

REVISED REMEDIAL INVESTIGATION REPORT
for the Properties Located at 471-491 Great Neck Road, Great Neck, NY
NYSDEC Consent Order Index # A1-0556-0706, NYSDEC Site # 1-30-068

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EXECUTIVE SUMMARY

ELM Engineering, P.C. (ELM Engineering) presents this Revised Remedial Investigation Report (RIR) on behalf of Plymouth Realty Co. (Plymouth) for the properties located at 471-491 Great Neck Road, Great Neck, New York (the "Site"). An active dry cleaning operation, Mayflower Cleaners, is located at 489 Great Neck Road. Chlorinated solvents have been released from this facility. In October 2006, the New York State Department of Environmental Conservation (NYSDEC) issued an Order on Consent and Administrative Settlement, hereafter referred to as the "Consent Order" for the Site, Index # A1-0556-0706, Site # 1-30-068.

This report presents the results of investigative work conducted pursuant to a *Remedial Investigation Work Plan* (RIWP) dated May 8, 2008, a *RIWP Addendum* dated March 25, 2009, a *Supplemental Remedial Investigation Work Plan* (SRIWP) dated October 14, 2010, and a *Groundwater Sampling Work Plan* (GSWP) dated January 18, 2012. The initial remedial investigation (RI) was completed in October 2009. The supplemental remedial investigation (SRI) was performed in February 2011. The supplemental groundwater investigation (SGI) was completed in December 2011-January 2012.

The objectives of the 2009 RI were to (1) further characterize the presence of site-related constituents of concern (COCs) related to previous releases at Mayflower Cleaners, (2) review the regional environmental history and historical sampling and monitoring results in order to confirm regional groundwater flow direction and evaluate the results of previous subsurface investigations, and (3) determine if the presence of the COCs represent a threat to human health or the environment.

The 2009 RI results suggest that (1) there is no significant source of site-related constituents, including tetrachloroethylene (PCE) or trichloroethene (TCE), in soil, (2) the presence of PCE in groundwater at the Site may be attributed to sources located hydraulically upgradient, and (3) constituents in soil and groundwater do not represent a threat to human health or the environment.

The 2009 RI results confirmed the presence of PCE and TCE in sub-slab soil vapor beneath Mayflower Cleaners. According to the New York State Department of Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH Guidance), the concentrations of PCE observed in sub-slab soil vapor during the RI required mitigation. As a result, Plymouth directed ELM Engineering to coordinate the installation of an interim active sub-slab depressurization system (SSDS) to eliminate any potential pathway for the migration of sub-slab vapors to indoor air beneath the Mayflower Cleaners facility and the adjacent bagel shop. In addition, NYSDEC required a SRI to characterize the nature and extent of PCE and TCE in sub-slab soil vapor and indoor air at commercial buildings adjacent to Mayflower Cleaners.

The 2011 SRI results confirmed the presence of PCE and TCE in sub-slab soil vapor and indoor air at the bagel shop, mini-mall and basement hallway. According to NYSDOH Guidance, the concentrations of PCE and TCE observed in sub-slab soil vapor at the bagel shop and mini-mall require mitigation; the concentrations of PCE and TCE observed in sub-slab soil vapor at the basement hallway require monitoring and/or mitigation.

The objective of the 2011-2012 SGI was to generate an appropriate set of analytical data to confirm the Conceptual Site Model (CSM). ELM's CSM states Site groundwater is not being adversely affected by residual Site-related PCE and TCE contamination and the presence of PCE and TCE in groundwater at the Site is attributable to two known hydraulically upgradient sources, the Citizens Development Company Site and the Kassan Cleaners Site. The 2011-2012 SGI results confirmed the CSM. PCE and TCE were not detected at the hydraulically cross-gradient sampling location or at any of the hydraulically downgradient sampling locations. The lack of any detectable presence of either PCE or TCE confirms no further action is warranted.

Based on the findings of the RI and SRI, ELM Engineering recommends that:

- A No Further Action (NFA) determination for remedial action or monitoring of soil and groundwater be issued for the Site,
- A deed restriction restricting the use of groundwater is attached to the property,
- The interim active SSDS at the Mayflower Cleaners and bagel shop remain active,
- An additional active SSDS be installed as a non-emergency Interim Remedial Measure (IRM) to eliminate any potential pathway for the migration of sub-slab vapors to indoor air beneath the mini-mall and portions of the basement hallway, and
- The site be reclassified from a Class 2 to a Class 4 Inactive Hazardous Waste Disposal Site following NYSDEC approval of the Final Engineering Report (FER).

DISCLAIMER

ELM Engineering, P.C. (ELM Engineering) has prepared this report based upon a review of information provided by the client as well as information collected and/or developed as part of the specific scope of work under this project. The report was prepared for the exclusive use of the client of record for the stated objectives relative to the subject property. No other warranty, express or implied, is made.

ELM Engineering does not purport to give legal advice. Any reference to legal issues or terms is provided as part of the general environmental risk assessment and is not a substitute for the advice of competent legal counsel.

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I. INTRODUCTION

ELM Engineering (ELM) presents this Revised Remedial Investigation Report (RIR) on behalf of Plymouth Realty Co. (Plymouth) for the properties located at 471-491 Great Neck Road, Great Neck, New York (the Site). An active dry cleaning operation, Mayflower Cleaners, is located at 489 Great Neck Road. Chlorinated solvents have been released from this facility. In October 2006, the New York State Department of Environmental Conservation (NYSDEC) issued an Order on Consent and Administrative Settlement, hereafter referred to as the "Consent Order" for the Site, Index # A1-0556-0706, Site # 1-30-068. The Consent Order required the submission of a Site Characterization Work Plan.

This report presents the results of investigative work conducted pursuant to a *Remedial Investigation Work Plan* (RIWP) dated May 8, 2008, a *RIWP Addendum* dated March 25, 2009, a *Supplemental Remedial Investigation Work Plan* (SRIWP) dated October 14, 2010, and a *Groundwater Sampling Work Plan* (GSWP) dated January 18, 2012. The initial remedial investigation (RI) was completed in October 2009. The supplemental remedial investigation (SRI) was performed in February 2011. The supplemental groundwater investigation (SGI) was completed in December 2011-January 2012.

II. BACKGROUND

A. Site Description

The Site encompasses the properties defined as 471-491 Great Neck Road in Great Neck, New York (Nassau County). According to the Office of the Nassau County Clerk, the Site is located in Section 2 on Block 051, Lot 209. A location map is provided as Figure 1. The surrounding area is highly urbanized and consists of numerous commercial buildings, several major roadways, and parking lots. A general building layout is provided as Figure 2.

Mayflower Cleaners is the current tenant of a single-story masonry building with a basement. Mayflower Cleaners shares this building with another tenant, a bagel shop. The address of Mayflower Cleaners is 489 Great Neck Road. The address of the bagel shop is 491 Great Neck Road.

The adjoining building to the north is a recently improved two-story multi-tenant mini-mall. A home appliance retailer occupies the basement floor. The address of the mini-mall is 485 Great Neck Road. The adjoining building to the north of the mini-mall is a single-story masonry building with a partial basement; current tenants include a liquor store (471 Great Neck Road), a pet store (477 Great Neck Road), and a public library (475 Great Neck Road). Together all three buildings represent one large commercial complex at the northern end of Lot 209. A customer parking lot separates the northern complex from another commercial complex located at the southern end of Lot 209. A detailed building layout at the ground level is provided as Figure 3. A detailed building layout at the basement level is provided as Figure 4.

B. Site Geology and Hydrogeology

The subsurface geology in the area consists predominantly of very fine sandy silt, silty very fine sand, and clayey silt or fine sand. The soils are interbedded with lenses of clay and occasional layers of coarse sand grading to fine gravel. The sediments comprise the Upper Glacial Aquifer, an unconfined water table aquifer, which overlies the Raritan Clay confining unit locally. According to hydrogeologic cross-sections, the top of the confining unit is present at approximately 100 ft below mean sea level and is approximately 150 to 200 ft thick. During the GSE groundwater was observed at approximately 20-35 ft bgs across the Site.

C. Previous Environmental Actions and Related Correspondence

In December 1992, at the request of NYSDEC, the Nassau County Department of Health (NCDOH) performed an inspection and sampling of some floor drains inside the facility, which were linked to drywells on the site. An October 18, 1995 letter from Frank C. Brock of the United States Environmental Protection Agency (USEPA) to Plymouth states that the USEPA was in receipt of analytical results of surficial soil samples collected from two former Class V dry wells located in the basement of the Mayflower Cleaners facility. The analytical results indicate the presence of PCE in surficial soil at concentrations of 3,400 µg/kg and 2,400 µg/kg, respectively, at the two dry wells. Subsequently, the site was referred to EPA's Underground Injection Control (UIC) Program.

The USEPA issued authorization for Plymouth's consultant to proceed with an approved Class V injection well closure plan to excavate the soil/sludge to a specific depth to achieve NYS Technical and Administrative Guidance Memorandum (TAGM) levels before backfilling the drains with clean inert fill and sealing with a minimum of six inches of concrete/asphalt. The dry wells were closed in 1996 by P.W. Grosser Consulting, Inc. of Bohemia, NY in accordance with the EPA-approved closure plan, which required the excavation of both dry wells to a depth of 2.5 feet below grade surface.

A Letter from Walter E. Andrews of the USEPA, dated March 14, 1996, states that the USEPA was in receipt of all necessary documents illustrating satisfactory closure of the Underground Injection Control (UIC) Program Class V wells. The USEPA agreed to close the file on the UIC Program.

D. Regional Environmental History

Investigations of chlorinated and petroleum constituent releases into the subsurface have been conducted in the region over the past several decades. The New Stanton Cleaners Site, the Citizens Development Company Site, and the Kassan Cleaners Site are former or active dry cleaning operations located in the vicinity of the Site (Figure 5). All three of these sites are known to have released chlorinated solvents into the subsurface. The Citizens Development Company Site and the Kassan Cleaners Site are located hydraulically upgradient of the Mayflower Cleaners Site. In addition, Great Neck Amoco is a petroleum hydrocarbon spill site located hydraulically upgradient of the Mayflower Cleaners Site. A brief summary of pertinent site information is provided below.

1. *New Stanton Cleaners Site – Chlorinated Solvents*

The New Stanton Cleaners Site is a Federal Superfund Site (No. 1-30-072) located at 110 Cutter Mill Road in the Village of Great Neck, Nassau County. A dry cleaning business continues to operate at the Site. A Record of Decision (ROD) was issued for Operable OU1 (OU1) on March 31, 1999. An investigation into additional sources of groundwater contamination at the New Stanton Cleaners Site was defined as Operable Unit 2 (OU2).

The OU2 investigation identified two Class 2 Inactive Hazardous Waste Disposal Sites in the area including the Mayflower Cleaners Site. The other Class 2 site is the Citizens Development Company Site, which is located at 47 Northern Boulevard, Great Neck, New York. The Stanton Cleaners Site is located hydraulically downgradient, approximately 2678 ft north-northwest, of the Mayflower Cleaners Site. As part of the investigation of the Stanton Cleaners Site, EPA concluded that PCE in groundwater was not migrating from the Mayflower Cleaners Site and that no further action was required in connection with the Mayflower Cleaners Site.

2. *Citizens Development Company - Chlorinated Solvents*

The Citizens Development Company (CDC) Site is a former dry cleaning operation and Class 2 Inactive Hazardous Waste Disposal Site (Site No. 1-30-070). This Site was formerly known as Flower Fashion as well as Cleanland Drive-In Cleaners. A ROD requiring groundwater monitoring for at least three years was issued for Operable OU1 (OU1) on March 30, 1998. The site is located hydraulically up-gradient, approximately 350 ft southwest, of the Mayflower Cleaners Site.

3. *Kassan Cleaners Site - Chlorinated Solvents*

The Kassan Cleaners Site is located at 12 Northern Boulevard (NYD064735863). Groundwater in the area is known to contain chlorinated solvents associated with releases from this site. The site is located hydraulically upgradient, approximately 765 ft southwest, of the Mayflower Cleaners Site.

4. *Great Neck Amoco Site – Petroleum Hydrocarbons*

The NYSDEC Bureau Spill Prevention and Response (BSPR) is managing the investigation and remediation of the Great Neck Amoco Site (NYSDEC Spill # 82-00157). The former Great Neck Amoco was located on the corner of Northern Boulevard and Great Neck Road, southeast and upgradient, approximately 425 ft south-southeast, of the Mayflower Cleaners Site. More than twenty wells have been installed and sampled in connection with the Great Neck Amoco Site; most of the wells are located in the parking lot adjacent to the Mayflower Cleaners Site (Figure 6).

The results of historical groundwater sampling events conducted by NYSDEC in October 2008 show the presence of petroleum hydrocarbons and chlorinated constituents in groundwater in monitoring wells located both on and hydraulically upgradient of the Mayflower Cleaners Site. It is reasonable to conclude that the presence of chlorinated constituents may be attributed to the upgradient releases noted above. Historical groundwater sampling results are discussed in greater detail in Section IV(C)(2)(b).

NYSDEC has tested and employed various technologies to address the presence of free-phase light non-aqueous phase liquid (LNAPL) and high concentrations of petroleum constituents in groundwater and soil associated with the Great Neck Amoco Site. Based on discussions with NYSDEC, the remedial system installed at the Site is not currently in operation.

III. APPLICABLE STANDARDS, CRITERIA, AND GUIDANCE

The RI and SRI analytical results were compared to the applicable standards, criteria, and guidance (SCGs). New York State Department of Health (NYSDOH) has published indoor air guidance values (AGVs) for benzene, PCE, TCE, and vinyl chloride. The NYSDOH AGVs are not applicable to sub-slab soil vapor. The applicable regulatory guidance for TCE and PCE in sub-slab soil vapor is Decision Matrix 1 and 2, respectively, which is presented in the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (October 2006). The NYSDOH Decision Matrices are used to select recommended remedial actions based on concurrent and co-located concentrations of sub-slab soil vapor and indoor air.

Groundwater results were compared to the NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (June 1998). At the time of the RI, Technical and Administrative Guidance Memorandum (TAGM) #4046 *Determination of Soil Cleanup Objectives and Levels* was the applicable guidance document for the cleanup of soils at Inactive Hazardous Waste Sites. Concentrations of site-related constituents in soil samples collected as part of the RI were compared to TAGM #4046.

All work conducted pursuant to the SRIWP was performed in accordance with DER-10: *Technical Guidance for Site Investigation and Remediation* (May 2010).

IV. REMEDIAL INVESTIGATION

A. Objectives

The objectives of the initial RI were to (1) further characterize the presence of site-related constituents of concern related to previous releases at Mayflower Cleaners, (2) review the regional environmental history and historical sampling and monitoring results in order to confirm regional groundwater flow direction and evaluate the results of previous subsurface investigations, and (3) determine if the presence of the COCs represent a threat to human health or the environment.

B. Methodologies

The initial RI activities took place between August 2008 and October 2009. ELM Engineering collected soil, groundwater, and sub-slab soil vapor samples at locations presented in Figure 7.

1. Groundwater Sampling and Historical Data Review

As part of the RI, ELM Engineering reviewed the regional environmental history and available data to evaluate the potential for additional upgradient sources to contribute to the presence of chlorinated constituents in groundwater observed at the Mayflower

Cleaners Site. This review included: (1) New Stanton Cleaners, (2) Citizens Development Company Site, (3) Kassan Cleaners Site, and (4) Great Neck Amoco Site. Section II(D): *Regional Environmental History* presents a summary of the regional environmental history.

In addition, NYSDEC's contractor, Envirotrac, conducts quarterly groundwater sampling and elevation monitoring of monitoring wells located in the parking lot adjacent to the Mayflower Cleaners in connection with the petroleum release at the Great Neck Amoco Site. Based on discussions with NYSDEC, it was agreed that these results may be used to evaluate the potential for additional upgradient sources to contribute to the presence of chlorinated constituents in groundwater observed at the Mayflower Cleaners Site. In August 2008, ELM Engineering gauged all existing monitoring wells at the Site to determine groundwater depth and flow direction with a groundwater interface probe. ELM Engineering compared the results of this monitoring event with the results presented by Envirotrac.

Finally, based on discussions with NYSDEC regarding the results of the historical data review, the installation of additional monitoring wells and groundwater sampling was proposed to further confirm that site-related source material was not contributing to the presence of chlorinated constituents in groundwater in close proximity to the Mayflower Cleaners Site.

On September 9, 2009, ELM Engineering supervised the installation of one nested groundwater monitoring well by Miller Environmental Group (MEG) of Westbury, NY at the former location of MW-1. Consistent with the RIWP *Addendum* and related correspondence with NYSDEC, two additional wells points were installed. ELM-MW-1S was screened from 25 to 35 ft bgs and ELM-MW-1D was screened from 40 to 50 ft bgs. A five-foot thick bentonite plug separates the two screened intervals to allow for discrete sampling of the shallow and deeper parts of the aquifer. Groundwater samples were submitted to an Environmental Laboratory Accreditation Program (ELAP)-certified laboratory, Alpha Analytical Laboratories (ELAP ID# 11148), under standard chain of custody protocol and analyzed for VOCs by USEPA Method 8260.

On October 19, 2009, ELM Engineering supervised the installation of one soil boring/temporary monitoring well (TMW-2) by MEG east of the site building on Great Neck Road. TMW-2 was screened from 20 and 30 ft bgs. One groundwater sample was collected from TMW2 as well as ELM-MW-1S and ELM-MW-1D. Groundwater samples were collected according to USEPA's *Low Stress/Low-Flow Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells* (USEPA Low Flow Procedures). Applicable water quality parameters (pH, dissolved oxygen, oxidation-reduction potential, conductivity, and turbidity) were measured with a Horiba U-22 meter. Sampling occurred after stabilization of three or more of the above-mentioned parameters, as defined by USEPA Protocol. Groundwater samples were submitted to Alpha Analytical Laboratories under standard chain of custody protocol and analyzed for VOCs by USEPA Method 8260.

2. Soil Sampling

In an effort to further confirm that site-related source material was not contributing to the presence of chlorinated constituents in groundwater in close proximity to the Mayflower Cleaners Site, ELM Engineering collected soil samples during the installation of monitoring wells. On July 22, 2009, ELM Engineering supervised the installation of two soil borings (SB-1 and SB-2) in the basement of Mayflower Cleaners. The soil borings were advanced by HydroTech Environmental using a jackhammer direct-push and mechanized pulley system to a depth of 10 ft below the concrete basement slab. ELM Engineering collected one composite soil sample from 2.5 to 5 ft bgs and one composite soil sample from 8 to 10 ft bgs at both SB-1 and SB-2. Soil samples were submitted to Alpha Analytical Laboratories under standard chain of custody protocol and analyzed for volatile organic compounds (VOCs) by USEPA Method 8260.

On September 9, 2009, as part of the installation of ELM-MW-1S and ELM-MW-1D, ELM Engineering collected soil samples from 25 to 27 ft bgs and 27 to 29 ft bgs. Soil samples were submitted to Alpha Analytical Laboratories under chain of custody and analyzed for VOCs by USEPA Method 8260. On October 19, 2009, as part of the installation of TMW-2, ELM Engineering collected soil samples from 20 to 23 ft and 25 to 27 ft bgs. Soil samples were submitted to Alpha Analytical Laboratories under standard chain of custody protocol and analyzed for VOCs by USEPA Method 8260.

3. Sub-Slab Soil Vapor Sampling

On July 22, 2009, ELM Engineering supervised the installation of two sub-slab soil vapor probes (SV-1 and SV-2) in the basement of Mayflower Cleaners by Viridian Environmental Field Services of Upper Montclair, NJ (Viridian) to characterize the sub-slab soil vapor conditions at the location of the former Class V injection wells. SV-1 was located near westernmost former Class V injection well. SV-2 was located near easternmost former Class V injection well.

Viridian used a hand-held electric coring drill to penetrate the concrete basement slab. After the slab was breached, 1/8" Teflon tubing was fed into the hole to a depth of six inches below the basement slab. The opposite end of the Teflon tube was outfitted with a 3-way polycarbonate stopcock. The annular space of each hole was sealed with hydrated bentonite to prevent intrusion of indoor air. After the hydrated bentonite seals solidified, each sub-slab probe was helium tested as per NYSDOH Guidance to verify the formation of an adequate seal. All three sub-slab probes passed the helium tracer test.

Viridian collected sub-slab soil vapor samples in laboratory-supplied Summa™ canisters. Soil vapor samples were submitted to H&P Mobile Geochemistry, Inc. of Carlsbad, CA (NELAC ID #11845) under standard chain of custody protocol and analyzed for VOCs via USEPA Method TO-15.

C. RI results

The RI analytical results summary table for soil, groundwater, and sub-slab soil vapor are presented in Table 1, Table 2, and Table 3. The full laboratory analytical data reports are

provided in Appendix A. The RI sampling results are depicted on the detailed site plan (Figure 8).

1. Groundwater

a. Historical Data Review

ELM Engineering reviewed the historical groundwater sampling and monitoring results for the Great Neck Amoco Site conducted by Envirotrac for NYSDEC. Envirotrac’s groundwater sampling results and contour map are presented in its October 2008 Update Report (Appendix B). ELM Engineering compared the results of its August 2008 groundwater elevation monitoring event (Table 4) to the results of Envirotrac’s October 2008 monitoring event. Both sets of groundwater elevation data suggest that groundwater generally flows to the northwest in the vicinity of the Site. The groundwater contours based on ELM’s data were consistent with those presented by Envirotrac in its October 2008 Update Report. However, ELM’s contour map was generated from a smaller data set, and also contained potentially questionable measurements, including those at monitoring well 14 and FN-7. Therefore, Envirotrac’s 2008 contour map, which was derived from a more robust data set, is used as the primary reference for groundwater contours at the Site (Figure 1 of Appendix B). Although ELM Engineering noted an error in Envirotrac’s contour map with regard to the position of groundwater contours near monitoring well FN-6, this finding does not materially affect the direction of groundwater flow.

The groundwater sampling results presented in Envirotrac’s October 2008 Update Report show the presence of petroleum and chlorinated constituents in groundwater in monitoring wells located hydraulically upgradient of the Mayflower Cleaners Site. Specifically, groundwater collected from monitoring well FN-4 contained PCE at a concentration of 1,600 µg/L. FN-4 is located a hydraulically upgradient, approximately 300 ft south, of the Mayflower Cleaners Site.

b. Remedial Investigation

A summary of the groundwater analytical results is presented in Table 5 below.

Table 5: Groundwater Results Summary Table

ANALYTE	CLASS GA STANDARD OR GUIDANCE VALUE (ug/L)	SAMPLE ID		
		ELM-MW-1S	ELM-MW-1D	TMW-2
BENZENE	1	2,500	12,000	ND
TOLUENE	5	18,000	440	1.0
ETHYLBENZENE	5	3,200	2,000	ND
1,2,4-TRIMETHYLBENZENE	5	2,400	ND	ND
N-PROPYLBENZENE	5	300	130	ND
M/P-XYLENE	5	12,000	1,100	1.1



ANALYTE	CLASS GA STANDARD OR GUIDANCE VALUE (ug/L)	SAMPLE ID		
		ELM-MW-1S	ELM-MW-1D	TMW-2
O-XYLENE	5	5,300	ND	ND
TETRACHLOROETHYLENE	5	ND	ND	1.4
TOTAL XYLENES	N/A	17,300	ND	ND

Notes: TOGS exceedances are in **bold**.

ND – Not Detected.

None of the RI groundwater samples contained chlorinated constituents above the applicable TOGS criteria. Only petroleum-related constituents exceed TOGS criteria at ELM-MW-1S and ELM-MW-1D. None of the VOCs observed in TMW-2 were detected at concentrations above the applicable TOGS criteria. The RI results do not indicate the presence of a significant source of chlorinated constituents in groundwater in the vicinity of the Mayflower Cleaners Site.

Regional groundwater flow direction, historical groundwater sampling results, and regional environmental history suggest that the presence of petroleum and chlorinated constituents observed in groundwater at the Mayflower Cleaners Site may be attributed to multiple sources that are located hydraulically upgradient.

2. *Soil*

c. *Visual Observations*

During the initial RI, soils encountered during the installation of SB-1 and SB-2 consisted of dark brown medium sand with some coarse gravel from below the concrete basement slab to approximately 3 ft bgs. This soil appeared to be the fill material that was placed as backfill as part of the remedial action that was completed in 1996. Native soils were present below 3 ft bgs. Native soils consisted of light tan to off-white silt and very fine sand with some interbedded clay lenses down to a depth of 10 ft bgs. Soil boring logs for SB-1 and SB-2 are provided in Appendix C. ELM Engineering did not observe staining or odors during soil boring installation; the maximum PID reading was 1.7 ppm.

Soils encountered during the installation of ELM-MW-1 consisted of fine and very fine-grained sands and some silt, with some clay lenses present as well as lenses of medium-grained sand. No staining, odors, or PID readings above 0.0 ppm were observed.

Soils encountered from 20 to 30 ft bgs during the installation of TMW-2 consisted of fine and very fine-grained sands and some silt, with some clay lenses present as well as lenses of medium-grained sand. No noticeable staining, odors, or PID readings above 0.0 ppm were observed.

d. *Analytical Results*

A review of the soil analytical results indicated that no VOCs were detected in SB-1 (2.5 to 5 ft bgs), SB-1 (8 to 10 ft bgs), SB-2 (8 to 10 ft bgs), TMW-2 (20 to 23 ft bgs), TMW-2 (25 to 27 ft bgs), ELM-MW-1 (25 to 27 ft bgs) and ELM-MW-1 (27 to 29 ft bgs). At SB-2 (2.5 to 5 ft

bgs) the only VOC observed was PCE at a concentration of 0.0026 mg/kg which is below the NYSDEC RSCO (1.4 mg/kg). This condition may reflect the presence of PCE in soil vapor entrained within the soil sample.

The RI soil results indicate that there is no significant residual source of PCE or TCE in subsurface soils at the Site.

3. *Sub-Slab Soil Vapor*

The RI results reflect the presence of PCE and TCE in sub-slab soil vapor. At SV-1, PCE was detected at a concentration of 110,000 µg/m³, TCE was detected at a concentration of 170 µg/m³, toluene was detected at a concentration of 62 µg/m³, and trichlorofluoromethane was detected at a concentration of 110 µg/m³. At SV-2, PCE was detected at a concentration of 460,000 µg/m³; TCE was detected at a concentration of 190 µg/m³, chloroform was detected at a concentration of 53 µg/m³, and trichlorofluoromethane was detected at a concentration of 220 µg/m³. Sub-slab soil vapor sampling results are presented in Figure 8.

According to NYSDOH Guidance, the concentrations of PCE observed in sub-slab soil vapor required mitigation. Based on discussions with NYSDEC, Plymouth conducted a study to evaluate the potential effectiveness of an active sub-slab depressurization system (SSDS) at Mayflower Cleaners. In May 2010, Plymouth installed two suction pits as well as three vacuum monitoring points (VMPs) to evaluate system performance and effectiveness. The pressure field extension (PFE) test conducted in May 2010 indicated that the interim SSDS was working properly. Therefore, with NYSDEC concurrence, the interim SSDS was activated and left in operation. An additional three VMPs were later installed to delineate the system’s radius of influence.

PFE tests performed on July 13, 2010 and September 22, 2010 confirmed that the interim SSDS was providing adequate sub-slab vacuum resulting in full communication beneath the basement slabs of Mayflower Cleaners and the bagel shop. A summary of the PFE test results is provided in Table 6 below.

Table 6: RI PFE Test Summary

VACUUM MONITORING POINTS (VMPS)						
DATE	MC-1	MC-2	BS-1	BS-2	BS-3	MM-1
7/13/2010	-0.36	-0.005	-0.13	-0.156	-0.026	-0.004
9/22/2010	-0.361	-0.003	-0.166	-0.158	-0.044	NS

Notes: Pressure measured in Inches of H₂O.
 MC – Denotes VMP installed in Mayflower Cleaners.
 BS – Denotes VMP installed in Bagel Shop.
 MM – Denotes VMP installed in Mini-Mall.
 NS – Not Sampled.

D. RI conclusions

The RI results indicated that there is no significant source of PCE or TCE in soil. Furthermore, the RI results do not indicate the presence of PCE in groundwater at concentrations above regulatory criteria. The regional groundwater flow direction, historical groundwater sampling results, and regional environmental history indicate that the presence of PCE observed in groundwater at the Mayflower Cleaners Site may be attributed to known hydraulically upgradient sources.

The RI results confirmed the presence of PCE and TCE in sub-slab soil vapor beneath the basement slab of Mayflower Cleaners at concentrations that NYSDOH suggests may warrant mitigation. ELM, with NYSDEC concurrence, determined that a sub-slab mitigation system was the best available technology to eliminate any potential vapor intrusion exposure pathway at Mayflower Cleaners. As a result, Plymouth directed ELM Engineering to test the potential effectiveness of an interim active SSDS. After these tests showed that the technology would be effective, ELM Engineering conducted additional PFE tests that confirmed that the interim active SSDS was providing full communication beneath the basement slabs of Mayflower Cleaners and the bagel shop.

Based on the RI results, ELM Engineering conducted the supplemental remedial investigation (SRI) to characterize the extent of site-related constituents in sub-slab and indoor air at adjacent commercial buildings.

V. SUPPLEMENTAL REMEDIAL INVESTIGATION

A. Objectives

The objectives of the SRI was to (1) examine the presence of PCE and TCE in sub-slab soil vapor and indoor air at commercial buildings adjacent to Mayflower Cleaners, (2) to determine if a complete vapor intrusion exposure pathway exists at adjacent commercial buildings, (3) to further evaluate the effectiveness of building foundation slabs as engineering controls against soil vapor intrusion, and (4) collect additional data to determine if further mitigation is necessary.

B. Methodologies

SRI activities took place in February and March 2011. As per the SRIWP, the SRI was conducted during the regular heating season. Sub-slab vapor probes were installed approximately one week prior to sampling to facilitate the concurrent collection of sub-slab, indoor, and ambient air samples. In addition, ELM Engineering inspected the basement slab at each sampling location for potential vapor intrusion pathways and performed a PFE test of interim active SSDS to assess system performance. A photographic log of the SRI activities is provided as Appendix D.

On February 10, ELM Engineering conducted a PFE test of the interim active SSDS and supervised the installation of three sub-slab soil vapor probes by Viridian. Viridian installed sub-slab probes in the (1) basement of the bagel shop (BM-SV-1), (2) electric utility room in basement of the mini-mall (ER-SV-1), and (3) basement hallway beneath the liquor store, pet store and public library (BH-SV-1). SRI sample locations are presented in

Figure 7. Viridian used a hand-held electric coring drill to penetrate the concrete basement slab. After the slab was breached, 1/8" Teflon tubing was fed into the hole to a depth of six inches below the basement slab. The opposite end of the Teflon tube was outfitted with a 3-way polycarbonate stopcock. The annular space of each hole was sealed with hydrated bentonite to prevent intrusion of indoor air. After the hydrated bentonite seals solidified, each sub-slab probe was helium tested as per NYSDOH Guidance to verify the formation of an adequate seal. All three sub-slab probes passed the helium tracer test.

On February 15 at 11:00 AM, Plymouth shut down the interim SSDS to comply with NYSDEC requirements that it be deactivated at least 24 hours prior to sample collection. Viridian and ELM Engineering returned to the Site on February 17 to collect sub-slab soil vapor, indoor air, and ambient air samples. Prior to sample collection, all three sub-slab probes were helium tested. All three sub-slab probes passed the helium tracer test. In addition, ELM Engineering performed a final inspection and completed the NYSDOH *Indoor Air Quality Questionnaire and Building Inventory Form* for each sample location on February 17 (Appendix E).

One indoor air sample was collected adjacent to each sub-slab sample location (BM-IA-1, ER-IA-1 and BH-IA-1). One ambient air sample (AA-1) was collected outside of the building above the sidewalk adjacent to the southern façade of Mayflower Cleaners. The indoor air samples were collected at a height of three to five feet above grade to simulate the breathing zone elevation. All air samples were collected in laboratory supplied 6-Liter Summa™ canisters with flow controllers calibrated for an eight hour sample collection. As per the SRIWP, all sub-slab soil vapor, indoor air, and ambient air samples were collected concurrently. All air samples were submitted to Centek Laboratories of Syracuse, NY (ELAP ID #11830) and analyzed for VOCs by USEPA Method TO-15.

During the sampling, Viridian and ELM Engineering observed that the flow controllers on the sub-slab and indoor air Summa™ canisters installed in the bagel shop were improperly calibrated. As a result, the sample was collected in two hours rather than the required eight hours. Therefore, ELM Engineering determined that the analytical results for BM-SV-1 and BM-IA-1 were not usable. As a result, on February 23, Viridian and ELM Engineering returned to the Site to recollect sub-slab soil vapor (BM-SV-2) and indoor air (BM-IA-2) samples at the bagel shop as well as an additional ambient air sample (AA-2). Prior to sample collection, the sub-slab probe was helium tested. The sub-slab probe passed the helium tracer test. In addition, ELM Engineering completed an additional NYSDOH *Indoor Air Quality Questionnaire and Building Inventory Form* for this sample location on February 23 (Appendix E).

Ambient air sample AA-2 was collected in the same location as AA-1. The indoor air sample was collected at a height of three to five feet above grade to simulate the breathing zone elevation. All air samples were collected in laboratory supplied 6-Liter Summa™ canisters with flow controllers calibrated for an eight hour sample collection. As per the SRIWP, the sub-slab soil vapor, indoor air, and ambient air samples were collected concurrently. All air samples were submitted to Centek Laboratories of Syracuse, NY (ELAP ID #11830) and analyzed for VOCs by USEPA Method TO-15.

On March 18, 2011, ELM Engineering utilized a Thermo Scientific OVM 580B model PID with an 11.7 electronvolt lamp to screen outdoor and indoor air for the presence of chlorinated constituents. In addition, ELM Engineering made observations concerning the Heating, Ventilating, and Air Conditioning (HVAC) systems at the Mayflower Cleaners facility and adjacent buildings.

C. SRI results

The following is a summary of the findings of SRI activities, including (1) verification of the effectiveness of the interim SSDS, (2) building inspection and inventory, and (3) laboratory analytical results for sub-slab soil vapor, indoor air, and ambient air samples. The analytical sub-slab soil vapor, indoor air, and ambient air samples are presented in Table 7.

1. Interim SSDS Effectiveness

The PFE test performed as part of the SRI on February 10, 2011 provided additional confirmation that the interim active SSDS was providing full communication beneath the basement slabs of Mayflower Cleaners and the bagel shop.

A summary of the SRI PFE test results is provided in Table 8 below. All PFE test results from the RI and SRI are presented in Figure 9.

Table 8: SRI PFE Test Summary

VACUUM MONITORING POINTS (VMPS)						
DATE	MC-1	MC-2	BS-1	BS-2	BS-3	MM-1
2/10/2011	-0.209	-0.008	-0.053	-0.087	-0.021	-0.006

Notes: Pressure measured in Inches of H₂O.
 MC – Denotes VMP installed in Mayflower Cleaners.
 BS – Denotes VMP installed in Bagel Shop.
 MM – Denotes VMP installed in Mini-Mall.

2. Building Inspections

Pursuant to NYSDOH Guidance, ELM Engineering conducted a building inspection at the Site on February 17, 2011. ELM Engineering visually inspected the basement slabs of all buildings at the Site, including Mayflower Cleaners, the bagel shop, mini-mall, library, pet store, and liquor store. The basement slabs in each of the buildings appeared to be competent and intact, with the exception of several minor penetrations (1 – 2” wide) in the slab at Mayflower Cleaners and the bagel shop as well as a drain cleanout located in a small storage room in the basement of the bagel shop that appeared to extend through the basement slab.

3. Air Sampling Results

The analytical results summary table for sub-slab soil vapor, indoor air and ambient air are summarized below and presented in Table 7. The full laboratory analytical data report (Category B) is provided in Appendix F. The analytical report was subjected to



independent third-party validation by Premier Environmental Services (Premier) of Merrick, New York. The professional resume for Premier is provided as Appendix G. Premier's Data Usability Summary Report (DUSR) for the SRI results is provided as Appendix H.

The SRI results and recommended actions for the Site are presented on Figure 10.

4. Ambient Air

The results of ambient air sampling reflect the presence of PCE and TCE in outdoor air adjacent to the Mayflower Cleaners Site. AA-1 contained PCE at a concentration of 100 $\mu\text{g}/\text{m}^3$ and TCE at a concentration of 26 $\mu\text{g}/\text{m}^3$. AA-2 contained PCE at a concentration of 52 $\mu\text{g}/\text{m}^3$ and TCE at a concentration of 1.8 $\mu\text{g}/\text{m}^3$.

On March 18, 2011, ELM Engineering conducted an additional inspection of the building and screened outdoor air for the presence of chlorinated constituents. ELM Engineering observed air discharge points on the roof of the Mayflower Cleaners facility. PID concentrations in the vicinity of these discharge points ranged from 0.5 ppm to 1.2 ppm. Multiple air intake fans were observed on the roof of the adjacent mini-mall. Within the Mayflower Cleaners facility, ELM Engineering observed a maximum PID concentration of 456 ppm in the vicinity of the dry cleaning machinery and noted the odor of chlorinated solvents. ELM Engineering also observed two wall-mounted exhaust fans within the Mayflower Cleaners facility. When standing on the sidewalk in the downstream direction of the fans, a chlorinated solvent odor was evident. ELM's observations suggest that the operations of the active dry cleaning facility may be contributing to the presence of chlorinated constituents in ambient (outdoor) air at both the ground and roof level.

5. Sub-Slab Soil Vapor Results

The SRI results indicate that PCE and TCE are present in sub-slab soil vapor beneath the bagel shop, mini-mall, and basement hallway. In the basement of the bagel shop, BM-SV2 contained PCE at a concentration of 7,600 $\mu\text{g}/\text{m}^3$ and TCE at a concentration of 120 $\mu\text{g}/\text{m}^3$. In the electrical room in the basement of the mini-mall, ER-SV-1 contained PCE at a concentration of 12,000 $\mu\text{g}/\text{m}^3$ and TCE at a concentration of 22 $\mu\text{g}/\text{m}^3$. In the basement hallway, BH-SV-1, contained PCE at a concentration of 130 $\mu\text{g}/\text{m}^3$ and TCE at a concentration of 2.7 $\mu\text{g}/\text{m}^3$.

6. Indoor Air

The SRI results indicate that PCE and TCE are present in indoor air in the bagel shop, mini-mall, and basement hallway. In the basement of the bagel shop, BM-IA2 contained PCE at a concentration of 180 $\mu\text{g}/\text{m}^3$ (AGV 100 $\mu\text{g}/\text{m}^3$) and TCE at a concentration of 79 $\mu\text{g}/\text{m}^3$ (AGV 5 $\mu\text{g}/\text{m}^3$). In the electrical room in the basement of the mini-mall, ER-IA-1 contained TCE at a concentration of 13 $\mu\text{g}/\text{m}^3$ above its NYSDOH AGV. In the electrical room in the basement of the mini-mall, ER-IA-1 contained PCE at a concentration (74 $\mu\text{g}/\text{m}^3$) below its NYSDOH AGV. In the basement hallway, BH-IA-1 contained PCE at a concentration of 15 $\mu\text{g}/\text{m}^3$ and TCE at a concentration of 1.9 $\mu\text{g}/\text{m}^3$, both below their respective NYSDOH AGVs.

The presence of chlorinated constituents in indoor air is complicated by the presence of chlorinated constituents in ambient air. The operations of the active dry cleaning facility

may be contributing to the presence of chlorinated constituents in ambient (outdoor) air. The results of the HVAC inspection and outdoor air screening for the presence of chlorinated constituents also showed that discharges of effluent exhaust associated with the Mayflower Cleaners dry cleaning operations are in close proximity to the air intakes for the HVAC system of the mini-mall. Therefore, it is possible that the presence of chlorinated constituents in ambient (outdoor) air may be contributing to the presence of chlorinated constituents in indoor air.

There is significant uncertainty concerning the likelihood that the presence of chlorinated constituents in indoor air reflects the migration of sub-slab soil vapor into indoor air. However, even in the absence of any contribution of sub-slab soil vapor to indoor air, NYSDOH Guidance recommends mitigation at the mini-mall and bagel shop and monitoring/mitigation at the basement hallway based solely on the concentrations of chlorinated constituents observed in sub-slab soil vapor.

VI. SUPPLEMENTAL GROUNDWATER INVESTIGATION

A. Objectives

The objective of the 2011-2012 SGI was to generate an appropriate set of analytical data to confirm the Conceptual Site Model (CSM). ELM's CSM states Site groundwater is not being adversely affected by residual Site-related PCE and TCE contamination and the presence of PCE and TCE in groundwater at the Site is attributable to two known hydraulically upgradient sources, the Citizens Development Company Site and the Kassan Cleaners Site.

B. Methodologies

1. *Monitoring Well Evaluation and Selection*

As part of the SGI, ELM Engineering compiled and evaluated available well construction information and historical analytical groundwater data from monitoring wells on and in the vicinity of the Site, in particular those which were installed by NYSDEC as part of the Great Neck Amoco Spill. ELM Engineering reviewed the available information and data to ascertain well screen lengths and depth intervals, well casing diameters, depth-to-groundwater measurements and depths of any confining soil layers that may be present beneath the Site (to the extent that this information was available). ELM Engineering used its findings to select a preliminary set of appropriate monitoring wells for sampling. On December 14, 2011, ELM Engineering visited the Site to inspect the integrity of each well to assess if it was intact, unobstructed or otherwise compromised, confirm the location of each well with a Global Positioning System (GPS) unit, and gauge each well to record depth-to-water and depth-to-bottom measurements. After the Site visit, ELM Engineering used its findings to create a proposed groundwater sampling plan. ELM Engineering presented its proposed strategy, including six target monitoring wells (three hydraulically upgradient and three hydraulically downgradient wells), to NYSDEC on December 15, 2011 and received verbal approval.

2. Sampling

Prior to the groundwater sampling event, the six target monitoring wells were redeveloped and surveyed on December 20, 2011. Under the supervision of ELM, a driller redeveloped the target monitoring wells using submersible pumps to remove sediment from each well. However, during well development, one of the target wells, MWL_8 was observed to be dry and MWL_4 was selected to replace MWL_8. MWL_4 was not developed on December 20, 2011, but on January 9, 2012. In addition, ELM_MW1S was added to the groundwater sampling program as a hydraulically cross-gradient sampling location and developed on December 20, 2011. At least five gallons of groundwater was pumped from each well. All purge wastewater was containerized on-Site in sealed and labeled 55-gallon steel drums and characterized for off-Site disposal in accordance with the GSWP. In addition, under the supervision of ELM, a surveyor, licensed in the State of New York, surveyed all target monitoring wells, except MWL_4, and prepared an elevation survey report.

Groundwater samples were collected from the seven target monitoring wells (Figure 11) on January 9-10, 2012 more than one week after the wells were developed with the exception being MWL_4, which was developed on January 9, 2012 and sampled on January 10, 2012. Prior to and after purging, the monitoring wells were gauged using a water level meter to determine the depth to the water table. The groundwater samples were collected using a Grundfos Redi-Flo 2" submersible pump connected to dedicated Teflon-lined polyethylene tubing. Prior to sampling, each well was continuously purged until applicable groundwater quality parameters (pH, conductivity, turbidity, dissolved oxygen, temperature and oxidation-reduction potential) stabilized, to the extent practicable, in general accordance with USEPA Low Flow Procedures. A YSI 6820 water quality meter was used to monitor the above groundwater quality parameters. The low flow groundwater sampling water quality parameter stabilization logs are provided as Appendix I. Groundwater samples were collected from 50 and MWL_4 without achieving stabilized water quality parameters for the reasons noted on the sampling logs provided in Appendix I. Seven groundwater samples were collected in pre-cleaned laboratory supplied glassware and submitted to Alpha Analytical Laboratories via courier service under standard chain of custody protocol and analyzed for VOCs via USEPA Method 8260B. In addition to the seven groundwater samples, five quality assurance / quality control samples (field blank, field duplicate, matrix spike, matrix spike duplicate and trip blank) were collected and analyzed for VOCs via USEPA Method 8260B. The analytical data was reported using full Analytical Service Protocol (ASP) Category B deliverables for all laboratory analyses.

C. Results

The groundwater analytical results are presented in Table 9. The ASP Category B analytical data report is provided as Appendix J. The ASP Category B analytical data report was subjected to independent third-party validation by Premier. Premier's DUSR, prepared in accordance with the guidelines set forth in Appendix 2B of DER-10, for the SGI results is provided as Appendix K.

The pre-purge depth to water measurements record on January 9-10, 2010 and the depth to water measurements recorded on the December 14, 2011 gauging event were used, in conjunction with the well elevation survey report, to generate a groundwater contour map and establish groundwater flow direction for the Site. The groundwater contour map and groundwater analytical results are both presented on Figure 12. The groundwater elevations collected as part of the SGI confirm the RI's conclusions that groundwater flows to the northwest at the Site.

As depicted in Figure 12, PCE and/or TCE were detected at only two of the seven groundwater sampling locations. At 34, PCE was detected below its TOGS standard at a concentration of 0.47 µg/L. TCE was not detected at 34. At FN4, PCE was detected above its TOGS standard at a concentration of 350 µg/L. TCE was detected above its TOGS standard at a concentration of 20 µg/L.

As presented in Table 9, the reporting limits (RLs) for PCE and TCE vary by sampling location. The highest RLs correspond to sampling locations where high benzene, toluene, ethylbenzene and xylene (BTEX) concentrations forced the laboratory to complete the analyses with a dilution factor of 500.

D. Conclusions

The SGI results indicate that there is no ongoing release of PCE or TCE to groundwater from the Site. As illustrated by Figure 12, PCE and TCE were only detected at hydraulically upgradient sampling locations (FN4 and 34). PCE and TCE were not detected at the hydraulically cross-gradient sampling location (ELM_MW1S) or at any of the hydraulically downgradient sampling locations (MWL_4, FN3 and 50).

Although the RLs for PCE and TCE vary across all sampling locations, and in a few cases exceed the applicable TOGS standards for PCE and TCE (5 µg/L), the RLs for PCE and TCE at the hydraulically downgradient sampling locations were low enough to have allowed the laboratory instrumentation to detect concentrations of the analytes in excess of 350 µg/L at these sampling locations had such concentrations been present in groundwater. The SGI analytical results uphold the CSM. PCE and TCE were not detected at the hydraulically cross-gradient sampling location or at any of the hydraulically downgradient sampling locations. The lack of any detectable presence of either PCE or TCE confirms no further action is warranted. The concentrations of PCE and TCE observed at FN4 are likely attributable to two known hydraulically upgradient sources, the Citizens Development Company Site and the Kassan Cleaners Site.

VII. SUPPORTING DOCUMENTS

A. Supplemental Remedial Investigation Work Plan (SRIWP)

All SRI field work was performed in accordance with the provisions set forth in the Quality Assurance Project Plan (QAPP) and the Field Sampling Plan (FSP), both prepared by ELM, dated September 4, 2007. The QAPP contains quality assurance and quality control

measures for field activities and the FSP contains standard operating procedures for field investigation activities.

B. Site-Specific Health and Safety Plans (HASPs)

All RI and SRI field work was performed in accordance with the Site-Specific Health and Safety Plan (HASP), prepared by ELM, dated September 4, 2007. All SGI field work was performed in accordance with an updated Site-Specific HASP, prepared by ELM, dated January 6, 2012. The HASP assigns responsibilities to ELM Engineering personnel, establishes personnel protection standards and mandatory safety practices and procedures, and provides for contingencies that may arise during investigations at the Site.

VIII. CONCEPTUAL SITE MODEL

Pursuant to DER-10 Section 3.22, a CSM should be developed at the outset of an RI to present a general understanding of the site and to evaluate potential human exposure pathways and impacts to the environment. The CSM considers site history and context, including the factors that influence distribution, transport, and fate of constituents. The CSM identifies:

- Potential sources and release mechanisms,
- Types of contaminants and affected media,
- Physical-chemical mechanisms that control constituent fate and transport, including potential migration pathways, and
- Likely exposure pathways that govern the potential for adverse effects to human health, including actual and potential human and environmental receptors.

ELM Engineering presented a CSM in its SRIWP. The following provides a summary of the refined CSM based on the SRI results.

The data suggest that past historical operations may have resulted in the discharge of chlorinated solvents into the subsurface from the basement of the Mayflower Cleaners facility at two Class V dry wells in the basement slab. This release appears to have resulted in the presence of a shallow and localized chlorinated solvent source material. This source material has been removed. It is possible that vapors associated with the former source material were trapped beneath the basement slab.

The RI results confirm that there is no significant source of chlorinated solvents in residual soils at the locations of the former Class V dry wells and surrounding soils. The observation of low concentrations of PCE in groundwater at the Site may be attributed to historical releases of chlorinated constituents to groundwater that have occurred at multiple locations hydraulically upgradient from the Mayflowers Cleaners Site. There is currently no complete exposure pathway for soil or groundwater at the Site.

PCE and TCE were not detected at the hydraulically cross-gradient sampling location or at any of the hydraulically downgradient sampling locations. The lack of any detectable presence of either PCE or TCE confirms no further action is warranted. In addition, the SGI results, in conjunction with the results and conclusions of the RI, suggest that the presence

of PCE and TCE in hydraulically upgradient groundwater is attributable to two known hydraulically upgradient sources, the Citizens Development Company Site and the Kassan Cleaners Site.

The RI and SRI results indicate that PCE and TCE are present in sub-slab soil vapor and indoor air of the Mayflower Cleaners, bagel shop, mini-mall, and basement hallway. There is significant uncertainty concerning the likelihood that the presence of chlorinated constituents in indoor air reflects the migration of sub-slab soil vapor into indoor air. The operations of the active dry cleaning facility may be contributing to the presence of chlorinated constituents in ambient (outdoor) air. The results of the HVAC inspection and outdoor air screening for the presence of chlorinated constituents also showed that discharges of effluent exhaust associated with the Mayflower Cleaners dry cleaning operations are in close proximity to the air intakes for the HVAC system of the mini-mall. Therefore, it is possible that the presence of chlorinated constituents in ambient (outdoor) air may be contributing to the presence of chlorinated constituents in indoor air.

The interim active SSDS installed at the Mayflower Cleaners facility is functioning properly, thereby eliminating any potential soil vapor intrusion exposure pathways from sub-slab to indoor air at the Mayflower Cleaners facility as well as the bagel shop. The basement slabs in each of the buildings appeared to be competent and intact, with the exception of several minor penetrations in the slab at Mayflower Cleaners and the bagel shop as well as a drain cleanout located in a small storage room in the basement of the bagel shop that appeared to extend through the basement slab.

There is no evidence to suggest that any complete soil vapor intrusion exposure pathways exist in the mini-mall and basement hallway. The basement slab of the mini-mall and basement hallway appears to be competent and intact; no significant penetrations through the basement slab were identified.

IX. CONCLUSIONS

Previous remedial actions removed source material at the Class V dry wells. The RI results indicate that there is no residual waste material in subsurface media. The lack of any detectable presence of PCE or TCE in cross-gradient or downgradient monitoring wells indicates the Site is not adversely impacting groundwater. In addition, there is currently no complete exposure pathway for soil or groundwater at the Site. Two known upgradient sources may be contributing to the presence of PCE and TCE in groundwater. Groundwater will continue to be monitored as part of the Great Neck Amoco petroleum spill site (NYSDEC Spill # 82-00157) under NYSDEC contract and oversight.

The SRI results confirmed the presence of PCE and TCE in sub-slab soil vapor and indoor air at the Mayflower Cleaners, the bagel shop, mini-mall, and basement hallway. When compared to NYSDOH Decision Matrix 1 and 2, the sub-slab concentrations of TCE and PCE in sub-slab vapor samples collected from the basement of the Mayflower Cleaners and bagel shop warrant mitigation. The interim active SSDS at Mayflower Cleaners has eliminated any potential vapor intrusion pathway at Mayflower Cleaners and the bagel shop.

The basement slab of the mini-mall appears to be an effective barrier to vapor intrusion. However, when compared to NYSDOH Decision Matrix 1 and 2, the sub-slab concentrations of TCE and PCE in sub-slab vapor samples collected from the electrical room of the mini-mall basement warrant mitigation. In addition, when compared to NYSDOH Decision Matrix 1 and 2, the sub-slab concentrations of TCE and PCE in sub-slab vapor samples collected from the basement hallway require monitoring and/or mitigation per NYSDOH guidance.

The elevated concentrations of PCE and TCE in ambient air at the site suggest that sources other than soil vapor may be contributing of PCE and TCE in indoor air. A potential source is the exhaust associated with the operations of the Mayflower Cleaners dry cleaning facility. Based on the additional HVAC inspections conducted during the SRI, the potential exists for chlorinated constituents in ambient (outdoor) air to be drawn into the indoor air of the bagel shop and mini-mall through the HVAC systems.

X. RECOMMENDATIONS

1. A No Further Action (NFA) determination for the remedial action or monitoring of soil and groundwater at the Mayflower Cleaners Site. Groundwater at the Site should not be used.
2. The interim active SSDS at the Mayflower Cleaners and bagel shop remain active until it is upgraded to eliminate any potential pathway for the migration of sub-slab vapors beneath portions of the mini-mall and the basement hallway to indoor air. Upgrade to the existing SSDS would be installed as a non-emergency Interim Remedial Measure (IRM) prior to the publication of Record of Decision (ROD). SSDS design, performance evaluation criteria, and monitoring requirements will be included in a revised SSDS Design Document.
3. After the additional SSDS is installed and the FER approved, ELM Engineering recommends that the Site be reclassified from a Class 2 to a Class 4 Inactive Hazardous Waste Disposal Site.

XI. REFERENCES

1. ITRC (Interstate Technology & Regulatory Council). *Vapor Intrusion Pathway: A Practical Guideline*. VI-1. Washington, D.C.: Interstate Technology & Regulatory Council, Vapor Intrusion Team. www.itrcweb.org. (January 2007).
2. New York State Department of Health (NYSDOH). *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, Final* (October 2006).
3. NYSDEC Division of Environmental Remediation DER-10: *Technical Guidance for Site Remediation and Investigation* (May 2010).
4. NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (June 1998).

5. NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 *Determination of Soil Cleanup Objectives and Levels.*
6. The ELM Group. *Remedial Investigation Report for the Property Located at 489 Great Neck Road, Great Neck, NY Consent Order Index# A1-0556-0706, Site# 1-30-068* (May 2010).

TABLES

Table 1
Soil Analytical Results
2009 Remedial Investigation
Mayflower Cleaners Site

Sample ID		SB-1 (2.5'-5')	SB-1 (8'-10')	SB-2 (2.5'-5')	SB-2 (8'-10')	DUPLICATE	ELM-MW1 (25'-27')	ELM-MW1 (27'-29')	TMW-2(20-23)	TMW-2(25-27)
Laboratory ID		L0910002-01	L0910002-02	L0910002-03	L0910002-04	L0910002-05	L0912643-01	L0912643-02	L0915007-01	L0915007-02
Sample Media		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Date		7/22/2009	7/22/2009	7/22/2009	7/22/2009	7/22/2009	9/9/2009	9/9/2009	10/19/2009	10/19/2009
Sample Depth		2.5-5'	8-10'	2.5-5'	8-10'		25-27'	27-29'	20-23'	25-27'
Units of Measure		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	NYSDEC Recommended Soil Cleanup Objectives (mg/kg)	NYSDEC Part 375 Restricted Commercial Criteria (mg/kg)								
Volatile Organic Compounds										
1,1,1,2-TETRACHLOROETHANE	NS	NS	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
1,1,1-TRICHLOROETHANE	0.8	500	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
1,1,2,2-TETRACHLOROETHANE	0.6	NS	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
1,1,2-TRICHLOROETHANE	NS	NS	0.0041 U	0.0042 U	0.0044 U	0.004 U	0.004 U	0.0047 U	0.0044 U	0.0044 U
1,1-DICHLOROETHANE	0.2	240	0.0041 U	0.0042 U	0.0044 U	0.004 U	0.004 U	0.0047 U	0.0044 U	0.0044 U
1,1-DICHLOROETHENE	0.4	500	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
1,1-DICHLOROPROPENE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,2,3-TRICHLOROBENZENE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,2,3-TRICHLOROPROPANE	0.4	NS	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
1,2,4,5-TETRAMETHYLBENZENE	NS	NS	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.013 U	0.012 U	0.012 U
1,2,4-TRICHLOROBENZENE	3.4	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,2,4-TRIMETHYLBENZENE	10	190	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,2-DIBROMO-3-CHLOROPROPANE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,2-DIBROMOETHANE	NS	NS	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.013 U	0.012 U	0.012 U
1,2-DICHLOROBENZENE	7.9	500	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,2-DICHLOROETHANE	0.1	30	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
1,2-DICHLOROPROPANE	NS	NS	0.0096 U	0.0097 U	0.01 U	0.0093 U	0.0094 U	0.011 U	0.01 U	0.01 U
1,3,5-TRIMETHYLBENZENE	3.3	190	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,3-DICHLOROBENZENE	1.6	280	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,3-DICHLOROPROPANE	0.3	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,4-DICHLOROBENZENE	8.5	130	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
1,4-DIETHYLBENZENE	NS	NS	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.013 U	0.012 U	0.012 U
2,2-DICHLOROPROPANE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
2-BUTANONE	0.3	500	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
2-HEXANONE	NS	NS	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
4-ETHYLTOLUENE	NS	NS	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.013 U	0.012 U	0.012 U
4-METHYL-2-PENTANONE	1	NS	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
ACETONE	0.2	500	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
ACRYLONITRILE	NS	NS	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
BENZENE	0.06	44	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
BROMOBENZENE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
BROMOCHLOROMETHANE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
BROMODICHLOROMETHANE	NS	NS	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
BROMOFORM	NS	NS	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.013 U	0.012 U	0.012 U
BROMOMETHANE	NS	NS	0.0055 U	0.0056 U	0.0058 U	0.0053 U	0.0054 U	0.0063 U	0.0059 U	0.0058 U
CARBON DISULFIDE	2.7	NS	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U

Notes:

- Bold value indicates concentration exceeds standard
- Italicized value indicates reporting limit exceeds standard
- J = Estimated value
- U = Not detected
- NS = No Standard
- NT = Not Tested

Table 1
Soil Analytical Results
2009 Remedial Investigation
Mayflower Cleaners Site

Sample ID		SB-1 (2.5'-5')	SB-1 (8'-10')	SB-2 (2.5'-5')	SB-2 (8'-10')	DUPLICATE	ELM-MW1 (25'-27')	ELM-MW1 (27'-29')	TMW-2(20-23)	TMW-2(25-27)
Laboratory ID		L0910002-01	L0910002-02	L0910002-03	L0910002-04	L0910002-05	L0912643-01	L0912643-02	L0915007-01	L0915007-02
Sample Media		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Date		7/22/2009	7/22/2009	7/22/2009	7/22/2009	7/22/2009	9/9/2009	9/9/2009	10/19/2009	10/19/2009
Sample Depth		2.5-5'	8-10'	2.5-5'	8-10'		25-27'	27-29'	20-23'	25-27'
Units of Measure		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	NYSDEC Recommended Soil Cleanup Objectives (mg/kg)	NYSDEC Part 375 Restricted Commercial Criteria (mg/kg)								
Volatile Organic Compounds										
CARBON TETRACHLORIDE	0.6	22	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
CHLOROBENZENE	1.7	500	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
CHLOROETHANE	1.9	NS	0.0055 U	0.0056 U	0.0058 U	0.0053 U	0.0054 U	0.0063 U	0.0059 U	0.0058 U
CHLOROFORM	0.3	350	0.0041 U	0.0042 U	0.0044 U	0.004 U	0.004 U	0.0047 U	0.0044 U	0.0044 U
CHLOROMETHANE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
CIS-1,2-DICHLOROETHENE	NS	500	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
CIS-1,3-DICHLOROPROPENE	NS	NS	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
DIBROMOCHLOROMETHANE	NS	NS	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
DIBROMOMETHANE	NS	NS	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
DICHLORODIFLUOROMETHANE	NS	NS	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
ETHYL ETHER	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
ETHYLBENZENE	5.5	390	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
HEXACHLOROBUTADIENE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
ISOPROPYLBENZENE	2.3	NS	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
METHYL TERT BUTYL ETHER	0.12	500	0.0055 U	0.0056 U	0.0058 U	0.0053 U	0.0054 U	0.0063 U	0.0059 U	0.0058 U
METHYLENE CHLORIDE	0.1	500	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
N-BUTYLBENZENE	10	500	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
N-PROPYLBENZENE	3.7	500	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
NAPHTHALENE	13	500	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
O-CHLOROTOLUENE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
O-XYLENE	NS	NS	0.0055 U	0.0056 U	0.0058 U	0.0053 U	0.0054 U	0.0063 U	0.0059 U	0.0058 U
P-CHLOROTOLUENE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
P-ISOPROPYLTOLUENE	10	NS	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
P/M-XYLENE	NS	NS	0.0055 U	0.0056 U	0.0058 U	0.0053 U	0.0054 U	0.0063 U	0.0059 U	0.0058 U
SEC-BUTYLBENZENE	10	500	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
STYRENE	NS	NS	0.0055 U	0.0056 U	0.0058 U	0.0053 U	0.0054 U	0.0063 U	0.0059 U	0.0058 U
TERT-BUTYLBENZENE	10	500	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
TETRACHLOROETHENE	1.4	150	0.0027 U	0.0028 U	0.003	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
TOLUENE	1.5	500	0.0041 U	0.0042 U	0.0044 U	0.004 U	0.004 U	0.0047 U	0.0044 U	0.0044 U
TRANS-1,2-DICHLOROETHENE	0.3	500	0.0041 U	0.0042 U	0.0044 U	0.004 U	0.004 U	0.0047 U	0.0044 U	0.0044 U
TRANS-1,3-DICHLOROPROPENE	NS	NS	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
TRANS-1,4-DICHLORO-2-BUTENE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
TRICHLOROETHENE	0.7	200	0.0027 U	0.0028 U	0.0029 U	0.0026 U	0.0027 U	0.0032 U	0.0029 U	0.0029 U
TRICHLOROFLUOROMETHANE	NS	NS	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.016 U	0.015 U	0.014 U
VINYL ACETATE	NS	NS	0.027 U	0.028 U	0.029 U	0.026 U	0.027 U	0.032 U	0.029 U	0.029 U
VINYL CHLORIDE	0.2	13	0.0055 U	0.0056 U	0.0058 U	0.0053 U	0.0054 U	0.0063 U	0.0059 U	0.0058 U

Notes:

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- NS = No Standard
- NT = Not Tested

Table 2
Groundwater Analytical Results
2009 Remedial Investigation
Mayflower Cleaners

Sample ID		TMW-2	MW-1S	MW-1D	TRIP BLANK
Laboratory ID		L0915007-03	L0915007-04	L0915007-05	L0915007-06
Sample Media		Water	Water	Water	Water
Sample Date		19-OCT-09	19-OCT-09	19-OCT-09	19-OCT-09
Units of Measure		ug/l	ug/l	ug/l	ug/l
Volatiles Organic Compounds	NYSDEC TOGS AWQS (ug/l)				
1,1,1,2-TETRACHLOROETHANE	5	0.5 U	250 U	120 U	0.5 U
1,1,1-TRICHLOROETHANE	5	0.5 U	250 U	120 U	0.5 U
1,1,2,2-TETRACHLOROETHANE	5	0.5 U	250 U	120 U	0.5 U
1,1,2-TRICHLOROETHANE	1	0.75 U	380 U	190 U	0.75 U
1,1-DICHLOROETHANE	5	0.75 U	380 U	190 U	0.75 U
1,1-DICHLOROETHENE	5	0.5 U	250 U	120 U	0.5 U
1,1-DICHLOROPROPENE	5	2.5 U	1200 U	620 U	2.5 U
1,2,3-TRICHLOROBENZENE	5	2.5 U	1200 U	620 U	2.5 U
1,2,3-TRICHLOROPROPANE	0.04	5 U	2500 U	1200 U	5 U
1,2,4-TRICHLOROBENZENE	5	2.5 U	1200 U	620 U	2.5 U
1,2,4-TRIMETHYLBENZENE	5	2.5 U	2400	620 U	2.5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	2.5 U	1200 U	620 U	2.5 U
1,2-DIBROMOETHANE	0.0006	2 U	1000 U	500 U	2 U
1,2-DICHLOROBENZENE	3	2.5 U	1200 U	620 U	2.5 U
1,2-DICHLOROETHANE	0.6	0.5 U	250 U	120 U	0.5 U
1,2-DICHLOROPROPANE	1	1.8 U	880 U	440 U	1.8 U
1,3,5-TRIMETHYLBENZENE	5	2.5 U	1200 U	620 U	2.5 U
1,3-DICHLOROBENZENE	3	2.5 U	1200 U	620 U	2.5 U
1,3-DICHLOROPROPANE	5	2.5 U	1200 U	620 U	2.5 U
1,4-DICHLOROBENZENE	3	2.5 U	1200 U	620 U	2.5 U
2,2-DICHLOROPROPANE	5	2.5 U	1200 U	620 U	2.5 U
2-BUTANONE	50	5 U	2500 U	1200 U	5 U
2-HEXANONE	50	5 U	2500 U	1200 U	5 U
ACETONE	50	5 U	2500 U	1200 U	5 U
ACRYLONITRILE	5	5 U	2500 U	1200 U	5 U
BENZENE	1	0.5 U	2500	12000	0.5 U
BROMOBENZENE	5	2.5 U	1200 U	620 U	2.5 U
BROMOCHLOROMETHANE	5	2.5 U	1200 U	620 U	2.5 U
BROMODICHLOROMETHANE	50	0.5 U	250 U	120 U	0.5 U
BROMOFORM	50	2 U	1000 U	500 U	2 U
BROMOMETHANE	5	1 U	500 U	250 U	1 U
CARBON DISULFIDE	60	5 U	2500 U	1200 U	5 U
CARBON TETRACHLORIDE	5	0.5 U	250 U	120 U	0.5 U
CHLOROBENZENE	5	0.5 U	250 U	120 U	0.5 U
CHLOROETHANE	5	1 U	500 U	250 U	1 U
CHLOROFORM	7	0.75 U	380 U	190 U	0.75 U
CIS-1,2-DICHLOROETHENE	5	0.5 U	250 U	120 U	0.5 U
CIS-1,3-DICHLOROPROPENE	0.4	0.5 U	250 U	120 U	0.5 U
DIBROMOCHLOROMETHANE	50	0.5 U	250 U	120 U	0.5 U
DIBROMOMETHANE	5	5 U	2500 U	1200 U	5 U
DICHLORODIFLUOROMETHANE	5	5 U	2500 U	1200 U	5 U
ETHYLBENZENE	5	0.5 U	3200	2000	0.5 U
HEXACHLOROBUTADIENE	0.5	0.6 U	300 U	150 U	0.6 U
ISOPROPYLBENZENE	5	0.5 U	250 U	120 U	0.5 U
METHYL TERT BUTYL ETHER	10	1 U	500 U	250 U	1 U
METHYLENE CHLORIDE	5	5 U	2500 U	1200 U	5 U
N-BUTYLBENZENE	5	0.5 U	250 U	120 U	0.5 U
N-PROPYLBENZENE	5	0.5 U	300	130	0.5 U
NAPHTHALENE	10	2.5 U	0.5 U	620 U	2.5 U
O-CHLOROTOLUENE	5	2.5 U	0.5 U	620 U	2.5 U
O-XYLENE	5	1 U	5300	250 U	1 U
P-CHLOROTOLUENE	5	2.5 U	1200 U	620 U	2.5 U
P-ISOPROPYLTOLUENE	5	0.5 U	250 U	120 U	0.5 U
P/M-XYLENE	5	1.1	12000	1100	1 U
SEC-BUTYLBENZENE	5	0.5 U	250 U	120 U	0.5 U
STYRENE	5	1 U	500 U	250 U	1 U
TERT-BUTYLBENZENE	5	2.5 U	1200 U	620 U	2.5 U
TETRACHLOROETHENE	5	1.4	250 U	120 U	0.5 U
TOLUENE	5	1	18000	440	0.75 U
TRANS-1,2-DICHLOROETHENE	5	0.75 U	380 U	190 U	0.75 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.5 U	250 U	120 U	0.5 U
TRANS-1,4-DICHLORO-2-BUTENE	5	2.5 U	1200 U	620 U	2.5 U
TRICHLOROETHENE	5	0.5 U	250 U	120 U	0.5 U
TRICHLOROFUOROMETHANE	5	2.5 U	1200 U	620 U	2.5 U
VINYL CHLORIDE	2	1 U	500 U	250 U	1 U

Notes:

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 NS = No Standard
 NT = Not Tested

Table 3
Sub-Slab Soil Vapor Analytical Results
2009 Remedial Investigation
Mayflower Cleaner Site

Sample ID		SV1_7222009	SV2_7222009
Laboratory ID		E907076-01	E907076-02
Sample Media		Soil Vapor	Soil Vapor
Sample Date		7/22/2009	7/22/2009
Units of Measure		ug/m3	ug/m3
	NYSDOH Air Guidance Values (ug/m3)		
Volatile Organic Compounds			
1,1,1,2-TETRACHLOROETHANE	NS	50 U	50 U
1,1,1-TRICHLOROETHANE	NS	50 U	50 U
1,1,2,2-TETRACHLOROETHANE	NS	50 U	50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	NS	100 U	100 U
1,1,2-TRICHLOROETHANE	NS	50 U	50 U
1,1-DICHLOROETHANE	NS	50 U	50 U
1,1-DICHLOROETHENE	NS	50 U	50 U
1,2,4-TRICHLOROBENZENE	NS	100 U	100 U
1,2,4-TRIMETHYLBENZENE	NS	50 U	50 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	NS	50 U	50 U
1,2-DICHLOROBENZENE	NS	100 U	100 U
1,2-DICHLOROETHANE	NS	50 U	50 U
1,2-DICHLOROETHANE-D4	NS	212	212
1,2-DICHLOROPROPANE	NS	50 U	50 U
1,2-DICHLOROTETRAFLUROETHANE	NS	100 U	100 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	NS	50 U	50 U
1,3-BUTADIENE	NS	50 U	50 U
1,3-DICHLOROBENZENE	NS	100 U	100 U
1,4-DICHLOROBENZENE	NS	100 U	100 U
1,4-DIOXANE (P-DIOXANE)	NS	50 U	50 U
1-BROMO-4-FLUOROBENZENE BROMOFLUROBENZENE)	NS	323	317
2-BUTANONE	NS	50 U	50 U
2-HEXANONE	NS	100 U	100 U
4-ETHYLTOLUENE	NS	50 U	50 U
4-METHYL-2-PENTANONE	NS	50 U	50 U
ACETONE	NS	200 U	200 U
BENZENE	NS	50 U	50 U
BENZYL CHLORIDE	NS	50 U	50 U
BROMODICHLOROMETHANE	NS	50 U	50 U
BROMOFORM	NS	200 U	200 U
BROMOMETHANE	NS	50 U	50 U
CARBON DISULFIDE	NS	50 U	50 U
CARBON TETRACHLORIDE	NS	50 U	50 U
CHLOROBENZENE	NS	50 U	50 U
CHLOROETHANE	NS	50 U	50 U
CHLOROFORM	NS	50 U	53

Notes:

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 NS = No Standard
 NT = Not Tested

Table 3
 Sub-Slab Soil Vapor Analytical Results
 2009 Remedial Investigation
 Mayflower Cleaner Site

Sample ID		SV1_7222009	SV2_7222009
Laboratory ID		E907076-01	E907076-02
Sample Media		Soil Vapor	Soil Vapor
Sample Date		7/22/2009	7/22/2009
Units of Measure		ug/m3	ug/m3
	NYSDOH Air Guidance Values (ug/m3)		
Volatile Organic Compounds			
CHLOROMETHANE	NS	50 U	50 U
CIS-1,2-DICHLOROETHENE	NS	50 U	50 U
CIS-1,3-DICHLOROPROPENE	NS	50 U	50 U
CYCLOHEXANE	NS	100 U	100 U
DIBROMOCHLOROMETHANE	NS	50 U	50 U
DICHLORODIFLUOROMETHANE	NS	100 U	100 U
ETHYL ACETATE	NS	50 U	50 U
ETHYLBENZENE	NS	50 U	50 U
HEXACHLOROBUTADIENE	NS	100 U	100 U
M&P-XYLENES	NS	50 U	50 U
METHYL TERT-BUTYL ETHER	NS	50 U	50 U
METHYLENE CHLORIDE	60	<i>100 U</i>	<i>100 U</i>
N-HEPTANE	NS	50 U	50 U
N-HEXANE	NS	50 U	50 U
O-XYLENE	NS	50 U	50 U
PROPYLENE	NS	100 U	100 U
STYRENE	NS	50 U	50 U
TETRACHLOROETHENE	100	110000	460000
TETRAHYDROFURAN	NS	50 U	50 U
TOLUENE	NS	62	50 U
TOLUENE-D8	NS	190	183
TRANS-1,2-DICHLOROETHENE	NS	50 U	50 U
TRANS-1,3-DICHLOROPROPENE	NS	50 U	50 U
TRICHLOROETHENE	5	170	190
TRICHLOROFUOROMETHANE	NS	110	220
VINYL ACETATE	NS	100 U	100 U
VINYL CHLORIDE	NS	50 U	50 U

Notes:

Bold value indicates concentration exceeds standard
 Italicized value indicates reporting limit exceeds standard
 J = Estimated value
 U = Not detected
 NS = No Standard
 NT = Not Tested

Table 4
Monitoring Well Gauging Data and Groundwater Elevations
August 2008
Mayflower Cleaners Site

Location	Depth to Groundwater (ft)	Groundwater Elevation (ft msl)
MW 1	23.75	49.48
14	35.46	40.63
22	27.6	48.22
50	23.29	47.45
FN 3	28.85	47.15
FN 7	15.54	54.29
FN 8	29.01	50.01

Table 7
Air Sampling Results
2011 Supplemental Remedial Investigation
Mayflower Cleaner Site

Sample ID		AA-1	AA-2	BH-IA-1	BH-SV-1	BM-IA2	BM-SV2	ER-IA-1	ER-SV-1
Sample Media		Air	Air	Air	Air	Air	Air	Air	Air
Sample Date		2/17/2011	2/23/2011	2/17/2011	2/17/2011	2/23/2011	2/23/2011	2/17/2011	2/17/2011
Units of Measure		ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
Volatile Organic Compounds	NYSDOH Air Guidance Values (ug/m3)								
1,1,1-TRICHLOROETHANE	NS	0.83 U	0.83 U	0.83 U	1.1	1.5	0.83 U	0.83 U	0.61 J
1,1,2,2-TETRACHLOROETHANE	NS	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	NS	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	0.86 J	1.2 U	1.2 U
1,1,2-TRICHLOROETHANE	NS	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
1,1-DICHLOROETHANE	NS	0.62 U	5.4	0.62 U	0.62 U	2.1	0.62 U	0.62 U	0.62 U
1,1-DICHLOROETHENE	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
1,2,4-TRICHLOROBENZENE	NS	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ
1,2,4-TRIMETHYLBENZENE	NS	1.7	7	1.5	4.1	1.4	12	3.1	6.5 J
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	NS	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2-DICHLOROBENZENE	NS	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U
1,2-DICHLOROETHANE	NS	0.62 U	0.62 U	1.3	0.78 U	0.62 U	0.62 U	0.62 U	0.62 U
1,2-DICHLOROPROPANE	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,2-DICHLOROTETRAFLUROETHANE	NS	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	NS	0.6 J	2.6	0.7 J	1.1	0.7 J	3.2	1.2	2.8
1,3-BUTADIENE	NS	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
1,3-DICHLOROBENZENE	NS	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U
1,4-DICHLOROBENZENE	NS	0.92 U	0.92 U	1.3	0.79 J	0.92 U	0.92 U	0.86 J	0.92 U
1,4-DIOXANE (P-DIOXANE)	NS	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ	5.9 J	1.1 UJ	1.1 UJ	1.1 UJ
2,2,4-TRIMETHYLPENTANE	NS	2	0.71 U	1.1	0.85	0.71 U	0.81	1	0.66 J
2-BUTANONE	NS	1.9	0.9 U	0.9 U	4.4	0.9 U	4.4	3.2	4.6
2-HEXANONE	NS	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ
4-ETHYLTOLUENE	NS	0.75 U	0.55 J	0.5 J	1.2	0.75 U	2.6	0.75	3.1
4-METHYL-2-PENTANONE	NS	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	21 J	1.2 UJ	1.2 UJ	1.2 UJ
ACETONE	NS	30	0.72 U	32	26	35	38	6.2	2
ALLYL CHLORIDE (3-CHLOROPROPENE)	NS	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U
BENZENE	NS	3.2	1.4	3.6	3	4.3	3.1	3.3	5.1
BENZYL CHLORIDE	NS	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U	0.88 U
BROMODICHLOROMETHANE	NS	1 U	1 U	1 U	1 U	1 U	2	1 U	1 U
BROMOFORM	NS	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
BROMOMETHANE	NS	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U	0.59 U
CARBON DISULFIDE	NS	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
CARBON TETRACHLORIDE	NS	0.9	0.9	0.96	0.64 J	0.83 U	1.1	0.83 U	0.96 U
CHLOROBENZENE	NS	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
CHLOROETHANE	NS	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
CHLOROFORM	NS	0.74 U	0.74 U	0.65 J	0.55 J	3.2	15	0.69 J	2.2
CHLOROMETHANE	NS	1.3	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
CIS-1,2-DICHLOROETHENE	NS	0.6 U	1.3	0.6 U	0.6 U	0.69	3.9	0.6 U	0.6 U

Notes:

- Bold value indicates concentration exceeds standard
- Italicized value indicates reporting limit exceeds standard
- J = Estimated value
- U = Not detected
- NS = No Standard
- NT = Not Tested

Table 7
Air Sampling Results
2011 Supplemental Remedial Investigation
Mayflower Cleaner Site

Sample ID		AA-1	AA-2	BH-IA-1	BH-SV-1	BM-IA2	BM-SV2	ER-IA-1	ER-SV-1
Sample Media		Air	Air	Air	Air	Air	Air	Air	Air
Sample Date		2/17/2011	2/23/2011	2/17/2011	2/17/2011	2/23/2011	2/23/2011	2/17/2011	2/17/2011
Units of Measure		ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
Volatile Organic Compounds	NYSDOH Air Guidance Values (ug/m3)								
CIS-1,3-DICHLOROPROPENE	NS	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
CYCLOHEXANE	NS	1.3	0.52 U	1.8	13	0.87	34	1.5	20
DIBROMOCHLOROMETHANE	NS	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
DICHLORODIFLUOROMETHANE	NS	3.3	0.75 U	0.75 U	0.75 U	0.75 U	3	0.75 U	0.75 U
ETHYL ACETATE	NS	0.92 U	0.92 U	0.92 U	0.92 U	3.2	0.92 U	0.92 U	0.92 U
ETHYLBENZENE	NS	1.2	0.75	1.5	4.4	0.71	6.6	1.7	6.1
HEXACHLOROBUTADIENE	NS	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ
ISOPROPANOL	NS	5.7	3.9	13	6	5.2	2	0.37 U	3.6
M&P-XYLENES	NS	3.2	2.2	3.7	15	1.9	23	4.5	15
METHYLENE CHLORIDE	60	1.4	0.53 U	0.35 J	0.53	0.53 U	1.1	0.42 J	0.53 U
N-HEPTANE	NS	1.9	0.92	2.8	2.5	5.9	0.62 U	2.8	2.3
N-HEXANE	NS	2.5	0.54 U	3.5	3	2.2	0.54 U	3	3.2
O-XYLENE	NS	1.3	1.1	1.5	5.9	0.75	7.5	2	8.2
PROPYLENE	NS	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
STYRENE	NS	0.65 U	0.65 U	0.65 U	2.5	0.69	1.7	0.65 U	0.65 U
TERT-BUTYL METHYL ETHER	NS	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
TETRACHLOROETHENE	100	100	52	15	130	180	7600	74	12000
TETRAHYDROFURAN	NS	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U
TOLUENE	NS	7.8	4.8	9.2 J	14	5.2	13	8.4 J	15
TRANS-1,2-DICHLOROETHENE	NS	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
TRANS-1,3-DICHLOROPROPENE	NS	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
TRICHLOROETHENE	5	26	1.8	1.9	2.7	79	120	13	22
TRICHLOROFLUOROMETHANE	NS	2.9 J	0.86 U	0.86 U	0.86 U	0.69 J	5.2 J	0.86 U	0.86 U
VINYL ACETATE	NS	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U
VINYL BROMIDE	NS	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U
VINYL CHLORIDE	NS	0.1 U	0.1 U	0.1 U	0.39 U	0.1 U	0.39 U	0.1 U	0.39 U

Notes:

Bold value indicates concentration exceeds standard
 Italicized value indicates reporting limit exceeds standard
 J = Estimated value
 U = Not detected
 NS = No Standard
 NT = Not Tested

Table 9
 Groundwater Analytical Data
 Mayflower Cleaners Site
 471-491 Great Neck Road
 Great Neck, NY

Well ID:		NYSDEC TOGS	ELMMW1S	FN2	FN2	FN3
Sample Date:			1/9/2012	1/9/2012	1/9/2012	1/9/2012
Sample ID:			ELMMW1S_010912	FN2_010912	DUP_011012	FN3_010912
Matrix:			WATER	WATER	WATER	WATER
Unit:			ug/L	ug/L	ug/L	ug/L
TETRACHLOROETHENE	127-18-4	5.00	<i>20 U</i>	<i>250 U</i>	<i>250 U</i>	0.5 U
TRICHLOROETHENE	79-01-6	5.00	<i>20 U</i>	<i>250 U</i>	<i>250 U</i>	0.5 U

Notes:

- Bold value indicates concentration exceeds standard
- Italicized value indicates reporting limit exceeds standard
- J = Estimated value
- U = Not detected
- NS = No Standard
- NT = Not Tested

Table 9
 Groundwater Analytical Data
 Mayflower Cleaners Site
 471-491 Great Neck Road
 Great Neck, NY

FN4 1/10/2012 FN4_011012 WATER ug/L	MWL4 1/10/2012 MWL4_011012 WATER ug/L	50 1/9/2012 50_010912 WATER ug/L	34 1/10/2012 34_011012 WATER ug/L	QAQC 1/9/2012 FIELD BLANK WATER ug/L
350	<i>20 U</i>	<i>12 U</i>	0.47 J	0.50 U
20	<i>20 U</i>	<i>12 U</i>	0.5 U	0.50 U

Notes:

Bold value indicates concentration exceeds standard

Italicized value indicates reporting limit exceeds standard

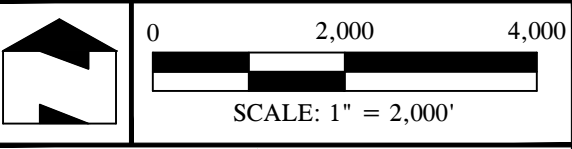
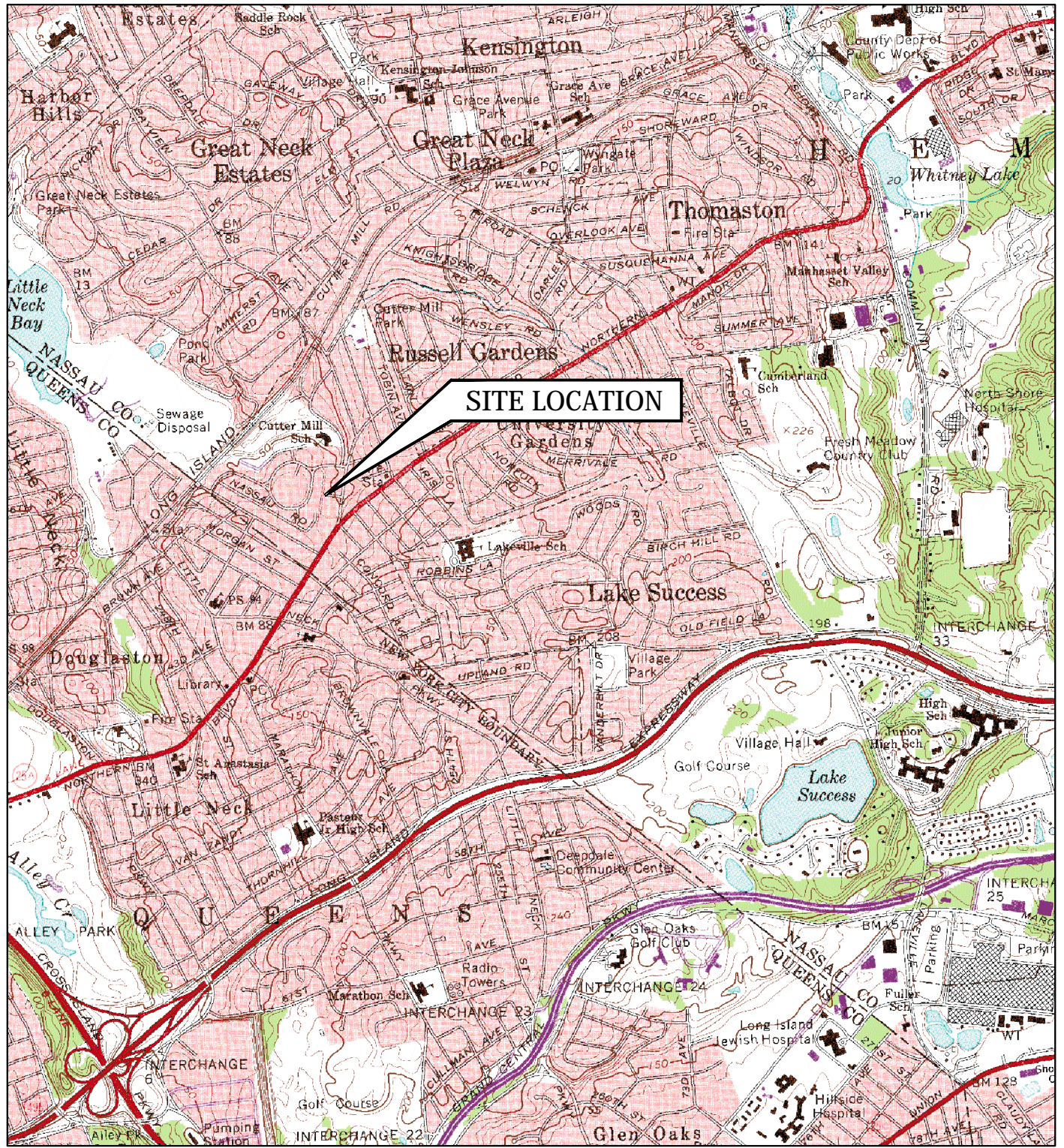
J = Estimated value

U = Not detected

NS = No Standard

NT = Not Tested

FIGURES



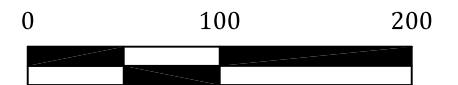
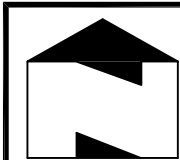
TITLE:	FIGURE 1 SITE LOCATION MAP
LOCATION:	489 GREAT NECK ROAD GREAT NECK, NASSAU COUNTY, NEW YORK
DATE:	12/7/10
FILENAME:	207072_SITELOC
SOURCE:	USGS TOPO, SEA CLIFF, N.Y. QUAD

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 612 MAIN STREET, BOONTON, NEW JERSEY 07005
 267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007
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LEGEND

--- APPROXIMATE DIVISION BETWEEN COMMERCIAL SPACES IN THE MINI-MALL



SCALE: 1" = 100'

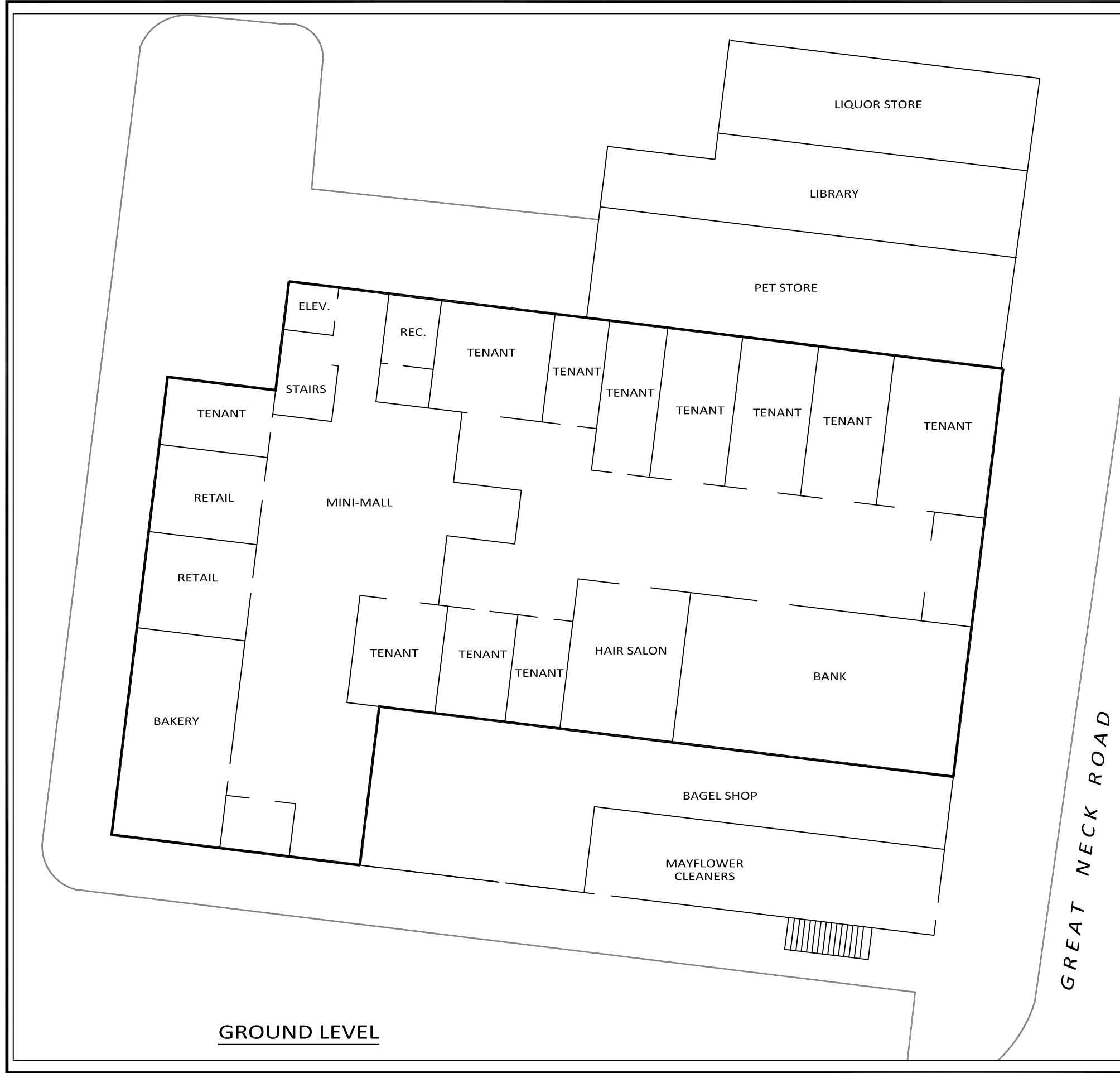
TITLE:		FIGURE 2 GENERAL BUILDING LAYOUT	
LOCATION:		489 GREAT NECK ROAD GREAT NECK, NEW YORK	
DATE:		5/24/11	
FILENAME:		207072_SITEMAP_REV5	
LAYOUT:		GEN_BLDG_SITE	



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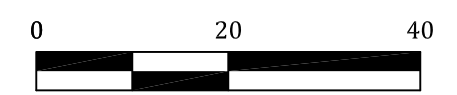
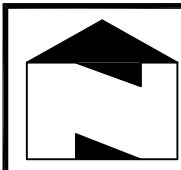
GROUND LEVEL

LEGEND


- DIVISION BETWEEN COMMERCIAL SPACES IN THE MINI-MALL
- MINI-MALL

SOURCES:

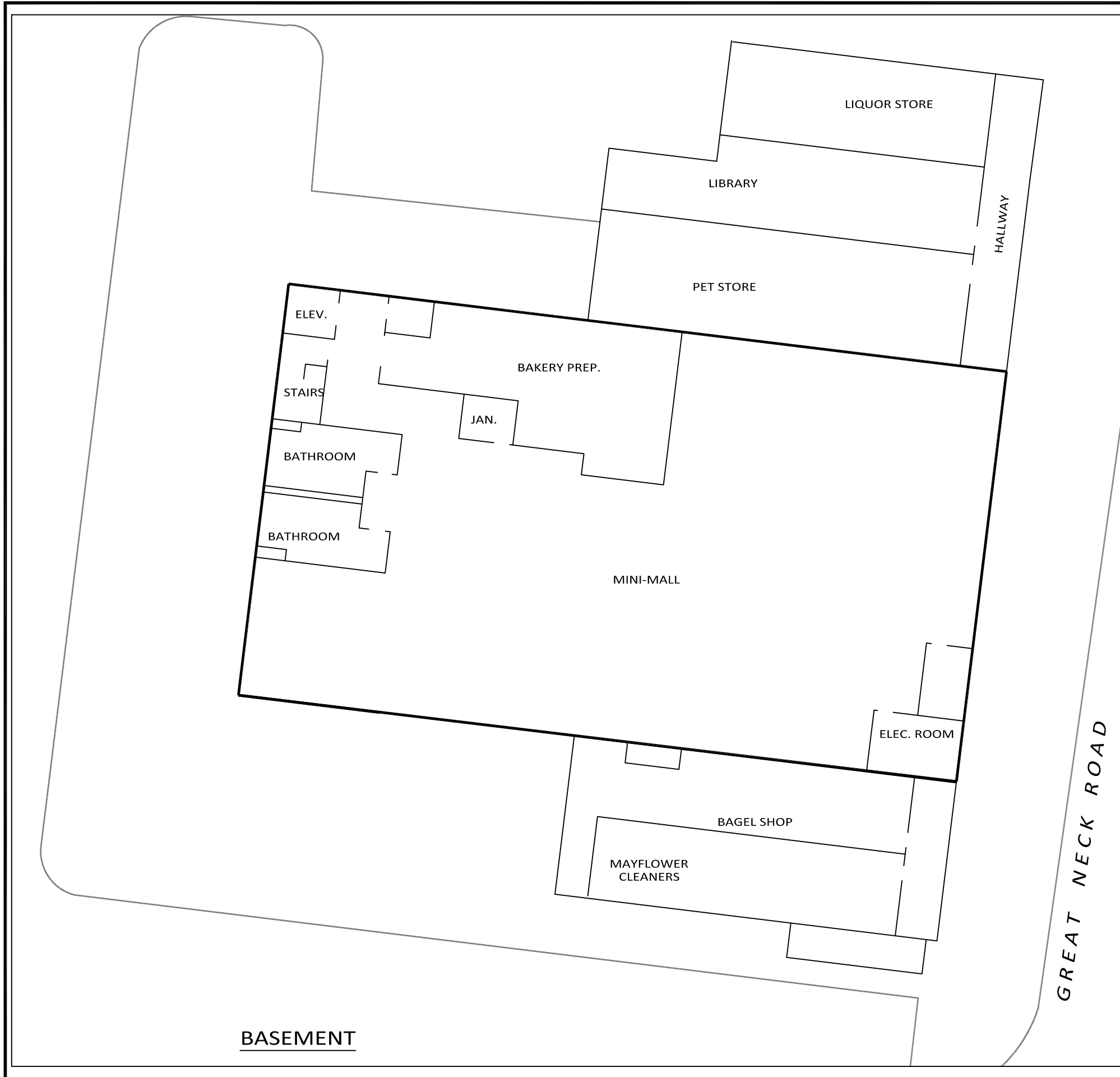
1. FLOOR PLANS PREPARED BY ROSENBAUM DESIGN GROUP, DATED JULY 16, 2007, REVISED APRIL 22, 2008



SCALE: 1" = 20'

TITLE: FIGURE 3 GENERAL BUILDING LAYOUT GROUND LEVEL	
LOCATION: 489 GREAT NECK ROAD GREAT NECK, NEW YORK	
DATE: 5/24/11	 <small>218 WALL STREET, PRINCETON, NEW JERSEY 08540 4920 YORK ROAD, SUITE 290, HOLICONG, PENNSYLVANIA 18928 612 MAIN STREET, BOONTON, NEW JERSEY 07005 267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007 2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020 www.ExploreELM.com</small>
FILENAME: 207072_SITEMAP_REV5	
LAYOUT: GENERAL BLDG LAYOUT	

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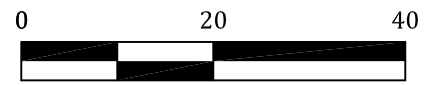

BASEMENT

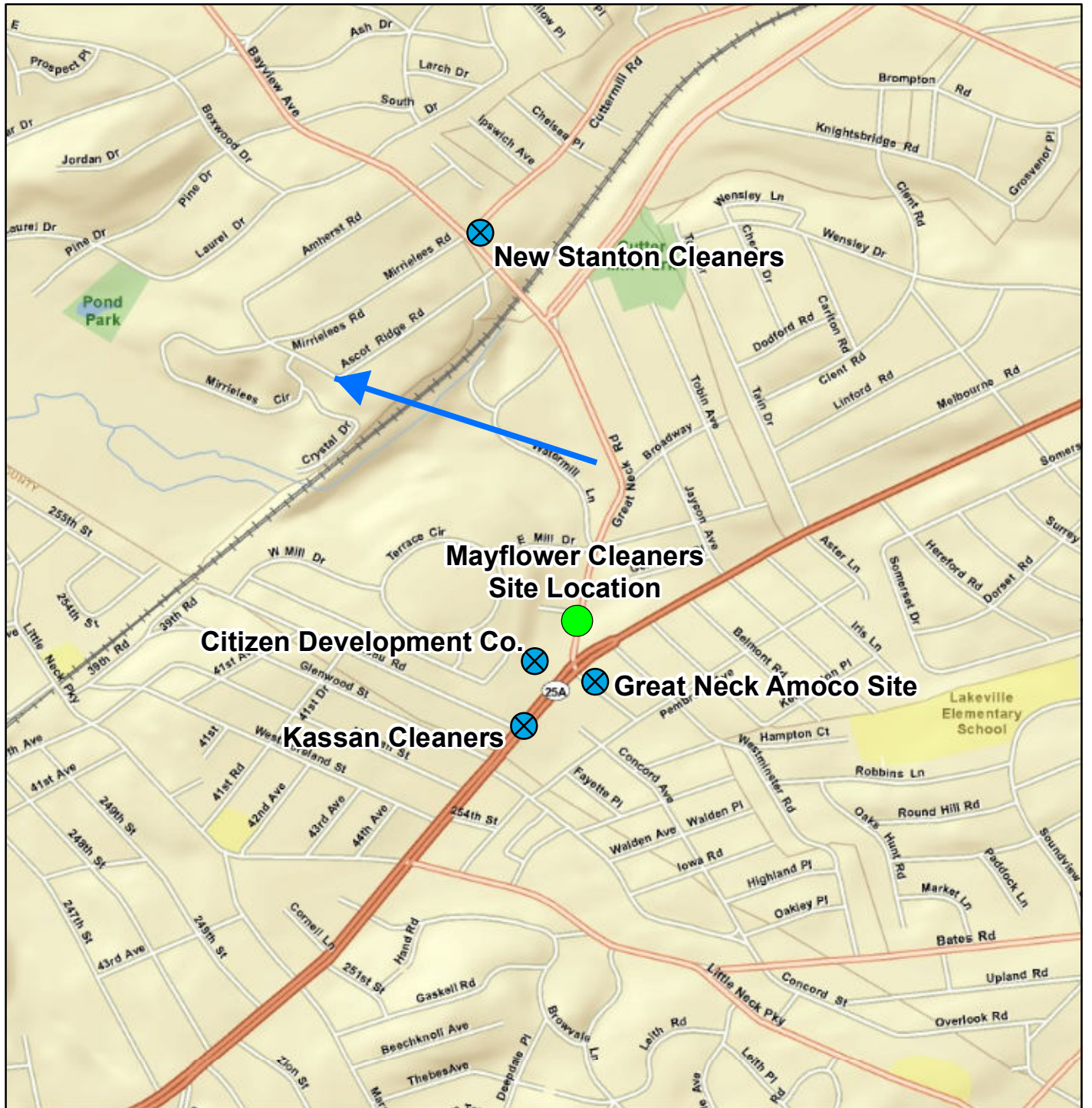
LEGEND

- DIVISION BETWEEN COMMERCIAL SPACES IN THE MINI-MALL
- MINI-MALL




SOURCES:

- 1. FLOOR PLANS PREPARED BY ROSENBAUM DESIGN GROUP, DATED JULY 16, 2007, REVISED APRIL 22, 2008

	 SCALE: 1" = 20'
TITLE: FIGURE 4 DETAILED BUILDING LAYOUT BASEMENT LEVEL	
LOCATION: 489 GREAT NECK ROAD GREAT NECK, NEW YORK	
DATE: 5/24/11	
FILENAME: 207072_SITEMAP_REV5	
LAYOUT: GEN BLDG_BASEMENT	
 The Elm Group <small>218 WALL STREET, PRINCETON, NEW JERSEY 08540 4920 YORK ROAD, SUITE 290, HOLLICONG, PENNSYLVANIA 18928 612 MAIN STREET, BOONTON, NEW JERSEY 07005 267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007 2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020 www.ExploreELM.com</small>	



LEGEND

-  Location of Regional Environmental Release
-  Site Location
-  Groundwater Flow Direction

SOURCE:
 1. ESRI World 2D Street Map, ESRI, AND, TANA,
 ESRI Japan, UNEP-WCMC, 2009.



0 1,000 2,000



SCALE: 1" = 1,000'

TITLE:

FIGURE 5
 LOCATION OF REGIONAL ENVIRONMENTAL RELEASES

LOCATION:

MAYFLOWER CLEANERS
 489 GREAT NECK ROAD
 GREAT NECK, NEW YORK

DATE:

05/18/2011

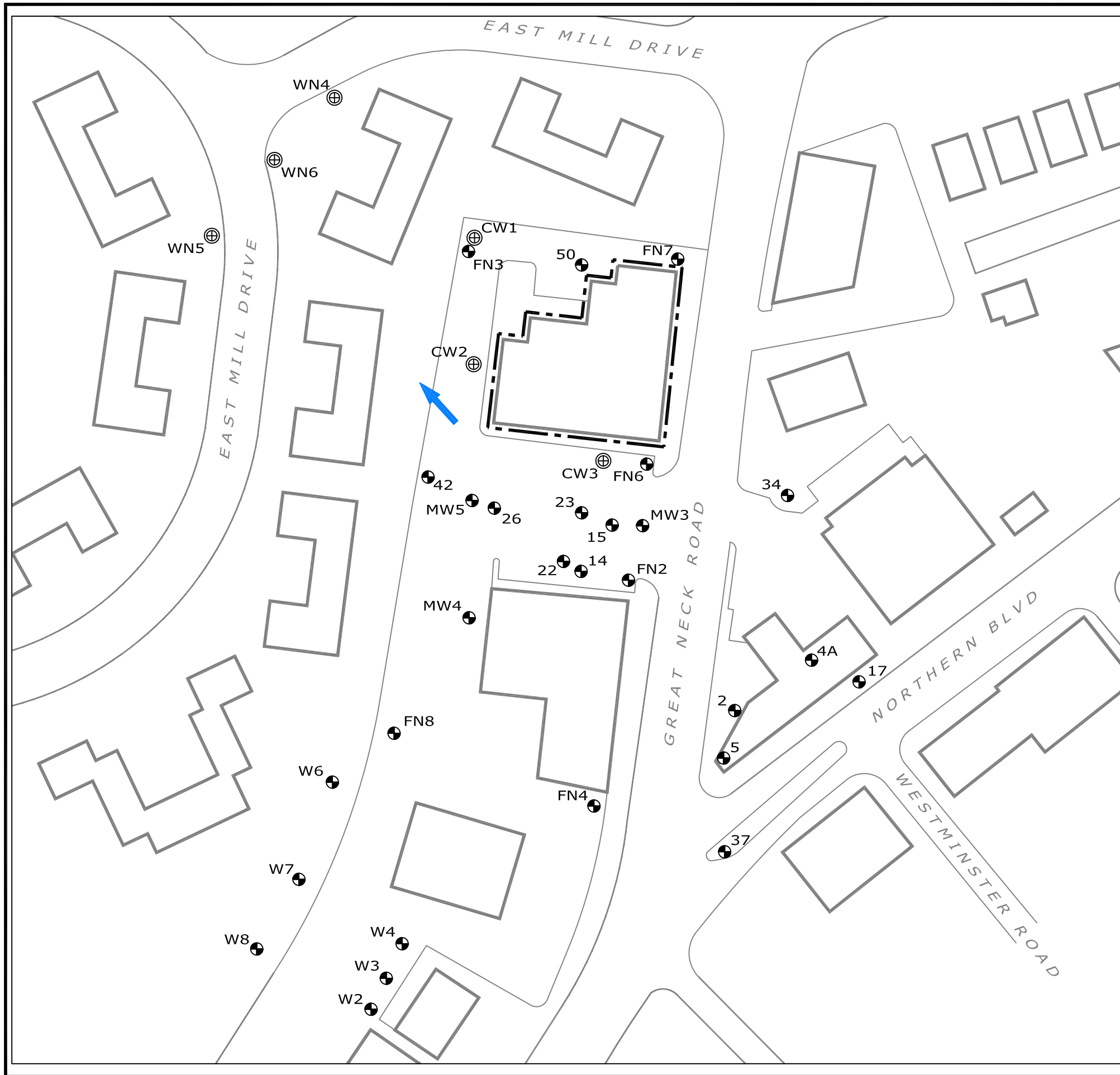
FILENAME:

Figure 5 (A Portrait).mxd




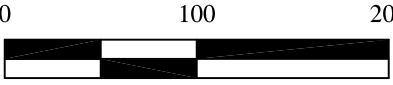

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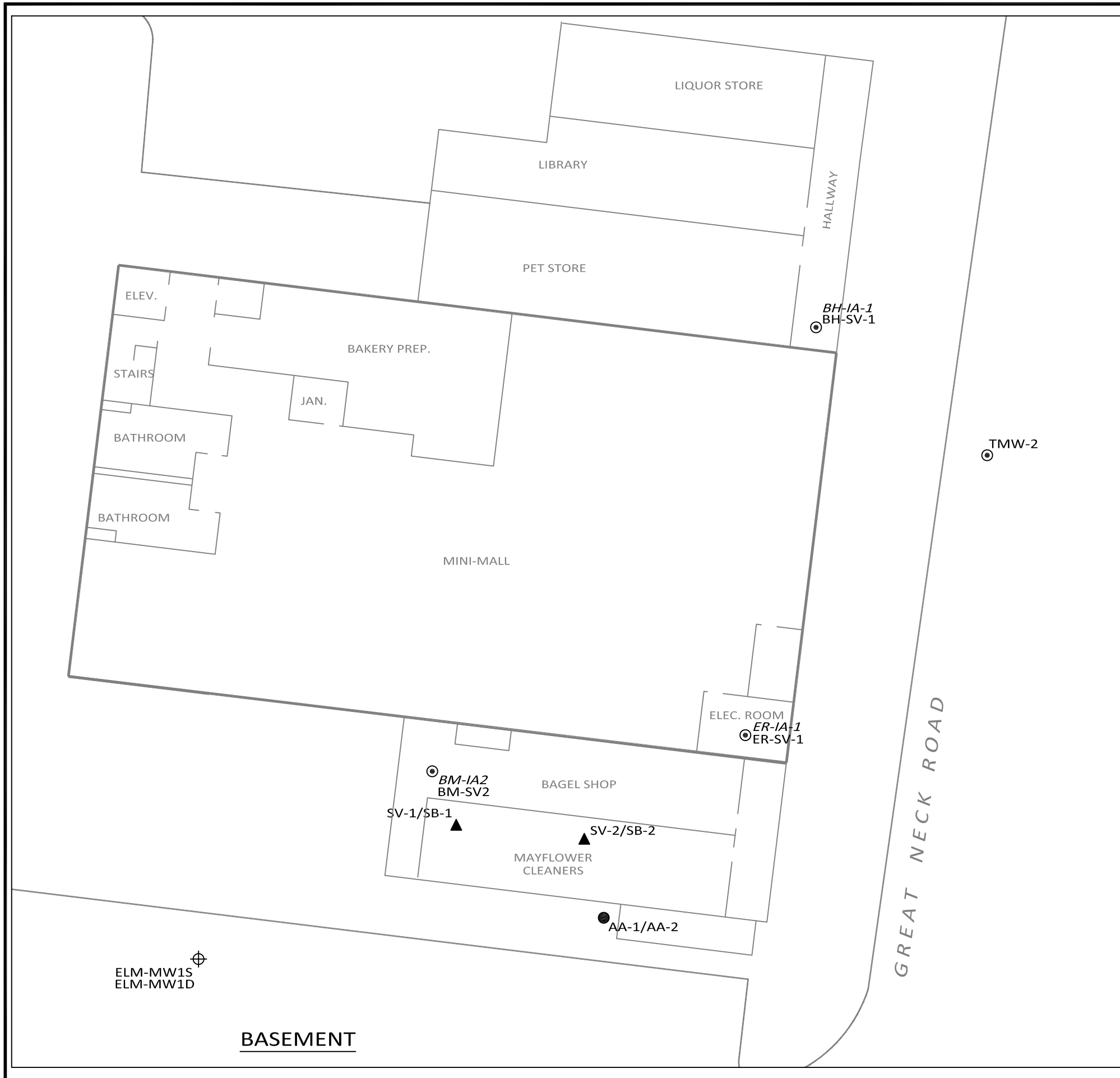
218 WALL STREET, PRINCETON, NEW JERSEY 08540
 4920 YORK ROAD, SUITE 290, HOLMCONG, PENNSYLVANIA 18928
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LEGEND

- FN3 ● MONITORING WELL LOCATION AND ID
- CW1 ⊕ CLUSTER WELL LOCATION AND ID
- ← GENERAL GROUNDWATER FLOW DIRECTION
- - - SITE BOUNDARY

	 SCALE: 1" = 100'
TITLE: FIGURE 6 PRE-RI MONITORING WELL LOCATIONS	
LOCATION: 489 GREAT NECK ROAD GREAT NECK, NEW YORK	
DATE: 5/24/11	
FILENAME: 207072_MONWELL_LOC_REV1	
LAYOUT: GWFLOW	
 The EIM Group <small>218 WALL STREET, PRINCETON, NEW JERSEY 08540 4920 YORK ROAD, SUITE 200, HOLICONG, PENNSYLVANIA 18928 612 MAIN STREET, BOONTON, NEW JERSEY 07005 267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007 2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020 www.ExploreELM.com</small>	



LEGEND

- DIVISION BETWEEN COMMERCIAL SPACES IN THE MINI-MALL
- MINI-MALL
- ER-IA-1, ER-SV-1 INDOOR AIR (IA) AND SUB-SLAB SOIL VAPOR (SV) SAMPLE LOCATION AND IDs (SRI)
- AA-1 AMBIENT AIR SAMPLE LOCATION AND ID (SRI)
- ELM MW1S NESTED MONITORING WELL LOCATION AND ID (RI)
- TMW-2 TEMPORARY MONITORING WELL LOCATION AND ID (RI)
- SV-1/SB-1 SOIL VAPOR / SOIL BORING LOCATION AND ID (RI) (IN BASEMENT)

SOURCES:

1. FLOOR PLANS PREPARED BY ROSENBAUM DESIGN GROUP, DATED JULY 16, 2007, REVISED APRIL 22, 2008

	<p>SCALE: 1" = 20'</p>
--	------------------------

TITLE: **FIGURE 7**
2009 RI AND 2011 SRI SAMPLING LOCATIONS

LOCATION:
489 GREAT NECK ROAD
GREAT NECK, NEW YORK

DATE: 5/24/11

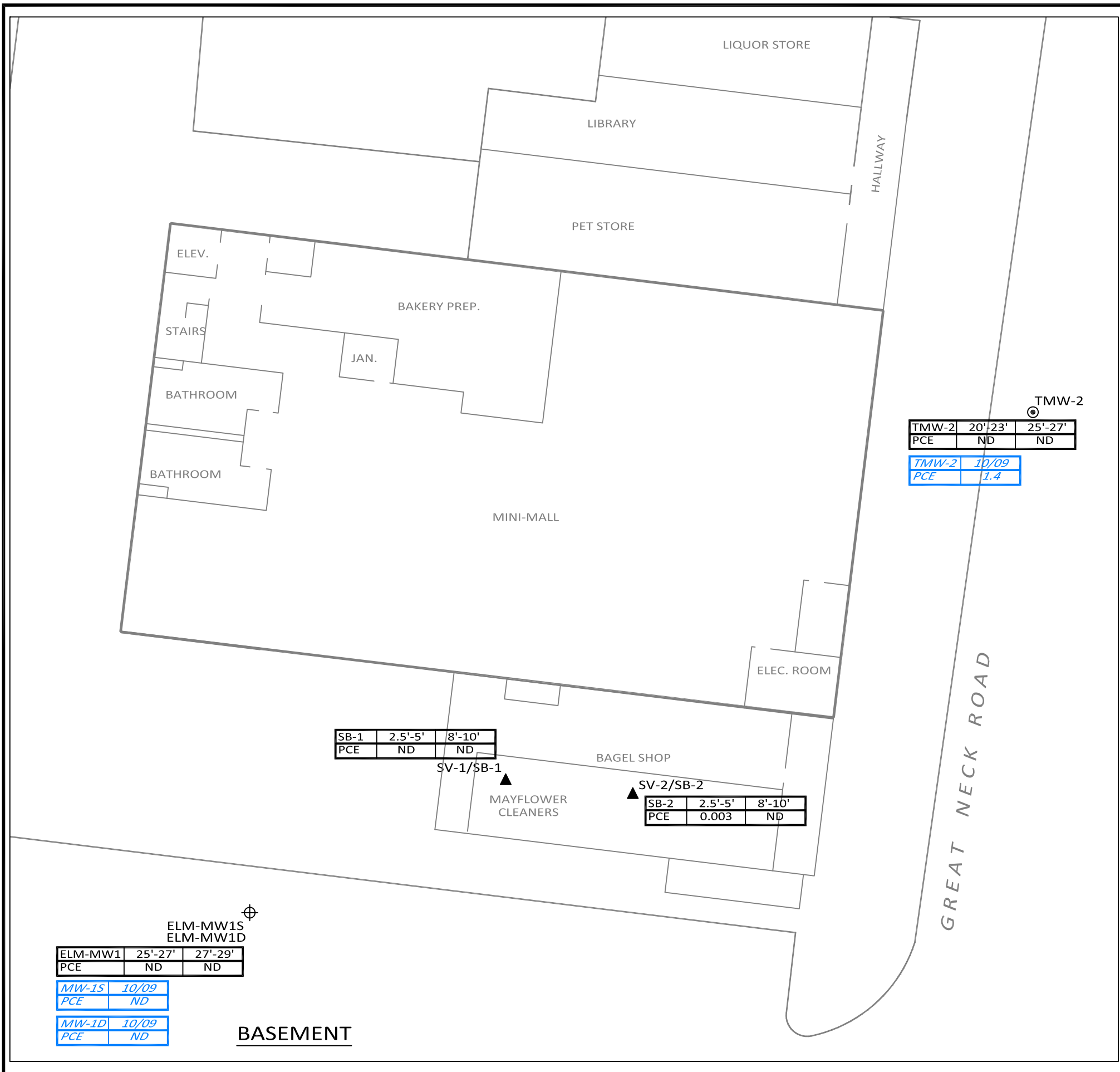
FILENAME: 207072_SITEMAP_REV5

LAYOUT: RI_SRI SAMP

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BASEMENT



LEGEND

- DIVISION BETWEEN COMMERCIAL SPACES IN THE MINI-MALL
- MINI-MALL
- ⊕ ELM MW1S NESTED MONITORING WELL LOCATION AND ID
- ⊙ TMW-2 TEMPORARY MONITORING POINT AND ID
- ▲ SV-1/SB-1 SOIL VAPOR / SOIL BORING LOCATION AND ID (IN BASEMENT)

SOIL RESULTS

SB-1	2.5'-5'	SAMPLE ID AND SAMPLE DEPTH IN FEET
PCE	ND	TETRACHLOROETHENE RESULT IN (mg/kg)

GROUNDWATER RESULTS

TMW-2	10/09	SAMPLE ID AND SAMPLE DATE
PCE	1.4	TETRACHLOROETHENE RESULT IN (ug/L)

TMW-2	20'-23'	25'-27'
PCE	ND	ND

TMW-2	10/09
PCE	1.4

SB-1	2.5'-5'	8'-10'
PCE	ND	ND

SB-2	2.5'-5'	8'-10'
PCE	0.003	ND

ELM-MW1	25'-27'	27'-29'
PCE	ND	ND

MW-1S	10/09
PCE	ND

MW-1D	10/09
PCE	ND

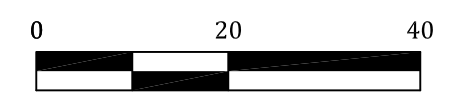
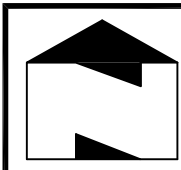
BASEMENT

NOTES:

1. ONLY DETECTED CHLORINATED COMPOUNDS IN SOIL AND GROUNDWATER ARE SHOWN.

SOURCES:

1. FLOOR PLANS PREPARED BY ROSENBAUM DESIGN GROUP, DATED JULY 16, 2007, REVISED APRIL 22, 2008



SCALE: 1" = 20'

TITLE: **FIGURE 8**
2009 RI SAMPLING RESULTS

LOCATION: 489 GREAT NECK ROAD
GREAT NECK, NEW YORK

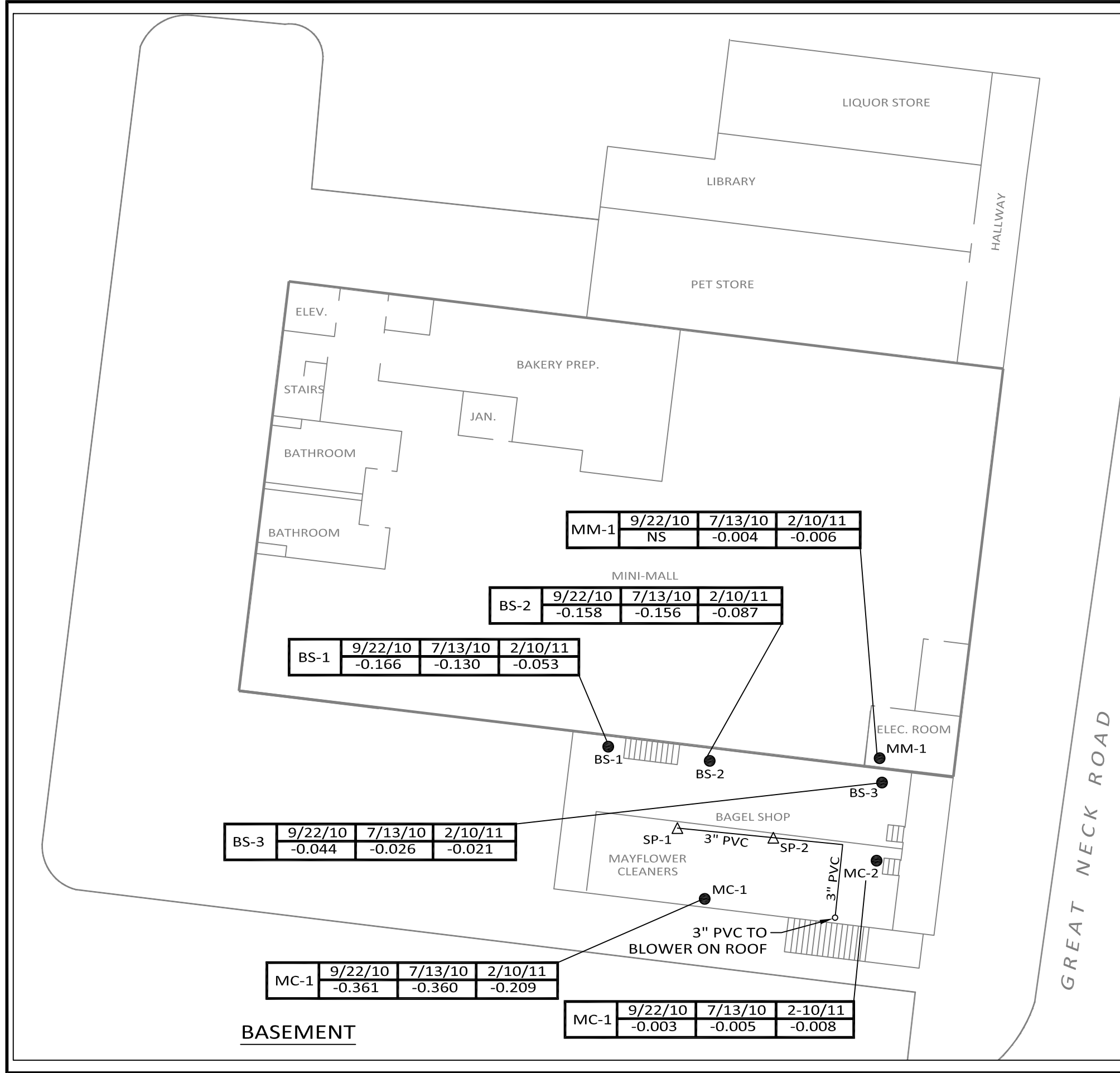
DATE: 5/24/11

FILENAME: 207072_SITEMAP_REV5

LAYOUT: RI_DATA

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G:\207072\CADD\207072_SITEMAP_REV5.dwg, INTERIM SSDS DATA, 5/24/2011 8:43:54 AM, Bruce



LEGEND

- DIVISION BETWEEN COMMERCIAL SPACES IN THE MINI-MALL
- MINI-MALL
- BS-1 SUB-SLAB VACUUM MONITORING PROBE
- △ SP-1 SUCTION PIT
- (-0.156) PRESSURE (INCHES OF H₂O)

MM-1	9/22/10	7/13/10	2/10/11	SAMPLE ID AND SAMPLE DATE PRESSURE IN INCHES OF H ₂ O
	NS	-0.004	-0.006	

NS NOT SAMPLED

NOTES:

1. SSDS SYSTEM INSTALLED ON MAY 11, 2010.
2. DIMENSIONS OF BASEMENT FOR BAGEL STORE AND MAYFLOWER CLEANERS BASED ON MEASUREMENTS TAKEN ON MAY 25, 2010.
3. DATA COLLECTED ON SEPTEMBER 22, 2010 AND JULY 13, 2010 AND FEBRUARY 10, 2011.

SOURCES:

1. FLOOR PLANS PREPARED BY ROSENBAUM DESIGN GROUP, DATED JULY 16, 2007, REVISED APRIL 22, 2008

SCALE: 1" = 20'

TITLE: **FIGURE 9**
INTERIM SSDS LAYOUT AND MONITORING RESULTS

LOCATION:
489 GREAT NECK ROAD
GREAT NECK, NEW YORK

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2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020
www.ExploreELM.com

DATE: 5/24/11

FILENAME: 207072_SITEMAP_REV5

LAYOUT: INTERIM SSDS DATA

MM-1	9/22/10	7/13/10	2/10/11
	NS	-0.004	-0.006

BS-2	9/22/10	7/13/10	2/10/11
	-0.158	-0.156	-0.087

BS-1	9/22/10	7/13/10	2/10/11
	-0.166	-0.130	-0.053

BS-3	9/22/10	7/13/10	2/10/11
	-0.044	-0.026	-0.021

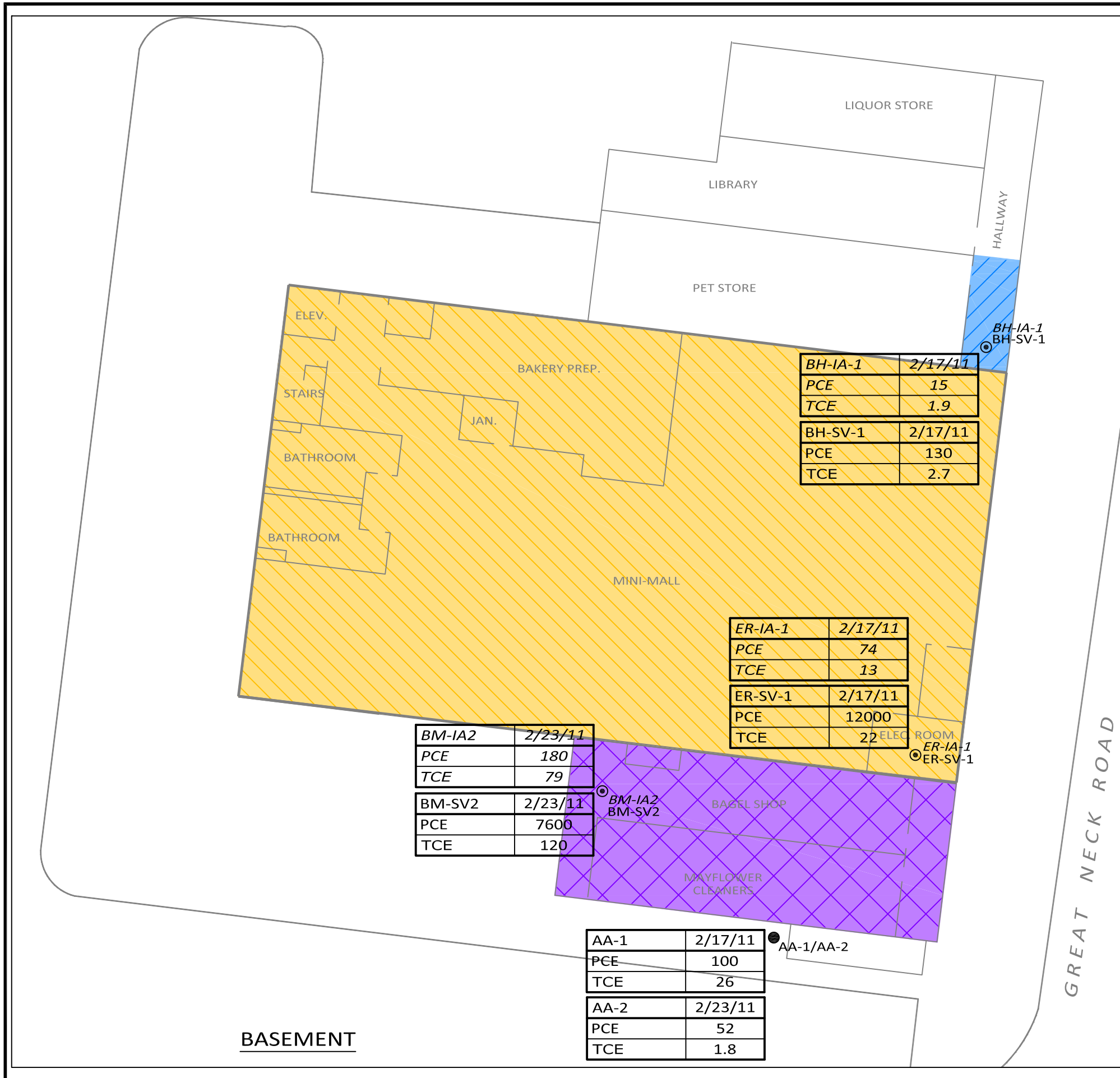
MC-1	9/22/10	7/13/10	2/10/11
	-0.361	-0.360	-0.209

MC-1	9/22/10	7/13/10	2-10/11
	-0.003	-0.005	-0.008

BASEMENT

GREAT NECK ROAD

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BASEMENT

BH-IA-1	2/17/11
PCE	15
TCE	1.9
BH-SV-1	2/17/11
PCE	130
TCE	2.7

ER-IA-1	2/17/11
PCE	74
TCE	13
ER-SV-1	2/17/11
PCE	12000
TCE	22

BM-IA2	2/23/11
PCE	180
TCE	79
BM-SV2	2/23/11
PCE	7600
TCE	120

AA-1	2/17/11
PCE	100
TCE	26
AA-2	2/23/11
PCE	52
TCE	1.8

LEGEND

- DIVISION BETWEEN COMMERCIAL SPACES IN THE MINI-MALL
- MINI-MALL

ER-IA-1
ER-SV-1 INDOOR AIR (IA) AND SUB-SLAB SOIL VAPOR (SV) SAMPLE LOCATION AND IDs

AA-1 AMBIENT AIR SAMPLE LOCATION AND ID

BH-SV-1	2/17/11	SAMPLE ID AND SAMPLE DATE
PCE	130	TETRACHLOROETHENE RESULT IN ug/m ³
TCE	2.7	TRICHLOROETHENE RESULT IN ug/m ³

AREA 1 - MONITOR/MITIGATE

AREA 2 - MITIGATE (COMPLETED)

AREA 3 - MITIGATE

NOTES:

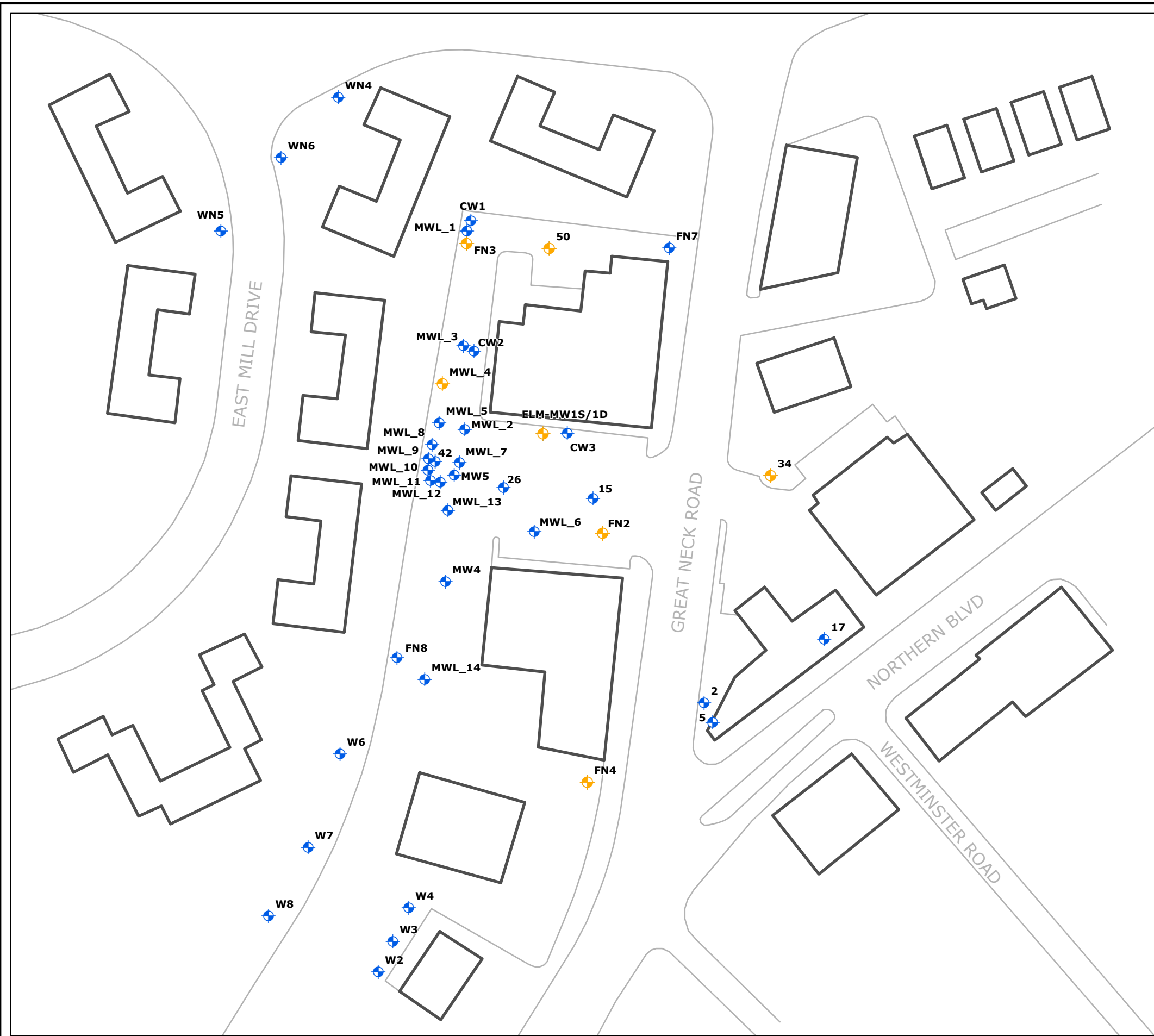
1. APPROPRIATE ACTION IS RECOMMENDED PURSUANT TO NYSDOH SOIL VAPOR/INDOOR AIR MATRIX 1 AND 2 (NYSDOH, 2006).

SOURCES:




1. FLOOR PLANS PREPARED BY ROSENBAUM DESIGN GROUP, DATED JULY 16, 2007, REVISED APRIL 22, 2008

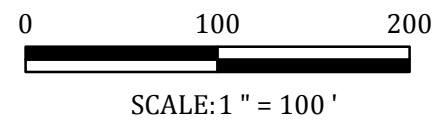
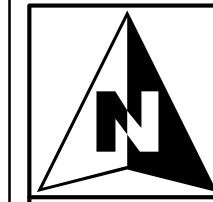
	 SCALE: 1" = 20'
FIGURE 10	
SRI RESULTS AND RECOMMENDED ACTIONS	
TITLE:	
489 GREAT NECK ROAD GREAT NECK, NEW YORK	
LOCATION:	
DATE: 5/24/11	
FILENAME: 207072_SITEMAP_REV5	
LAYOUT: AIRDATA	


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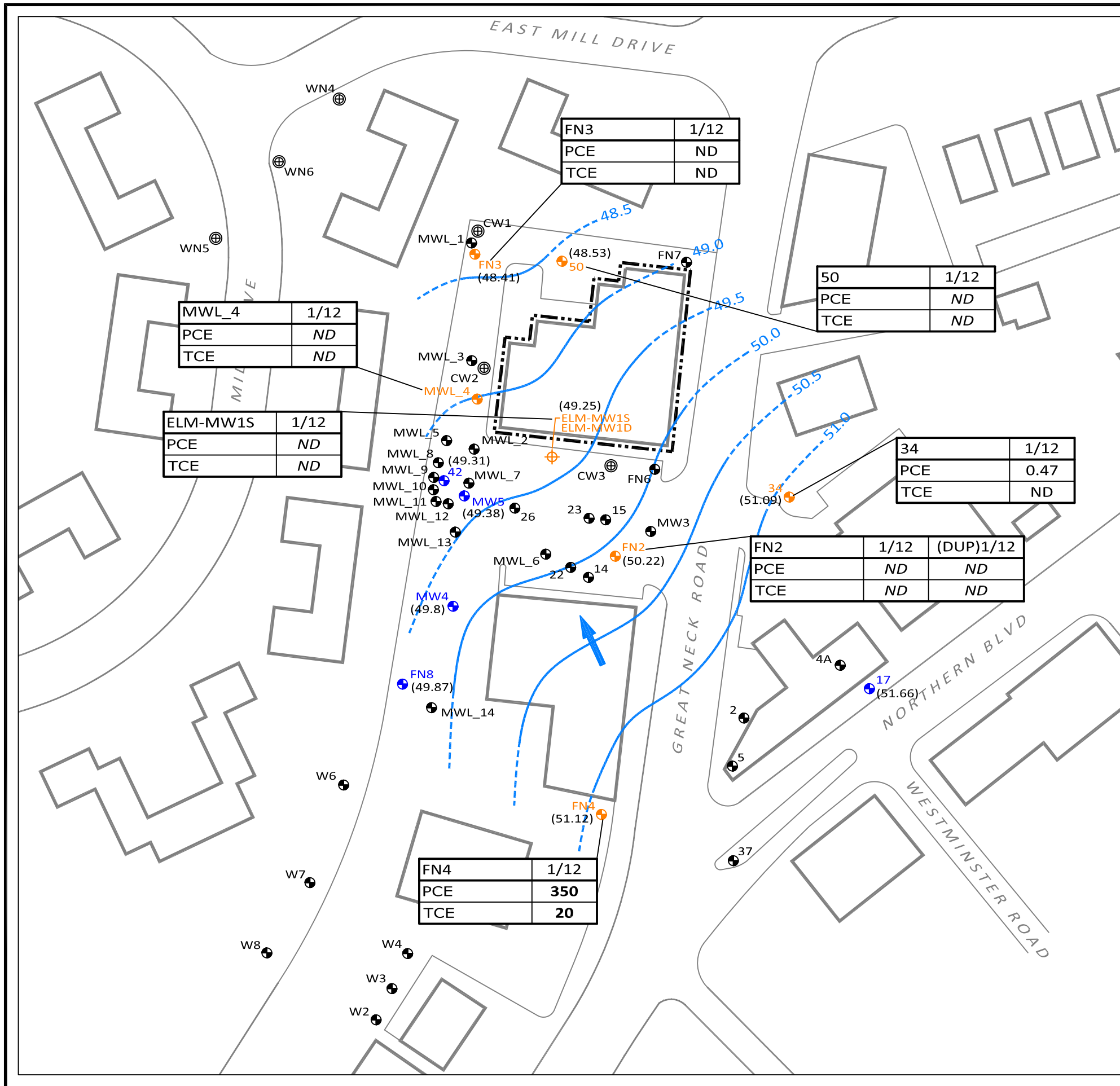


LEGEND

-  **FN7** MONITORING WELL LOCATION AND ID
-  **FN4** PROPOSED LOCATION AND ID OF MONITORING WELL TO BE SAMPLED
-  BUILDING FOOTPRINT



TITLE: FIGURE 11 SGI SAMPLING LOCATIONS	
LOCATION: 489 GREAT NECK ROAD GREAT NECK, NEW YORK	
DATE: 12/15/2011	
FILENAME: PROP_SAMPLE_LOCS.mxd	 <p>THE ELM GROUP <small>218 WALL STREET, PRINCETON, NEW JERSEY 08540 4920 YORK ROAD, SUITE 290, HOLCOMB, PENNSYLVANIA 18928 612 MAIN STREET, BOONTON, NEW JERSEY 07005 267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007 2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020 www.exploreELM.com</small></p>

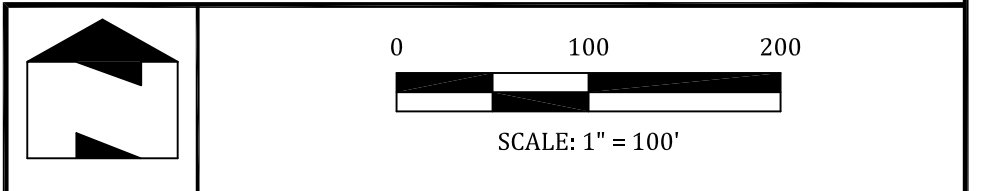


LEGEND

- SITE BOUNDARY
 - FN8 MONITORING WELL LOCATION AND ID, AND GROUND WATER ELEVATION COLLECTED DECEMBER 14, 2011
 - FN3 MONITORING WELL LOCATION AND ID, AND GROUND WATER ELEVATION COLLECTED JANUARY 9-10, 2012
 - 17 MONITORING WELL LOCATION AND ID
 - CW1 CLUSTER WELL LOCATION AND ID
 - (51.12) GROUND WATER ELEVATION (FEET)
 - GROUND WATER ELEVATION CONTOUR (FEET)
CONTOUR INTERVAL = 0.5 FOOT
DASHED WHERE INFERRED
 - INTERPRETED GROUND WATER FLOW DIRECTION
- | | | |
|-----|------|---|
| FN2 | 1/12 | SAMPLE ID AND DATE |
| PCE | ND | TETRACHLOROETHENE RESULT IN ug/L (TOGS = 5) |
| TCE | ND | TRICHLOROETHENE RESULT IN ug/L (TOGS = 5) |
| | ND | NOT DETECTED |
| | ND | NOT DETECTED/REPORTING LIMIT EXCEEDS TOGS 1.1.1 |

NOTES:

1. ALL RESULTS ARE IN ug/L.
2. ONLY COMPOUNDS OF CONCERN ARE SHOWN.
3. **BOLD RESULTS EXCEED APPLICABLE TOGS 1.1.1 STANDARD (SEE LEGEND).**
4. GROUND WATER ELEVATION FOR MWL_4 IS NOT SHOWN BECAUSE WELL WAS NOT SURVEYED.
5. GROUND WATER CONTOURS WERE DERIVED FROM BOTH THE 12/14/11 AND 1/9-10/12 GAUGING EVENTS.
6. THE HORIZONTAL DATUM IS THE NEW YORK STATE PLANE COORDINATE SYSTEM NAD83 DETERMINED BY DIFFERENTIAL GPS ON 12/20/11. REFERENCE STATION: NYQN.
7. THE VERTICAL DATUM IS THE EXISTING WELL DATUM PROVIDED BY THE ELM GROUP TO BORBAS SURVEYING & MAPPING, LLC. IN A DIGITAL FILE (MAYFLOWER_SURVEY_DATA.XLSX) VIA EMAIL ON 12/19/11. BENCHMARK HELD: MARK ON 4" DIAMETER PVC INNER CASING OF FN7=69.83'.
8. THE EXISTING WELL DATUM DIFFERS FROM NAVD88 (NORTH AMERICAN VERTICAL DATUM OF 1988) BY APPROXIMATELY 25 FEET (NAVD88 INNER CASING OF FN7=45.07'±).
9. ALL COORDINATES AND ELEVATIONS SHOWN HEREON ARE IN U.S. SURVEY FEET.



TITLE: FIGURE 12	
SGI SAMPLING RESULTS AND GROUND WATER CONTOUR MAP	
LOCATION: 489 GREAT NECK ROAD GREAT NECK, NEW YORK	
DATE: 1/20/12	
FILENAME: 207072_MONWELL_LOC-REV2	
LAYOUT: GW DATA	

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