.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this OM&M Plan. At a minimum, a Site-wide inspection will be conducted:

- Annually for the duration of remediation system operation and post-remediation monitoring;
- When a significant breakdown of the AS/SVE system has occurred necessitating such an inspection; and
- Whenever a severe condition has taken place, such as an erosion or flooding event, which may affect the EC.

5.3.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms for their respective system (refer to Attachment 4 for the AS/SVE system). Additionally, a general Site-wide inspection form will be completed during the Site-wide inspection (see Attachment 6). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records (including all sampling data of any media at the Site and system maintenance reports) generated for the Site during the calendar year will be included in the Annual OM&M Report.

5.3.3 Evaluation of Records and Reporting

The results of the inspection and Site monitoring data will be evaluated as part of the EC certification to confirm that the:

- EC are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;

- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The Site remedy continues to be protective of public health and the environment and is performing as designed in the RAWP and FER.

5.4 OM&M REPORT

The OM&M Report will be submitted annually by March 1 of the calendar year following the reporting period and submittals will continue through the end of the monitoring period. Other activities, such as groundwater monitoring may be submitted quarterly for the first year, if requested by NYSDEC, and annually thereafter, with those results also incorporated into the Annual OM&M Report. The report will include:

- EC certification;
- All applicable inspection forms and other records generated for the Site during the reporting period;
- A summary of any effluent monitoring data and/or information generated during the reporting period with comments and conclusions;
- Cumulative data summary tables and/or graphical representations of contaminants of concern by media, which include a listing of all compounds analyzed along with the applicable standards, with all exceedances highlighted;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables required for all points sampled during the calendar year (also to be submitted electronically in the NYSDEC-specified format);
- A performance summary for the AS/SVE system at the Site during the calendar year, including information such as:
    - The number of days the system was run for the reporting period;
    - The contaminant mass removed;
    - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
    - A summary of the performance and/or effectiveness monitoring;
    - Comments, conclusions, and recommendations based on data evaluation; and
    - Description of the resolution of performance problems.

- A Site evaluation, which will address the following:
  - The performance and effectiveness of the remedy;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored; and
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan.
- A figure showing sampling and well locations, and significant analytical values at sampling locations; and
- Comments, conclusions, and recommendations, based on an evaluation of the information included in the report, regarding EC/ICs at the Site.

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