CONFIDENTIAL AND PRIVILEGED

PHASE II ENVIRONMENTAL SITE INVESTIGATION REPORT

OF

ASIAN AMERICANS FOR EQUALITY (AAFE)
133-04 39TH AVENUE
QUEENS, NY 11368

SCA LLW NO.: 047043
SCA CONTRACT NO.: C000009227
SCHOOL DISTRICT: 77
SCA JOB NO.: Q747-23159

LOUIS BERGER PROJECT NO.: JG-3259

JANUARY 16, 2007

NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

Prepared by:

Louis Berger & Assoc., P.C.
199 Water Street, 23rd Floor
New York, NY 10038
Phone: (212) 612-7934
Fax: (212) 363-4341
Mr. Seth Schultz

Prepared for:

NYC SCA
30-30 Thomson Avenue
Long Island City, NY 11101-3045
Phone: (718) 472-8502
Fax: (718) 472-8297
Attn: Ms. Lee Guterman

Louis Berger & Assoc., P.C.
One Seaport Plaza, 199 Water Street, 23rd Floor, New York, New York
Tel 212 612 7900 Fax 212 363 4341 www.louisberger.com

January 16, 2007

Ms. Lee Guterman
Manager, IEH Division
New York City School Construction Authority
30-30 Thomson Avenue
Long Island City, New York 11101

Re: Phase II Environmental Site Investigation
Asian Americans for Equality (AAFE) at
133-04 39th Avenue, Queens, NY 11368
LLW No.: 047043; SCA Job No.: Q747-23159

Dear Ms. Guterman:

At the request of the New York City School Construction Authority (NYCSCA), Louis Berger and Assoc., P.C. (Berger) conducted a Phase II Environmental Site Investigation (ESI) for the Asian Americans for Equality (AAFE) Site at 133-04 39th Avenue, Queens, New York 11354 (hereinafter referred to as the "Site"). The field investigation activities took place on November 4-7, 2006 and consisted of the performance of a geophysical survey, advancement of soil borings, installation of temporary well points, and the collection of subsurface soil, groundwater, and sub-slab vapor samples for laboratory analyses. This Phase II ESI was completed to assess the following Recognized Environmental Conditions (RECs) as identified by TAMS in the Phase I ESA Update Report dated September 11, 2006.

The Phase II ESI identified petroleum contaminated soil beneath the Site building, requiring New York State Department of Environmental Conservation (NYSDEC) notification. Concentrations of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals were detected above applicable standards in soil samples that were collected from beneath the existing building. At two borings located beneath the Site building, a layer of imported fill material consisting of coke was observed. Sub-slab vapor samples collected beneath the existing building indicate the presence of elevated VOC concentrations of petroleum-based compounds and chlorinated-based solvents. Based on the concentrations of VOCs, there exists a potential for sub-slab vapor intrusion into the existing building. Trichloroethene (TCE) was detected above applicable criteria in two groundwater samples. It is unknown whether the concentrations of TCE are the result of historical on-site or off-site releases.

If the Site is selected for a public school, the Site owner plans to raze the existing structure and construct a new building. Since the NYCSCA would lease the upper floors (2nd floor and above) the subsurface environmental impacts would not affect the occupied space. Therefore, the Site is suitable for use as a school under the existing conditions and no additional investigation on the part of NYCSCA at the Site is recommended. Based on the conditions identified during the investigation, Berger recommends that the Site owner take any required actions to close the NYSDEC spill case associated with the petroleum impacts beneath the Site building. In addition, the new building design should incorporate engineering controls to prevent soil vapor intrusion. Additionally, a 24 inch certified-clean soil layer or equivalent is recommended to be placed over landscaped areas, if incorporated into the development of the Site. Lastly, the TAMS Phase I ESA Update report included recommendations to address environmental concerns, which should be implemented. If the NYCSCA modifies their proposed plan for occupancy or considers acquiring the property in the future, an additional investigation is required to further evaluate the conditions identified by this Phase II ESI.

Sincerely,
LOUIS BERGER & ASSOC., P.C.

Seth Schultz
Contract Manager

NOTICE OF REMEDIATION REQUIRED

Environmental contamination at the project site must be remediated prior to, or during, site development.
Remedial design documents must be included within bid specifications for the construction contract.
Contact IEH Department for additional information or assistance.

Site Name	Asian Americans for Equality (AAFE)	**LLW No.**	47043
Description	133-04 39th Avenue	**IEH Job Number**	Q747-23159
District	77	**Consultant Vendor**	Louis Berger & Assoc., P.C.
Borough	Queens	**Phase I Delivery Date**	9/11/2006
Block/ Lot	Block 4973, Lots 6	**Phase II Delivery Date**	1/16/2007

Identified Contamination

	MEDIA (list affected media)	*CONTAMINANT* (e.g., VOC, chlorinated solvents, SVOC, PAHs, metals, cyanide)	*CONCENTRATION RANGE* (min-max concentration)	*UNITS* (e.g., ug/l, mg/l)
	None			
X	Soil	acetone	ND - 1.14	mg/kg
		xylene (total)	ND - 1.13	mg/kg
		2-butanone (MEK)	ND - 0.176	mg/kg
		2-methylnaphthalene	ND - 66	mg/kg
		benzo(a)anthracene	ND - 0.42	mg/kg
		benzo(a)pyrene	ND - 0.353	mg/kg
		benzo(b)fluoranthene	ND - 0.368	mg/kg
		benzo(k)fluoranthene	ND - 0.28	mg/kg
		chrysene	ND - 0.421	mg/kg
		dibenzo(a,h)anthracene	ND - 0.0955	mg/kg
		naphthalene	ND - 13.7	mg/kg
		arsenic	ND - 7.7	mg/kg
		barium	35.5 - 432	mg/kg
		beryllium	ND - 0.65	mg/kg
		chromium	12.6 - 38.5	mg/kg
		copper	8.5 - 73.1	mg/kg
		lead	4.8 - 1,170	mg/kg
		mercury	ND - 0.6	mg/kg
		nickel	8.3 - 51.8	mg/kg
		zinc	27.2 - 255	mg/kg
X	Groundwater	TCE	9.2 - 9.6	ug/L
X	Soil Vapor	PCE	50 - 220	ug/m3
		TCE	ND - 59	ug/m3
		1,1,1-TCA	2.6 - 34	ug/m3
		carbon tetrachloride	ND - 33	ug/m3
		1,2,4-trimethylbenzene	12 - 25	ug/m3
		1,3,5-trimethylbenzene	3.9 - 9.8	ug/m3
		ethylbenzene	4.3 - 10	ug/m3
		MTBE	ND - 9.4	ug/m3
		toluene	14 - 27	ug/m3
		m- and p-xylene	13 - 30	ug/m3
		o-xylene	5.2 - 13	ug/m3

Required Remediation

	MEASURE (list recommended remediation measures)	*METHOD* (e.g., Contractor HASP, soil excavation, removed soil characterization, sub-slab vapor membrane, etc.)	*COST ESTIMATE*
X	**None**		

Comments

If the Site is selected for a public school, the Site owner plans to raze the existing structure and construct a new building. Since the NYCSCA would lease the upper floors (2nd floor and above) the subsurface environmental impacts would not affect the occupied space. Therefore, the Site is suitable for use as a school under the existing conditions and no additional investigation on the part of NYCSCA at the Site is recommended. Based on the conditions identified during the investigation, Berger recommends that the Site owner address the following issues:

- Take any required actions to close with the NYSDEC spill case associated the petroleum impacts observed beneath the Site building.
- Incorporate engineering controls to prevent soil vapor intrusion into the newly constructed building.
- If landscaped areas are incorporated into the development of the Site, a 24 inch certified-clean soil layer or equivalent is recommended to be placed over on-Site soils.
- Implement the recommendations to address the environmental concerns included in the TAMS Phase I ESA Update report.

If the NYCSCA modifies their proposed plan for occupancy or considers acquiring the property in the future, an additional investigation is required to further evaluate the conditions identified by this Phase II ESI.

Attachments

The following environmental reports are attached to this document:

REPORT	*PREPARER FIRM*	*DATE*
Phase II Environmental Site Investigation Report	Louis Berger & Assoc., P.C.	1/16/2007

Signature

Seth Schultz	Louis Berger & Assoc., P.C.	1/16/2007
Preparer	**Firm**	**Date**

Copy:
IEH: File (1); **DSF:** L. Corcoran (1); **A&E:** B. Barrett (1);
Legal: K. Ou (1)

Industrial and Environmental Hygiene

REV. 3/00

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EXECUTIVE SUMMARY

At the request of the New York City School Construction Authority (NYCSCA), Louis Berger & Assoc., P.C. (Berger) conducted a Phase II Environmental Site Investigation (ESI) of the Asian Americans for Equality (AAFE) Site located at 133-04 39th Avenue, Queens, New York 11354 (hereinafter referred to as the "Site"). The Site is identified as Block 4967, Lot 6 by the Queens County Tax Assessors Records and situated in an area primarily characterized by commercial and residential use.

The Site occupies an approximately 15,000-square foot irregularly shaped lot that is improved with an asphalt-paved parking lot and a one-story building. The entire Site is enclosed with a chain-link fence. NYCSCA is considering a lease of the upper floors (2nd floor and above) of a future building constructed at the Site for use as a public school facility.

A Phase I Environmental Site Assessment (ESA) was prepared for the Site in 2002 by G.C. Environmental, Inc. (GCE) of Ardsley, New York. In 2006, NYCSCA requested TAMS Consultants Inc., (TAMS), to update the Phase I ESA in accordance with ASTM standards. This Phase II ESI was completed to assess Recognized Environmental Conditions (RECs) identified by TAMS in the Phase I ESA Update Report dated September 11, 2006.

The Phase I ESA Update identified on-site RECs associated with an underground storage tank (UST) that was reportedly removed from the Site in October 1995; a suspect petroleum UST that was reported to be located at the Site; and, the use of the Site as an automobile repair facility from circa 1956 to 2001. The Phase I ESA Update also identified off-site RECs associated with a spill case for the Mobil Service Station located adjacent to the Site and historical uses of the surrounding properties (e.g., auto repair facilities, gas stations, a film processing facility, a medical instrument manufacturer, and a machine shop).

The TAMS Phase I ESA Update also identified environmental concerns associated with emissions from vents associated with the gasoline USTs located at the adjoining Mobil Service Station; suspect PCB-containing fluorescent light ballasts; suspect asbestos containing material (ACM) in the building; and suspect lead based paint (LBP). Recommendations to address the environmental concerns were presented in the TAMS Phase I ESA Update.

To assess the RECs identified in the Phase I ESA Update report, a Phase II ESI Scope of Work was submitted to NYCSCA on October 4, 2006. The Phase II ESI activities consisted of the performance of a geophysical survey, advancement of soil borings, installation of temporary well points, and the collection of subsurface soil, groundwater, and sub-slab vapor samples for laboratory analyses.

Findings

To address the REC related to the former on-site UST, a geophysical survey was used identify the excavation area, soil borings were advanced and samples collected to identify the potential presence of petroleum contaminated soils. A Freedom of Information Law (FOIL) request was filed by Berger with the New York State Department of Environmental Conservation (NYSDEC) with regard to this former on-site UST. The response from NYSDEC confirmed that on October 31, 1995 NYSDEC provided regulatory oversight for the removal of one (1) 550-gallon single wall steel UST formerly used for heating oil at the former auto repair shop. In all, five (5) soil borings (SB-10 through SB-14) were installed within an asphalt-paved parking lot area to assess whether residual contamination existed in the vicinity of the former 550-gallon UST that was removed in 1995. In the vicinity of the former 550-gallon UST

excavation area, the soils consisted of fill material (sand with some silt) to a depth of 18 ftbg. Sampling results did not indicate petroleum impacts in this area, therefore the former 550-gallon UST is not considered to be a concern for the Site. Sampling results were compared to the New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum #4046 Recommended Soil Cleanup Objectives (TAGM RSCO) and the Part 375 Track 1 Soil Cleanup Objectives (Part 375 Track 1 SCOs). The laboratory results indicated that no residual soil contamination is present in the vicinity of the former UST.

The geophysical survey was also used to attempt to locate the suspect UST identified by the Site owner. Based on the geophysical survey, there is no evidence of this suspect UST and the contingency soil borings, proposed in the Scope of Work, were not advanced.

To address the REC related to the potential presence of impacts beneath the Site building due to its historical use for automotive repairs, soil and sub-slab soil vapor samples were collected from beneath the slab. Six (6) soil borings (SB-04 through SB-09) were installed inside the existing building. Beneath the Site building the fill material layer ranges from 2-15 ftbg. Soil samples that were collected from the fill beneath the existing building contained detectable concentrations of some SVOCs above their corresponding TAGM RSCO and Part 375 Track 1 SCOs. Based on field observations, evidence of petroleum impacted soil (e.g., odor, stained soil, and PID responses) was noted in boring SB-07 beneath the concrete slab. Based on the presence of petroleum impacted soil beneath the slab, a reportable condition as per Navigation Law Article 12; 17 NYCRR 32.3 and 32.4 is present. The NYCSCA provided the Site owner with the details of the field observations and requested that they notify the NYSDEC.

At boring SB-07, a layer of imported fill material consisting of what is believed to be coke was observed at the end of the boring from 10 to 12.8 ftbg. Boring SB-04 also contained a trace amount of this material directly beneath the concrete slab. Additionally, concentrations of barium, chromium, copper, mercury, nickel, and zinc were present in soil samples that exceed TAGM RSCOs and Part 375 Track 1 SCOs. Lead was detected at concentrations that exceed the Part 375 Track 1 SCO. Results from the waste characterization samples (SB-02 and SB-13) indicated that the soil does not exhibit evidence of hazardous waste characteristics. Sub-slab vapor samples collected beneath the existing building indicate the presence of elevated VOC concentrations of petroleum-based compounds and chlorinated-based solvents. The elevated VOC concentrations in soil and soil vapor are attributed to the previous usage as an auto repair facility or the presence of impacted fill material. Based on the concentrations of VOCs, there exists a potential for sub-slab vapor intrusion into the existing building.

To address potential off-site RECs, three soil boring/temporary well points were advanced. The results of the subsurface soil investigation conducted outside of the building footprint and former 550-gallon UST area identified the Site as being underlain with native materials from the ground surface consisting of medium to fine sands, interbedded with dense silts layers to a depth of 50 ftbg. Two (2) soil borings/temporary well points (TWP-01/SB-01 and TWP-02/SB-02) were installed in the northeastern portion of the Site to characterize subsurface soil conditions and assess groundwater quality at the Site boundary. One soil boring/temporary well point (TWP-03/SB-03) was installed in the southwestern portion of the Site to assess whether contamination from the adjacent Mobil Service Station has migrated via groundwater on to the Site. Soil analytical results for TWP-01/SB-01, TWP-02/SB-02 and TWP-03/SB-03 were below applicable standards for VOCs and SVOCs. Trichloroethene (TCE) was detected above applicable criteria in two groundwater samples collected from the soil borings/temporary well points at TWP-01/SB-01 and TWP-02/SB-02. Because temporary wells do not allow for measurement of groundwater flow direction, it is unknown whether concentrations of TCE at these

locations can be attributed to historical on-site or off-site releases. TWP-03/SB-03 did not exhibit concentrations of VOCs or SVOCs above standards for groundwater.

Conclusions and Recommendations

If the Site is selected for a public school, the Site owner would raze the existing structure and construct a new building. Since the NYCSCA would lease the upper floors (2nd floor and above) the subsurface environmental impacts would not affect the occupied space. Therefore, the Site is suitable for use as a school under the existing conditions and no additional investigation on the part of NYCSCA at the Site is recommended. Based on the conditions identified during the investigation, Berger recommends that the Site owner address the following issues:

- Take any required actions to close the NYSDEC spill case associated with the petroleum impacts observed at SB-07 beneath the Site building.
- Incorporate engineering controls to prevent soil vapor intrusion into the newly constructed building.
- If landscaped areas are incorporated into the development of the Site, a 24 inch certified-clean soil layer or equivalent is recommended to be placed over on-Site soils.
- Implement the recommendations to address the environmental concerns included in the TAMS Phase I ESA Update report.

If the NYCSCA modifies their proposed plan for occupancy or considers acquiring the property in the future, an additional investigation is required to further evaluate the conditions identified by this Phase II ESI.

1.0 INTRODUCTION

1.1 Purpose

At the request of the New York City School Construction Authority (NYCSCA), Louis Berger & Assoc., P.C. (Berger) conducted a Phase II Environmental Site Investigation (ESI) of the Asian Americans for Equality (AAFE) Site located at 133-04 39th Avenue, Queens, New York 11354 (hereinafter referred to as the "Site"). The Site is identified as Block 4967, Lot 6 by the Queens County Tax Assessors Records and situated in an area primarily characterized by commercial and residential use.

The Site occupies an approximately 15,000-square foot irregularly shaped lot that is improved with an asphalt-paved parking lot and a one-story building. The entire Site is enclosed with a chain-link fence. NYCSCA is proposing to lease the upper floors of any future building constructed at the Site for use as a public school facility. *Figure 1* presents a Site Location Map and *Figure 2* presents a Site Plan.

1.2 Prior Reports

A Phase I Environmental Site Assessment (ESA) was prepared for the Site in 2002 by G.C. Environmental, Inc. (GCE) of Ardsley, New York. The American Society of Testing and Materials (ASTM) Standard Practice E 1527-00 was the basis for the Phase I ESA. The ASTM standard states that Phase I ESA reports are considered viable for 180 days from the date of issuance. In 2006, NYCSCA requested TAMS Consultants Inc., an Earth Tech Company (TAMS) to update the Phase I ESA. This Phase II ESI was completed to assess Recognized Environmental Conditions (RECs) identified by TAMS in the Phase I ESA Update Report dated September 11, 2006.

1.2.1 On-Site RECs

- Based on the review of the prior report, Sanborn Maps, City Directories, New York City Department of Buildings (NYCDOB) records, and Queens County Tax Assessors Records, the present-day Site building was constructed circa 1951 and operated as an automotive repair facility from circa 1956 until 2001. The historical use of the Site for automotive repairs is considered a REC since undocumented releases of petroleum products and hazardous substances have the potential to impact the subsurface of the Site.

- The New York State Department of Environmental Conservation (NYSDEC) Spill database indicates that an underground storage tank (UST) was removed from the Site in October 1995. A Freedom of Information Law (FOIL) request was filed by Berger with the New York State Department of Environmental Conservation (NYSDEC) with regard to this former on-site UST. The response from NYSDEC confirmed that on October 31, 1995 NYSDEC provided regulatory oversight for the removal of one (1) 550-gallon single wall steel, UST formerly used for heating oil at the former auto repair shop. The NYSDEC FOIL response letter is presented in *Appendix F*. Since laboratory analysis of endpoint soil samples indicated that low concentrations of various chemicals were present at 10 to 12 feet below ground surface; NYSDEC closed the spill case on November 24, 1995. No documentation regarding the removal of the UST was made available for TAMS to review; therefore, the subsurface conditions cannot be assessed. The potential presence of petroleum impacts from the former UST is considered a REC.

- Based on TAMS' conversation with Mr. Thomas Yu of AAFE, a suspect petroleum UST is reported to be located at the Site. The potential presence of an UST is considered a REC since undocumented releases would impact subsurface conditions at the Site.

1.2.2 Off-Site RECs

- The Mobil Service Station on the adjoining property (131-11 Roosevelt Avenue) is listed in the NYSDEC Leaking Tanks (LTANKS) and UST databases. This facility is also identified in the USEPA Resource Conservation and Recovery Act (RCRA) Small Quantity Generator (SQG) and FINDS databases. NYSDEC spill case number 9103630 was assigned to this facility on July 3, 1991, when a tank failure resulted in the release of an unknown quantity of gasoline. Approximately 390 cubic yards of contaminated soils were removed and a soil vapor extraction (SVE) system was installed. The SVE system operated from 1995 until 1999, removing a total of 4,910 pounds of contamination from the soil. The records indicate that contaminant concentrations in groundwater have shown a steady decreasing trend and are below standards in the downgradient wells. In December 2004 a Sensitive Receptor Survey report was submitted to NYSDEC; it was approved by the NYSDEC in January 2005. NYSDEC closed the spill case on September 28, 2005. Due to its proximity to the AAFE Site and the presence of seven gasoline USTs at the property, the Mobil Service Station is considered a REC.

- Historical uses of the surrounding properties include auto repair facilities, gas stations, a film processing facility, a medical instrument manufacturer, and a machine shop. Undocumented releases from these facilities may have impacted the Site conditions. Historical uses of the surrounding properties as described above are considered RECs.

1.2.3 On-Site and Off-Site Environmental Concerns

The following environmental concerns were identified during the TAMS Phase I ESA Update:

- The vents for the gasoline USTs located at the Mobil Service Station are located near the shared property line. During fuel deliveries, emissions from the vents have the potential to affect indoor air quality at the Site.

- TAMS' Site inspection revealed the presence of fluorescent light ballasts throughout the building. Based on the age of the building (constructed circa 1951), fluorescent light fixtures may have PCB-containing ballasts and they are considered an environmental concern.

- Based on the observation of suspect asbestos containing material (ACM) in the building, the presence of ACM at the Site is an environmental concern.

- During the Site inspection, TAMS observed numerous exterior painted surfaces (i.e., walls, doors, door frames, and window frames), which may be original components of the building. Based on the age of the building (constructed circa 1951), it is possible that the painted surfaces may contain lead and lead based paint (LBP) is considered an environmental concern.

Recommendations to address the environmental concerns noted above are presented in the TAMS Phase I ESA Update.

2.0 SITE SETTING

2.1 Site Description

The Site is located at 133-04 39th Avenue, Queens, Queens County, New York 11354; identified as Block 4973, Lot 6 and designated as zone C4-2 by the Queens County Tax Assessors Records. The Site occupies an approximately 15,000-square foot irregularly shaped lot that is improved with an asphalt-paved parking lot and a one-story building. The Site is currently owned by AAFE and is situated in an area characterized predominantly by commercial and residential use.

The Site building is a one-story cinderblock structure on a concrete slab with a flat roof. Historically, the Site was developed with a residence until the existing building was constructed circa 1951. The building is designated as occupancy code O9 (Office Building) by the New York City Department of Buildings (NYCDOB). From circa 1951 to 1956, the Site was used for furniture sales. From circa 1956 to 2001, the Site was used for automotive repairs. From 2001 to 2003, the Site was used for furniture sales. In 2003, AAFE acquired the Site and since that time the Site has been utilized as a community center. Extensive renovations have been performed within the building to convert the former automotive repair and furniture sales space into office spaces and classrooms. The heating for the building is provided by electric space heaters. The Site is also served by public utilities (i.e., electric, sewer).

The Site is bounded by 39th Avenue to the north; a three story mini-mall containing hair salons, accounting offices, an ink stamp and trophy store, and other offices to the east; a Mobil Service Station to the south; and College Point Boulevard to the west. A British Petroleum gasoline station, an "Asian Food Market" and a former Enterprise rental car office are located west of the Site, across College Point Boulevard. A residential apartment building and the Flushing Mall are located to the north of the Site across 39th Avenue.

2.2 Site Physical Characteristics

2.2.1 Topography

Based on a review of the United States Geological Survey (USGS) 7.5-Minute Quadrangle Map, Flushing, NY, dated 1966 (photorevised 1979), the elevation of the Site is approximately 40 feet above mean sea level (amsl). The topography of the immediate Site area was observed to gently slope to the west. A copy of the topographic map is presented in *Figure 1*.

2.2.2 Geology and Soils

The geology of the Site area is expected to consist of Upper Pleistocene glacial drift deposits (such as till, lacustrine deposits, and outwash sand and gravel) overlying Late Cretaceous deposits from the Raritan formation (Soren, 1978). The glacial outwash deposits have a maximum thickness of 300 feet and consist of the Jameco Gravel of pre-Sangamon age and the Gardiners Clay of Sangamon age.

The Raritan formation consists of two (2) members: the Lloyd Sand Member and the Clay Member (Perlmutter, 1953). The Lloyd Sand Member is composed of very fine to very coarse quartzose sand,

granule to medium-pebble gravel, and interbedded clay and clayey and silty sand. The Clay Member is composed of clay, silty clay, and clayey and silty fine sand. The depth to the Raritan formation near the Site is expected to be greater than 150 feet below grade (Soren, 1978).

The results of the subsurface soil investigation conducted outside of the building footprint and former 550-gallon UST area identified the Site as being underlain with native materials from the ground surface consisting of medium to fine sand, interbedded with dense silts layers to a depth of 50 ftbg. In the vicinity of the former 550-gallon UST excavation area, the soils consisted of fill material (sand with some silt) to a depth of 18 ftbg. Beneath the Site building the fill material layer ranges from 2-15 ftbg. At boring SB-07, a layer of imported fill material consisting of what is believed to be coke was observed from 10 to 12.8 ftbg.

2.2.3 Hydrology

The upper glacial aquifer is the uppermost hydrogeologic unit in this area of Queens County. This unit consists of glacial outwash deposits comprised of silt, sand, and gravel with non-continuous clay members. The outwash deposits are highly permeable, with horizontal hydraulic conductivities being estimated at up to 270 feet per day (Franke and Cohen, 1972). Thickness of the upper glacial aquifer in the area of the Site is estimated to be in excess of 150 feet (Soren, 1978). Groundwater was encountered approximately 39 ftbg at the Site and is inferred to flow to the west toward Flushing Creek.

3.0 DESCRIPTION OF PHASE II FIELD ACTIVITES

Based on the approved Phase II ESI Proposal/Scope of Work dated October 4, 2006, Berger completed a focused subsurface investigation on November 4-7, 2006 to address the RECs identified at the Site in the Phase I ESA Update prepared by TAMS and dated September 11, 2006. The field activities included the following:

- Geophysical Survey: To identify the former location of a 550-gallon UST, investigate the potential presence of suspect on-site UST and to clear areas in the vicinity of proposed soil boring locations from subsurface structures and utilities.

- Subsurface Soils Investigation: Advancement of three deep borings (SB-01 through SB-03) to characterize subsurface soil conditions and assess groundwater quality vis-à-vis off-site sources; advancement of six (6) borings (SB-04 through SB-09) beneath the existing Site building to assess whether the historic usage of the Site as an automobile repair facility has impacted subsurface soils; and advancement of five (5) borings (SB-10 through SB-14) to assess the potential presence of residual contamination from the location of the former 550-gallon UST that was excavated and removed in 1995.

- Groundwater Investigation: Three (3) groundwater samples (TWP-01 through TWP-03) were collected to assess the Off-Site RECs.

- Sub-Slab Soil Vapor Survey: Collection of three (3) sub-slab vapor samples for laboratory analysis from beneath the existing Site building assess whether the historic usage of the Site as an automobile repair facility and the Off-Site RECs have impacted subsurface soil vapor.

The scope and methods used for the various field activities are documented below.

3.1 Geophysical Survey

A geophysical survey was performed on November 2, 2006, by NAEVA Geophysics, Inc. (NAEVA) of Congers, New York. The geophysical survey was performed to identify the former location of a 550-gallon UST that was removed in October 1995, locate a suspect UST identified by the owner, and to clear proposed soil boring locations of subsurface obstructions (including utilities). The areas of the Site not covered by the building were scanned using an electromagnetic (EM) scanning system followed by a scan with the ground penetrating radar (GPR). To clear proposed soil boring locations within the building, buried utilities was identified using a radio trace method. Any areas where the geophysical survey identified subsurface structures or utilities located in the vicinity of the proposed soil borings locations, the locations were relocated to avoid conflict.

A survey grid was established across the Site and EM data was collected in a "snakelike" manner at 5-foot intervals along the grid. The GPR data was collected in all areas where significant EM anomalies were present. Reconnaissance GPR profiles were completed in various orientations and lengths to determine the general characteristics of the subsurface. In addition, NAEVA generated a figure with Site attributes, identified utilities and sample locations.

3.2 Subsurface Soils Investigation

Subsurface soil sampling was conducted on November 4-7, 2006. Soil samples were collected at targeted locations to assess the RECs identified during the Phase I ESA Update. Aquifer Drilling and Testing, Inc. (ADT), of Maspeth, New York, was the drilling contractor. *Figure 3* presents the soil sample locations. A description of the soils retained in each soil sample (by split spoon or Macrocore sampler) was logged by a qualified scientist and the soils were screened in the field for the presence of VOCs with a photo ionization detector (PID). PID screening was performed by placing soils into an air tight bag to allow potential volatiles to collect in the head space and then screening with a PID. Field screening was also performed by visual and olfactory observation for evidence of impacts. Upon completion of drilling, each soil boring was backfilled with the drill cuttings. A cement grout mixture was used as a surface seal at soil boring locations within the building. Exterior borings were patched with asphalt to match surrounding conditions. Soil boring SB-03 was installed in an unpaved area that did not require patching.

For Quality Assurance/Quality Control (QA/QC) purposes, one field duplicate soil sample and one rinsate blank were collected and analyzed for Target Compound List (TCL) VOCs, TCL Semi-Volatile Organic Compounds (SVOCs), Target Analyte List (TAL) metals, and PCBs. Trip blanks for soil analysis are not required. The soil samples were collected, properly cooled and packaged to prevent breakage, and forwarded via courier to Accutest of Dayton, New Jersey, which is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory. Standard chain-of-custody procedures were followed.

The following sections describe the subsurface soils investigation with the associated RECs (e.g., Off-Site RECs, Site Building, and Former UST):

Off-Site RECs

To address potential off-site RECs, three soil boring/temporary well points were advanced. Two (2) soil borings (SB-01 and SB-02) were installed in the northeastern portion of the Site to characterize subsurface soil conditions and assess groundwater quality in the presumed hydraulically upgradient portion of the Site using a hollow stem auger drill rig. Soil boring (SB-03) was installed in the southwestern portion of the Site to assess whether contamination from the adjacent Mobil Service Station has migrated via groundwater on to the Site using a Geoprobe. Soil borings SB-01, SB-02, and SB-03 were advanced to depths of 50, 49 and 50 ftbg, respectively.

Split spoon soil samples were collected continuously from the ground surface to 50 ftbg in SB-01 and from 5 ftbg to 49 ftbg in SB-02. The split spoons were decontaminated between sampling events using a water and alconox soap bath and then rinsed with water. Due to equipment access issues, SB-03 which was originally to be installed with a hollow stem auger was advanced using a Geoprobe with Macrocore samples collected continuously from the ground surface to 50 ftbg.

One soil sample was collected from the unsaturated soil/groundwater interface in soil borings SB-01 through SB-03. Soil samples were analyzed for Target Compound List (TCL) VOCs, TCL Semi-Volatile Organic Compounds (SVOCs), Target Analyte List (TAL) metals, and PCBs.

Site Building

Six (6) soil borings (SB-04 through SB-09) were installed inside the existing building to assess whether the historic usage of the Site as an automobile repair facility has impacted subsurface soils. In order to

install the six interior soil borings (SB-04 through SB-09), concrete coring through the existing slab was done to access the soils beneath the building. Direct push drilling methods utilizing a Geoprobe rig were used to retrieve soil samples from the borings SB-04, SB-05, SB-07 using 5-foot long, 2-inch diameter Macrocores lined with acetate sleeves that were advanced continuously from grade to the depth of 16, 16 and 15 ftbg, respectively. Due to equipment access issues, soil borings SB-06, SB-08 and SB-09 were all advanced to a depth of eight ftbg using a hand-held jack-hammer with Geoprobe rod attachments. To minimize the damage to the building's interior, plywood was placed underneath Geoprobe track rig. In addition, minimal cutting of the existing carpet was performed in order to access the concrete slab and the desired sampling locations. A cement grout mixture was used as a surface seal at soil boring locations within the building. Exterior borings were patched with asphalt to match surrounding conditions.

Two (2) soil samples were collected from each of soil borings SB-04 through SB-09. One sample was collected from the 6-inch interval directly beneath the concrete slab and one sample was collected from the depth interval corresponding to the greatest contaminant impacts (identified through field observations and screening) or, in the absence of contamination, from the deepest sample depth interval. Two impacted zones were noted at SB-07 and therefore, three samples were collected. Soil samples were analyzed for TCL VOCs, TCL SVOCs, TAL metals, and PCBs.

Former UST

Five (5) soil borings (SB-10 through SB-14) were installed in the western portion of the Site to assess the potential presence of residual contamination from the location of 550-gallon UST that was excavated and removed in 1995. Direct push drilling methods utilizing a Geoprobe rig were used to retrieve soil samples from the borings SB-10, SB-11, SB-12, SB-13 and SB-14 which were all installed to depth of 20 ftbg. Samples were retrieved using 5-foot long, 2-inch diameter Macrocores lined with acetate sleeves that were advanced continuously from grade to the depth of the soil boring.

Soil samples were collected from boring SB-11 at the depth of 11-12 ftbg; from boring SB-12 at the depth of 15-16 ftbg; and, from boring SB-13 at the depths of 11-12 and 19-20 ftbg. The samples reflect the interval corresponding to the depth of reported low level impacts when the tank was removed in 1995. Soil borings SB-10 and SB-14 were field screened and the soils described from ground surface to boring termination. Soil samples were analyzed for TCL VOCs, TCL SVOCs, TAL metals, and PCBs.

Waste Characterization

For waste characterization purposes, soil samples were collected from areas of the Site expected to be excavated to facilitate the construction of a new building which would include a basement. Two samples were collected from fill materials and one was collected from undisturbed "native" material.

Soil boring SB-06 contained fill material to the termination depth of 8 ftbg and soil boring SB-13 contained fill from 0-20 ftbg. A total of three soil samples were collected. The composite samples were collected by taking soil retrieved with the Macrocores and mixing them in stainless steel bowls using stainless steel utensils. The bowls and utensils were then decontaminated using a deionized water and alconox soap bath and then rinsed with deionized water. The composite soil sample from SB-06 was collected from 0-8 ftbg and the composite soil samples from SB-13 were collected from 0-15 ftbg and 15-20 ftbg. The grab VOC samples were collected from 7.5-8 ftbg in SB-06 and from 11-12 ftbg and 19-20 ftbg in SB-13.

The grab samples were analyzed for TCL VOCs and the composite samples were analyzed for TCL SVOCs, Resource Conservation and Recovery Act (RCRA) metals, PCBs, and RCRA characteristics (e.g., ignitability, corrosivity, reactivity, and toxicity).

3.3 Groundwater Investigation

The drilling contractor (ADT) installed Temporary Well Points (TWPs) at SB-01 (TWP-01), SB-02 (TWP-02) and SB-03 (TWP-03) by advancing 2" diameter PVC casing with 20-foot screened interval from 30 to 50 ftbg. Groundwater sampling was completed on November 4-6, 2006. Groundwater samples were collected to assess the Off-Site RECs identified during the Phase I ESA Update. The groundwater samples were collected using a dedicated bailer. Field observations indicated that sample turbidity was high, reflecting the entrainment of sediment in the samples. The laboratory analyzed the groundwater samples for TCL VOCs, TCL SVOCs, TAL metals, and PCBs.

Laboratory analyses were performed in accordance with USEPA Publication SW-846. The samples were collected, properly cooled and packaged to prevent breakage, and forwarded via courier to Accutest of Dayton, New Jersey, which is a NYSDOH ELAP-certified analytical laboratory. Standard chain-of-custody procedures were followed.

3.4 Sub-Slab Soil Vapor Survey

As part of the Phase II ESI, a sub-slab vapor survey was completed on November 7, 2006, to determine if VOCs from on-site or off-site RECs identified during the Phase I ESA Update have impacted the Site. Three soil vapor samples (SV-01, SV-02, and SV-03) were collected as part of the sub-slab vapor survey. The investigation was performed according with protocols outlined in the document entitled, NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 17, 2006 (NYSDOH Guidance). Sub-slab vapor sample locations are shown on *Figure 3*.

ADT of Maspeth, New York performed the concrete coring. Sub-slab vapor sampling was completed through coring the basement floor slab (approximately six inches in thickness), followed by the advancing of a one-half inch steel hammer drill to a depth of two inches below the basement floor slab. Once the desired depth was reached, the drill point was removed from the borehole. Dedicated polyethylene tubing was inserted into the top two inches of soil beneath the floor slab. The borehole was then sealed at grade with beeswax to prevent ambient air from being drawn into the sample. The above-grade end of the polyethylene tubing was attached to the low-flow peristaltic pump and a sufficient amount of air was evacuated from the soil to confirm that free flow of sub-slab vapor was taking place. A PID measurement was taken; then a one-hour sampling period was initiated with a flow rate of approximately 0.1 liters per minute. The sub-slab vapor samples were collected utilizing SUMMA Canisters. Upon completion of sampling, each borehole was patched at the surface with concrete.

After collection, the SUMMA Canisters were submitted for analysis to Severn Trent Laboratories Burlington (STL Burlington) of Colchester, Vermont, a NYSDOH ELAP certified laboratory and analyzed using United States Environmental Protection Agency (USEPA) Method TO-15. Samples were analyzed for the list of TO-15 organic compounds presented in Table A-1. Standard chain-of-custody procedures were followed.

3.5 Investigation-Derived Waste Management and Disposal

All investigation derived waste (IDW), which consisted of soil cuttings generated during hollow stem drilling operations, was temporarily stored on-site in steel 55-gallon drums. The field team leader was in communication with the Site owner to determine the appropriate location for the storage of the drums. All drums were clearly labeled with the date, location, well/boring number, and contents. The hollow stem auger drilling operations generated a total of two (2) drums of soil cuttings. The drums were picked up on December 15, 2006 by Clean Venture of Elizabeth, New Jersey. See *Appendix E* for copies of the Bills of Lading associated with the waste pickup.

Waste classification sampling was not necessary as analytical results from soil samples collected from these boring locations were sufficient for classification. Based on the sampling results, the soil waste was classified as non-hazardous excavated material. The removal of drummed IDW soil cuttings from the Site was performed in an expeditious manner and was transported and disposed of in accordance with federal, state and local regulations.

4.0 DISCUSSION OF PHASE II FINDINGS

This section discusses the analytical data and findings for the activities discussed in Section 3.0. Tabulated laboratory results are presented in *Appendix B*. Complete analytical data reports are included in *Appendix C*.

4.1 Geophysical Survey Findings

The results of the geophysical survey identified the tank excavation location for the former 550-gallon UST. The results did not identify the presence of the suspect UST identified by the owner. The geophysical survey identified the locations of subsurface utilities. Proposed soil boring locations were cleared of subsurface utilities. The geophysical map prepared by NAEVA is presented in *Appendix D*.

4.2 Subsurface Soil Sampling Findings

New York State has not promulgated soil standards, but Recommended Soil Cleanup Objectives (RSCOs) have been established under the NYSDEC Technical and Administrative Guidance Memorandum HWR-4046 (TAGM) Determination of Soil Cleanup Objectives and Cleanup Levels," dated January 1994 and amended December 20, 2000. Additionally, Soil Cleanup Objectives (SCOs) have been established to permit unrestricted use (Track 1) under 6 NYCRR Part 375 (Part 375 Track 1 SCOs). The unrestricted use soil cleanup objectives represent the concentration of a contaminant in soil which, when achieved at a site, will require no use restrictions on the site for the protection of public health, groundwater and ecological resources due to the presence of contaminants in the soil. Soils analytical results were compared to the TAGM RSCOs and Part 375 Track 1 SCOs. The results of the metals analysis were also compared to the Eastern USA Soil Background concentrations included in TAGM. Soil boring logs are presented in *Appendix A*.

4.2.2 Volatile Organic Compounds (VOCs)

Off-Site RECs and Former UST

Laboratory analytical results did not indicate detectable concentrations of TCL VOCs in subsurface soils that exceed TAGM RSCOs or Part 375 Track 1 SCOs in soil borings advanced for Off-Site RECs or the former UST.

Site Building

Based on field observations, evidence of petroleum impacted soil (e.g., odor, stained soil, and PID responses) were noted in boring SB-07 beneath the concrete slab. Based on the presence of this petroleum impacted soil beneath the slab, a reportable condition as per Navigation Law Article 12; 17 NYCRR 32.3 and 32.4 is present. At boring SB-07, a layer of imported fill material consisting of what is believed to be coke was observed at the end of the boring from 10 to 12.8 ftbg. Boring SB-04 also contained a trace amount of this material directly beneath the concrete slab. Table 1 presents a summary of the observations and PID readings noted.

Table 1 Summary of Impacted Soil Based on Observations and PID Readings

SOIL BORING	PID LEVELS (PPM)	IMPACTED DEPTH INTERVAL (ftbg)	OBSERVATIONS
SB-07	177	0.8-1.3	Fill, odor, and staining
SB-07	89.1	1.5-3	Fill, odor
SB-07	123	5-5.2	Fill, odor
SB-07	13.4	5.2-7	Fill
SB-07	68.2	10-12.8	Fill, odor, coke
SB-04	0	0.3-0.8	Fill, coke

PPM – parts per million

The laboratory analytical results detected acetone, 2-butanone (MEK) and xylene (total) in soil sample SB-07 (0.8-1.3 feet) at concentrations above the Part 375 Track 1 SCOs. Acetone was also detected at SB-07 (5-7) and SB-07 (15-16) at concentrations above the Part 375 Track 1 SCO. No other detected concentrations of the TCL VOCs exceed TAGM RSCOs or Part 375 Track 1 SCOs.

A summary of the analytical results for the TCL VOC analysis is presented in Table A-2 of *Appendix B*. Table 2, below, summarizes the detected VOC concentrations in soil exceeding applicable criteria.

Table 2 Detected TCL VOC Concentrations in Soil Exceeding Applicable Criteria

Sample Identification	Compound	Concentration (mg/kg)	TAGM RSCO (mg/kg)	Part 375 Track 1 SCO (mg/kg)
SB-07 (0.8-1.3 feet)	acetone	0.318	0.2	0.05
	2-butanone (MEK)	0.176	0.3	0.12
	xylene (total)	1.13	1.2	0.26
SB-07 (5-7 feet)	acetone	0.0961	0.2	0.05
SB-07 (15-16 feet)	acetone	0.0767	0.2	0.05

Notes:
mg/kg – milligrams per kilogram
Shading – Concentration exceeds TAGM RSCO
Border – Concentration exceeds Part 375 Track 1 SCO

4.2.3 Semi-Volatile Organic Compounds (SVOCs)

Off-Site RECs

Laboratory analytical results for SB-01 through SB-03 did not indicate detectable concentrations of TCL SVOCs in subsurface soils that exceed TAGM RSCOs or Part 375 Track 1 SCOs in soil borings advanced for Off-Site RECs.

Site Building

The laboratory analytical results detected of the SVOCs 2-methylnaphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and naphthalene beneath the Site building at concentrations above the TAGM RSCOs. Exceedances of TAGM RSCOs were detected at SB-04 (0.4-0.9), SB-06 (0.5-1.0), SB-07 (0.8-1.3), SB-08 (0.4-0.9) and SB-09 (0.5-1.0). The results revealed that the detected concentrations of SVOCs that exceed TAGM RSCOs were present beneath the existing building within 1.3 ftbg. Naphthalene was detected at SB-07 (0.8-1.3) at a concentration that exceeds the Part 375 Track 1 SCO. The detected concentration of SVOCs in these soil samples is attributed to the previous usage as an auto repair facility.

Former UST

SVOC analytical results of SB-11, SB-12 and SB-13 indicated that benzo(a)pyrene was the only compound detected at a concentration that marginally exceeds the TAGM RSCO. However the concentration of benzo(a)pyrene is below the Part 375 Track 1 SCO.

A summary of the analytical results for TCL SVOC analysis is presented in Table A-3 of *Appendix B*. Table 3, below, summarizes the detected SVOC concentrations in soil exceeding applicable criteria.

Table 3 Detected TCL SVOC Concentrations in Soil Exceeding Applicable Criteria

Sample Identification	Compound	Concentration (mg/kg)	TAGM RSCO (mg/kg)	Part 375 Track 1 SCO (mg/kg)
SB-04 (0.4-0.9 feet)	benzo(a)pyrene	0.128	0.061	1
	dibenz(a,h)anthracene	0.0376 J	0.014	0.33
SB-06 (0.5-1.0 feet)	benzo(a)pyrene	0.154	0.061	1
	dibenz(a,h)anthracene	0.0478 J	0.014	0.33
SB-07 (0.8-1.3 feet)	2-methylnaphthalene	66	36.4	NS
	naphthalene	13.7	13	12
SB-08 (0.4-0.9 feet)	benzo(a)athracene	0.42	0.224	1
	benzo(a)pyrene	0.353	0.061	1
	benzo(b)fluoranthene	0.368	0.22	1

Sample Identification	Compound	Concentration (mg/kg)	TAGM RSCO (mg/kg)	Part 375 Track 1 SCO (mg/kg)
	benzo(k)fluoranthene	0.28	0.22	0.8
	chrysene	0.421	0.4	1
	dibenz(a,h)anthracene	0.0955	0.014	0.33
SB-09 (0.5-1.0 feet)	benzo(a)pyrene	0.087 J	0.061	1
	dibenz(a,h)anthracene	0.0294 J	0.014	0.33
SB-13 (11-12 feet)	benzo(a)pyrene	0.0776	0.061	1

Notes:
mg/kg – milligrams per kilogram
J – Analyte detected below the quantitation limit
- None of the detected concentrations of SVOCs exceed the Part 375 Track 1 SCO.
Shading – Concentration exceeds TAGM RSCO
Border – Concentration exceeds Part 375 Track 1 SCO

4.2.4 Target Analyte List (TAL) Metals

Off-Site RECs

Soil sample results from SB-01, SB-02 and SB-03 revealed concentrations of chromium, iron and zinc in excess of the TAGM RSCO. SB-02 and SB-03 also contained nickel concentrations in excess of the TAGM RSCO. Only chromium in SB-02 was found to be above the Part 375 Track 1 SCOs. However, none of the detected concentrations were above the Eastern USA Soil Background concentration.

Site Building

Soil sample results from SB-04 through SB-09 revealed concentrations of barium, chromium, copper, mercury, nickel, and zinc in excess of the TAGM RSCOs and Part 375 Track 1 SCOs. Lead was detected at concentrations that exceed the Part 375 Track 1 SCO. Additionally, four of the lead concentrations are above the Eastern USA Background Soil concentration. The concentrations of metals in subsurface soils located directly beneath the existing building are possibly attributed to the previous usage as an auto repair facility or fill material placed at the Site.

Former UST

Soil sample results from SB-11, SB-12, SB-12 (DUP) and SB-13 revealed concentrations of chromium, iron, nickel and zinc in excess of the TAGM RSCO. Chromium concentrations from all four samples were found to be above the Part 375 Track 1 SCOs but below the Eastern USA Soil Background concentrations. Nickel concentrations in all four samples were found to be above both the Part 375 Track 1 SCOs and the Eastern USA Soil Background concentrations. In addition, Zinc in SB-11 was found to be above Eastern USA Soil Background concentration but below the Part 375 Track 1 SCOs.

Table 4, below, summarizes the detected metal concentrations in soil exceeding applicable criteria. A summary of the analytical results for the metals analysis is presented in Table A-4 of *Appendix B.*

Table 4 Detected Metals Concentrations in Soil Exceeding Applicable Criteria

Sample Identification	Compound	Concentration (mg/kg)	TAGM RSCO (mg/kg)	Part 375 Track 1 SCO (mg/kg)	Eastern Soil Background Concentration (mg/kg)
SB-01 (34-36 feet)	chromium	17.4	10 or SB	30	1.5 – 40
	iron	17,100	2,000 or SB	NS	2,000 – 55,000
	zinc	27.2	20 or SB	109	50
SB-02 (35-39 feet)	chromium	38.1	10 or SB	30	1.5 – 40
	iron	20,300	2,000 or SB	NS	2,000 – 55,000
	nickel	17.9	13 or SB	30	0.5 – 25
	zinc	46.7	20 or SB	109	50
SB-03 (34-35 feet)	chromium	29.6	10 or SB	30	1.5 – 40
	iron	16,500	2,000 or SB	NS	2,000 – 55,000
	nickel	20.3	13 or SB	30	0.5 – 25
	zinc	29.6	20 or SB	109	50
SB-04 (0.4-0.9 feet)	chromium	19.7	10 or SB	30	1.5 – 40
	copper	27.2	25 or SB	50	1 – 50
	iron	15,400	2,000 or SB	NS	2,000 – 55,000
	mercury	0.39	0.1 or SB	0.18	0.001 – 0.2
	nickel	17.5	13 or SB	30	0.5 – 25
	zinc	78.6	20 or SB	109	50
SB-04 (15-16 feet)	chromium	27.6	10 or SB	30	1.5 – 40
	copper	25.6	25 or SB	50	1 – 50
	iron	19,500	2,000 or SB	NS	2,000 – 55,000
	nickel	23.9	13 or SB	30	0.5 – 25
	zinc	30.1	20 or SB	109	50
SB-05 (0.6-1.1	chromium	20.6	10 or SB	30	1.5 – 40

Sample Identification	Compound	Concentration (mg/kg)	TAGM RSCO (mg/kg)	Part 375 Track 1 SCO (mg/kg)	Eastern Soil Background Concentration (mg/kg)
feet)	copper	27.5	25 or SB	50	1 – 50
	iron	20,900	2,000 or SB	NS	2,000 – 55,000
	lead	808	SB	63	200-500*
	mercury	0.6	0.1 or SB	0.18	0.001 – 0.2
	nickel	17.6	13 or SB	30	0.5 – 25
	zinc	149	20 or SB	109	50
SB-05 (15-16 feet)	chromium	33.4	10 or SB	30	1.5 – 40
	iron	29,600	2,000 or SB	NS	2,000 – 55,000
	nickel	21.9	13 or SB	30	0.5 – 25
	zinc	56.6	20 or SB	109	50
SB-06 (0.5-1.0 feet)	barium	432	300 or SB	350	15 – 600
	chromium	20.7	10 or SB	30	1.5 – 40
	copper	73.1	25 or SB	50	1 – 50
	iron	14,300	2,000 or SB	NS	2,000 – 55,000
	lead	582	SB	63	200-500*
	mercury	0.23	0.1 or SB	0.18	0.001 – 0.2
	nickel	17.5	13 or SB	30	0.5 – 25
	zinc	233	20 or SB	109	50
SB-06 (7-8 feet)	chromium	24.1	10 or SB	30	1.5 – 40
	iron	18,100	2,000 or SB	NS	2,000 – 55,000
	nickel	15.8	13 or SB	30	0.5 – 25
	zinc	31.5	20 or SB	109	50
SB-07 (0.8-1.3 feet)	chromium	37.5	10 or SB	30	1.5 – 40
	iron	28,500	2,000 or SB	NS	2,000 – 55,000

Sample Identification	Compound	Concentration (mg/kg)	TAGM RSCO (mg/kg)	Part 375 Track 1 SCO (mg/kg)	Eastern Soil Background Concentration (mg/kg)
	manganese	5,540	NS	NS	100 – 5,000
	mercury	0.12	0.1 or SB	0.18	0.001 – 0.2
	nickel	19.7	13 or SB	30	0.5 – 25
	zinc	48.6	20 or SB	109	50
SB-07 (5-7 feet)	chromium	12.6	10 or SB	30	1.5 – 40
	iron	8,020	2,000 or SB	NS	2,000 – 55,000
	zinc	27.1	20 or SB	109	50
SB-07 (15-16 feet)	chromium	29.8	10 or SB	30	1.5 – 40
	iron	4,570	2,000 or SB	NS	2,000 – 55,000
SB-08 (0.4-0.9 feet)	arsenic	7.7	7.5 or SB	13	3 – 12
	berylium	0.65	0.16 or SB	7.2	0 – 1.75
	chromium	21.8	10 or SB	33	1.5 – 40
	copper	50.5	25 or SB	50	1 – 50
	lead	1,170	SB	63	200-500*
	mercury	0.49	0.1 or SB	0.18	0.001 – 0.2
	nickel	19.4	13 or SB	30	0.5 – 25
	zinc	255	20 or SB	109	50
SB-08 (7-8 feet)	chromium	27.7	10 or SB	30	1.5 – 40
	nickel	18.1	13 or SB	30	0.5 – 25
	zinc	33.7	20 or SB	109	50
SB-09 (0.5-1.0 feet)	chromium	25.6	10 or SB	30	1.5 – 40
	copper	29.3	25 or SB	50	1 – 50
	lead	614	SB	63	200-500*
	mercury	0.27	0.1 or SB	0.18	0.001 – 0.2

Sample Identification	Compound	Concentration (mg/kg)	TAGM RSCO (mg/kg)	Part 375 Track 1 SCO (mg/kg)	Eastern Soil Background Concentration (mg/kg)
	nickel	19.9	13 or SB	30	0.5 – 25
	zinc	135	20 or SB	109	50
SB-09 (7-8 feet)	chromium	23.7	10 or SB	30	1.5 – 40
	nickel	13.6	13 or SB	30	0.5 – 25
	zinc	30.1	20 or SB	109	50
SB-11 (11-12 feet)	chromium	38.5	10 or SB	30	1.5 – 40
	nickel	36.9	13 or SB	30	0.5 – 25
	zinc	62.7	20 or SB	109	50
SB-12 (15-16 feet)	chromium	32.8	10 or SB	30	1.5 – 40
	nickel	50	13 or SB	30	0.5 – 25
	zinc	31.1	20 or SB	109	50
SB-13 (11-12 feet)	chromium	33.5	10 or SB	30	1.5 – 40
	nickel	51.8	13 or SB	30	0.5 – 25
	zinc	31.1	20 or SB	109	50
DUP-01/SB-12	chromium	31.1	10 or SB	30	1.5 – 40
	nickel	44.1	13 or SB	30	0.5 – 25
	zinc	28.1	20 or SB	109	50

Notes:
mg/kg – milligrams per kilogram
SB – Site Background
Shading – Concentration exceeds TAGM RSCO
Border – Concentration exceeds Part 375 Track 1 SCO
Underline – Concentration exceeds Eastern Soil Background Concentration
* - Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4 – 61ppm. Average areas in metropolitan or suburban areas or near highways are much higher and typically range from 200 – 500 ppm.

4.2.5 Polychlorinated Biphenyls (PCBs)

The laboratory results indicate that no detectable concentrations of PCBs were present in the soil samples. A summary of the analytical results for PCB analysis is presented in Table A-5 of *Appendix B*.

4.2.6 Waste Characteristics

Three (3) samples (one from fill material at SB-13, one from native material at SB-13, and one from fill material at SB-6) were analyzed for USEPA RCRA hazardous waste characteristics of corrosivity, ignitability, reactivity, and toxicity. The results of the analyses indicate that the soil does not exhibit evidence of hazardous waste characteristics. These three (3) samples were also analyzed for VOCs, SVOCs, metals, pesticides and herbicides via the Toxicity Characteristic Leaching Procedure (TCLP) and compared to the RCRA Standard for Characteristic Hazardous Waste. All analytes were found to be below the RCRA standard. Furthermore, all analytes were non-detect except for cadmium, chromium and lead. A summary of the waste characteristics analyses is presented in Table A-6 of *Appendix B*.

4.3 Groundwater

Groundwater sample results were compared against the NYSDEC Class GA Groundwater Standards and Guidance Values referenced in TOGS. The TOGS criteria are guidelines that NYSDEC uses as reference values for groundwater.

4.3.1 Volatile Organic Compounds (VOCs)

The laboratory results indicate that detected concentrations of acetone, cis-1,2-dichloroethene, and trichloroethene (TCE) were present in the groundwater samples collected. TCE was detected at a concentration of 9.2 micrograms per liter (ug/L) in TWP-01 and 9.3 ug/L in TWP-02 which is above the NYSDEC Class GA Groundwater Standard of 5 ug/L. The remaining detected concentrations do not exceed NYSDEC Class GA Groundwater Standards and Guidance Values. No other VOCs were detected in the groundwater samples. Toluene was detected at a concentration of 0.83 ug/L in the RB/SB-1 and is attributed to laboratory handling. A summary of the TCL VOC results is presented in Table A-7 of *Appendix B*. Table 5, below, summarizes the detected TCE concentrations in groundwater exceeding the NYSDEC Class GA Groundwater standard.

Table 5 Detected Concentrations of TCE in Groundwater Exceeding Applicable Criteria

Sample Identification	Concentration (ug/L)	NYSDEC Class GA Groundwater Standards or Guidance Values (ug/L)
TWP-01	9.2	5
TWP-02	9.6	5

Notes:
ug/L – micrograms per liter

4.3.2 Semi-Volatile Organic Compounds (SVOCs)

The laboratory analytical results revealed concentrations of bis(2-ethylhexyl)phthalate in groundwater samples TWP-02 and RB/SB-01, however, the detected concentrations did not exceed the NYSDEC

Class GA Groundwater standard or guidance value of 5 ug/L. No other TCL SVOCs were detected in the groundwater samples. A summary of the analytical results for the TCL SVOC analysis is presented in Table A-8 of *Appendix B*.

4.3.3 Target Analyte List (TAL) Metals

The laboratory results revealed detected concentrations of antimony, barium, calcium, iron, magnesium, manganese, nickel, potassium, and silver were present in the filtered groundwater samples. Antimony (TWP-03), iron (TWP-02), magnesium (TWP-03), manganese (TWP-01, TWP-02, and TWP-03), and sodium (TWP-01, TWP-02, and TWP-03) were present at concentrations in excess of NYSDEC's Class GA Groundwater standards or guidance values. Table 6, below, summarizes the metals concentrations in groundwater exceeding the corresponding NYSDEC Class GA Groundwater Standards and Guidance Values. A summary of the TAL Metals results is presented in Table A-9 of *Appendix B*.

Table 6 Detected Metals in Groundwater Exceeding Applicable Criteria

Sample Identification	Compound	Concentration (ug/L)	NYSDEC Class GA Groundwater Standards or Guidance Values (ug/L)
TWP-01	manganese	1,240	300
	sodium	32,800	20,000
TWP-02	iron	618	300
	manganese	1,450	300
	sodium	25800	20,000
TWP-03	antimony	7.4	3
	magnesium	41,500	35,000
	manganese	1,440	300
	sodium	44,600	20,000

Notes:
ug/L – micrograms per liter

4.3.4 Polychlorinated Biphenyls (PCBs)

The laboratory results did not reveal detectable concentrations of PCBs in the groundwater samples. A summary of the analytical results for PCB analysis is present of Table A-10 of *Appendix B*.

4.4 Sub-Slab Vapor Findings

New York State has not promulgated sub-slab vapor standards, but the NYSDOH has established exposure guidelines, Air Guidance Values (AGVs) for indoor air quality. To evaluate concentrations of contaminants in sub-slab vapor, the analytical results were compared to the NYSDOH AGVs. Detected concentrations of VOCs present in the sub-slab vapor samples were compared to the background levels of VOCs in air (NYSDOH Fuel Oil 2003 Upper Limit, USEPA Building Assessment and Survey Evaluation [BASE] 90th Percentile Value, and Heath Effects Institute [HEI] Relationship of Indoor, Outdoor and Personal Air [RIOPA] 95th Percentile Value) published in the NYSDOH Guidance (NYSDOH Background Levels). A PID reading was collected from each sub-slab sampling location prior to sampling with SUMMA canisters. PID readings for each sub-slab vapor sample were less than one part per million.

The laboratory analytical results revealed detectable concentrations of VOCs in each of the sub-slab vapor samples collected. Table 8, below, summarizes the VOCs detected in sub-slab vapor samples. A summary of the analytical results for VOCs in sub-slab vapor samples is presented in Table A-11 of *Appendix B*.

The sub-slab vapor investigation identified PCE in all samples at concentrations ranging from 50 to 220 ug/m^3. The highest concentration of PCE was detected in SV-02 which is above the NYSDOH AGV of 100 ug/m^3. Each sub-slab vapor sample was detected above the NYSDOH Background Levels. TCE was detected at a concentration of 10 ug/m^3 in SV-02 and 59 ug/m^3 in SV-03 which are above the NYSDOH AGV of 5 ug/m^3 and above the NYSDOH Background Levels. Carbon tetrachloride was detected at a concentration of 12 ug/m^3 in SV-02 and 33 ug/m^3 in SVG-03 and 1,1,1-trichoroethane was detected at a concentration of 34 ug/m^3 in SV-03 which are above the NYSDOH Background Levels. The NYSDOH has not established AGV's for carbon tetrachloride and 1,1,1-trichloroethane.

The following constituents were detected in the sub-slab vapor samples collected at varying concentrations: 1,2,4-trimethylbenzene (12 – 25 ug/m^3), 1,3,5-trimethylbenzene (3.9 – 9.8 ug/m^3), benzene (2.1 – 3.0 ug/m^3), ethylbenzene (4.3 – 10 ug/m^3), toluene (14 – 27 ug/m^3), m- and p-xylene (13 – 30 ug/m^3), and o-xylene (5.2 – 13 ug/m^3). The NYSDOH has not established AGV's for these compounds. With the exception of benzene, these compounds were detected at concentrations that exceed the NYSDOH Background Levels.

The presence of elevated concentrations of sub-slab vapor may be attributed to the previous usage of the Site as an auto repair facility and/or from the Off-Site RECs. Based on the concentrations of these VOCs, there exists a potential for vapor intrusion at the current Site building.

Table 7 Detected VOCs in Sub-Slab Vapor Exceeding Applicable Criteria

VOCs	SG-01 (ug/m³)	SG-02 (ug/m³)	SG-03 (ug/m³)	NYSDOH Air Guideline Values (ug/m3)	NYSDOH Fuel Oil 2003 Upper Fence Limit (ug/m3) (1)		USEPA BASE Data 90% Percentile Value (ug/m3) (1)		HEI RIOPA 2005 95% Percentile Value (ug/m3) (1)	
					Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
1,1,1-Trichloroethane	2.6	5.3	34	NA	2.5	0.6	20.6	2.6	NA	NA
1,2,4-Trimethylbenzene	12	25	13	NA	9.8	1.9	9.5	5.8	NA	NA
1,3,5-Trimethylbenzene	4.2	9.8	3.9	NA	3.9	0.7	3.7	2.7	NA	NA
Benzene	2.1	2.7	3	NA	13	4.8	9.4	6.6	10	5.16
Carbon Tetrachloride	1.3 U	12	33	NA	1.3	1.2	<1.3	0.7	1.1	1
Ethylbenzene	4.3	10	8.7	NA	6.4	1	5.7	3.5	7.62	3.04
Methyl tert-Butyl Ether	1.8 U	2.7 U	9.4	NA	14	NA	11.5	6.2	36	22.1
Tetrachloroethene	50	220	81	100	2.3	0.7	15.9	6.5	6.01	3.17
Toluene	14	22	27	NA	57	5.1	43	33.7	39	NA
Trichloroethene	1.1 U	10	59	5	0.5	0.4	4.2	1.3	1.36	0.79
Xylene (m,p)	13	30	25	NA	11	1	22.2	12.8	22.2	10
Xylene (o)	5.2	13	10	NA	7.1	1.5	7.9	4.6	7.24	3.23

Notes:
U – Analyte not detected at method detection limit
NA – No AGV or NYSDOH Background Level established
Shading – Concentration exceeds NYSDOH AGV
Underline – Concentration exceeds NYSDOH, USEPA Base Data, HEI RIOPA 2005 Background Levels

4.5 Summary of Findings

The results of the Phase II ESI indicated the following:

Off-Site RECs

Trichloroethene (TCE) was detected above the NYSDEC Class GA Groundwater standard in two groundwater samples collected from the borings installed at SB-01 and SB-02. It is unknown whether concentrations of TCE at these locations can be attributed to historical on-site or off-site releases. Laboratory results revealed that detected concentrations of SVOCs did not exceed NYSDEC Class GA Standards and Guidance Values. Antimony, iron, magnesium, manganese and sodium were present in concentrations that exceed the NYSDEC Class GA Groundwater Standards and Guidance Values and are most likely attributed to natural conditions or anthropomorphic impacts to ground water. PCBs were not detected in groundwater samples collected.

Site Building

Based on field observations, evidence of petroleum impacted soil (e.g., odor, stained soil, and PID responses) were noted in boring SB-07 beneath the concrete slab. Based on the presence of this petroleum impacted soil beneath the slab, a reportable condition as per Navigation Law Article 12; 17 NYCRR 32.3 and 32.4 is present. The NYCSCA provided the Site owner with the details of the field observations and requested that they notify the NYSDEC.

At boring SB-07, a layer of imported fill material consisting of what is believed to be coke was observed at the end of the boring from 10 to 12.8 ftbg. Boring SB-04 also contained a trace amount of this material directly beneath the concrete slab.

Subsurface soils contain concentrations of VOCs, acetone and xylene (total) that are above the TAGM RSCOs and Part 375 Track 1 SCOs. The results of the subsurface soil sampling revealed that the soils beneath the existing building contain detected concentrations of SVOCs above their corresponding TAGM RSCO (including 2-methylnaphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and naphthalene). None of the detected concentrations of SVOCs exceed Part 375 Track 1 SCOs. Concentrations of barium, chromium, copper, mercury, nickel, and zinc were present in soil samples that exceed TAGM RSCOs and Part 375 Track 1 SCOs. Lead was detected at concentrations that exceed the Part 375 Track 1 SCO. Analytical results from the waste characterization sample SB-06 indicated the soil did not exhibit evidence of hazardous waste characteristics. The concentrations of metals in subsurface soils located directly beneath the existing building are possibly attributed to the previous usage as an auto repair facility or fill material placed at the Site.

Sub-slab vapor samples collected beneath the existing building indicate the presence of elevated concentrations of petroleum contaminants and chlorinated-based solvents. The detected concentrations are possibly attributed to the previous usage of the Site as an auto repair facility. Based on the concentrations of VOCs, there exists a potential for sub-slab vapor intrusion.

Former UST

To address the REC related to the former 550-gallon UST, a geophysical survey was used identify the excavation area, soil borings were advanced and samples collected to identify the potential presence of petroleum contaminated soils. In all, five (5) soil borings (SB-10 through SB-14) were installed within an asphalt-paved parking lot area to assess whether residual contamination existed at the location of the former 550-gallon UST that was removed in 1995. The results of the geophysical survey identified the tank excavation location of the former 550-gallon UST that was removed in 1995. Sampling results did not indicate petroleum impacts in this area, therefore the former 550-gallon UST is not considered to be a concern for the Site.

The geophysical survey was also used to attempt to locate the suspect UST identified by the Site owner. Based on the geophysical survey, there is no evidence of this suspect UST. As such, the presence or removal of any associated petroleum-impacted soils associated with the suspect UST is not a concern.

Table 8 Environmental Due Diligence Results Check List

Environmental Due Diligence Results Check List Proposed School Building Site			
Did the investigation identify contamination:	**Yes**	**No**	**Unknown**
On the Site that would be subject to regulatory oversight or potential responsible party liability?	✔ 1, 2		
On the Site or off-site that would represent an impact to a future school facility?		✔ 3	
On the Site or off-site that would represent an impact to future site development (construction) activities?	✔ 1, 2, 3		
On the Site that has impacted groundwater beneath the Site?			✔ 2
Additional questions:			
Will regulatory agencies require groundwater remediation at the Site?			✔ 2
Will ongoing environmental monitoring be necessary at the Site?			✔ 2

Notes:

1 – Petroleum impacted soil was present beneath the Site building and the detected concentrations of VOCs, SVOCs and metals in soils beneath the existing building and VOCs in sub-slab vapor are possibly attributed to the previous usage of the Site as an auto repair facility.

2 – TCE was detected at concentrations that exceed the NYSDEC Class GA Groundwater Standard; however, with the investigations performed to date, its source (on-site or off-site) cannot be determined.

3 – If the Site is selected for use as a school, the Site owner would raze the existing structure and construct a new building in which the school would be located on the upper floors (2nd floor and above). The subsurface environmental impacts identified during the investigation would not affect the occupied spaces above the ground floor.; however, it is recommended that the Site owner incorporate engineering controls to prevent soil vapor intrusion into the newly constructed building.

5.0 RECOMMENDATIONS

If the Site is selected for a public school, the Site owner would raze the existing structure and construct a new building. Since the NYCSCA lease the upper floors (2nd floor and above), the subsurface environmental impacts would not affect the occupied space. Therefore, the Site is suitable for use as a school under the existing conditions and no additional investigation on the part of NYCSCA at the Site is recommended. Based on the conditions identified during the investigation, Berger recommends that the Site owner address the following issues:

- Take any required action to close the NYSDEC spill case associated with the petroleum impacts observed at SB-07 beneath the Site building.
- Incorporate engineering controls to prevent soil vapor intrusion into the newly constructed building.
- If landscaped areas are incorporated into the development of the Site, a 24 inch certified-clean soil layer or equivalent is recommended to be placed over on-Site soils.
- Implement the recommendations to address the environmental concerns included in the TAMS Phase I ESA Update report.

If the NYCSCA modifies their proposed plan for occupancy or considers acquiring the property in the future, an additional investigation is required to further evaluate the conditions identified by this Phase II ESI.

6.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Louis Berger and Assoc., P.C. (Berger) has performed a Phase II Environmental Site Investigation of the Proposed AAFE School at 133-04 39th Avenue, Queens, New York. The scope of the Phase II Environmental Site Investigation was consistent with the Scope of Work dated October 4, 2006.

LOUIS BERGER & ASSOC., P.C.

Seth Schultz
Contract Manager

Michael McCloskey
QA/QC

7.0 REFERENCES

Baskerville, C., 1989. Geology and Engineering Geology of the New York Metropolitan Area. American Geophysical Union, Washington, D.C.

Baskerville, C., 1994. Bedrock and Engineering Geologic Maps of New York and parts of Kings and Queens Counties, New York, and parts of Bergen and Hudson Counties, New Jersey.

Perlmutter, N.M., Arnow, T, 1953. *Ground Water in Bronx, New York, and Richmond Counties with Summary Data on Kings and Queens Counties, New York City, New York*; U.S. Geological Survey in Cooperation with the Water Power and Control Commission.

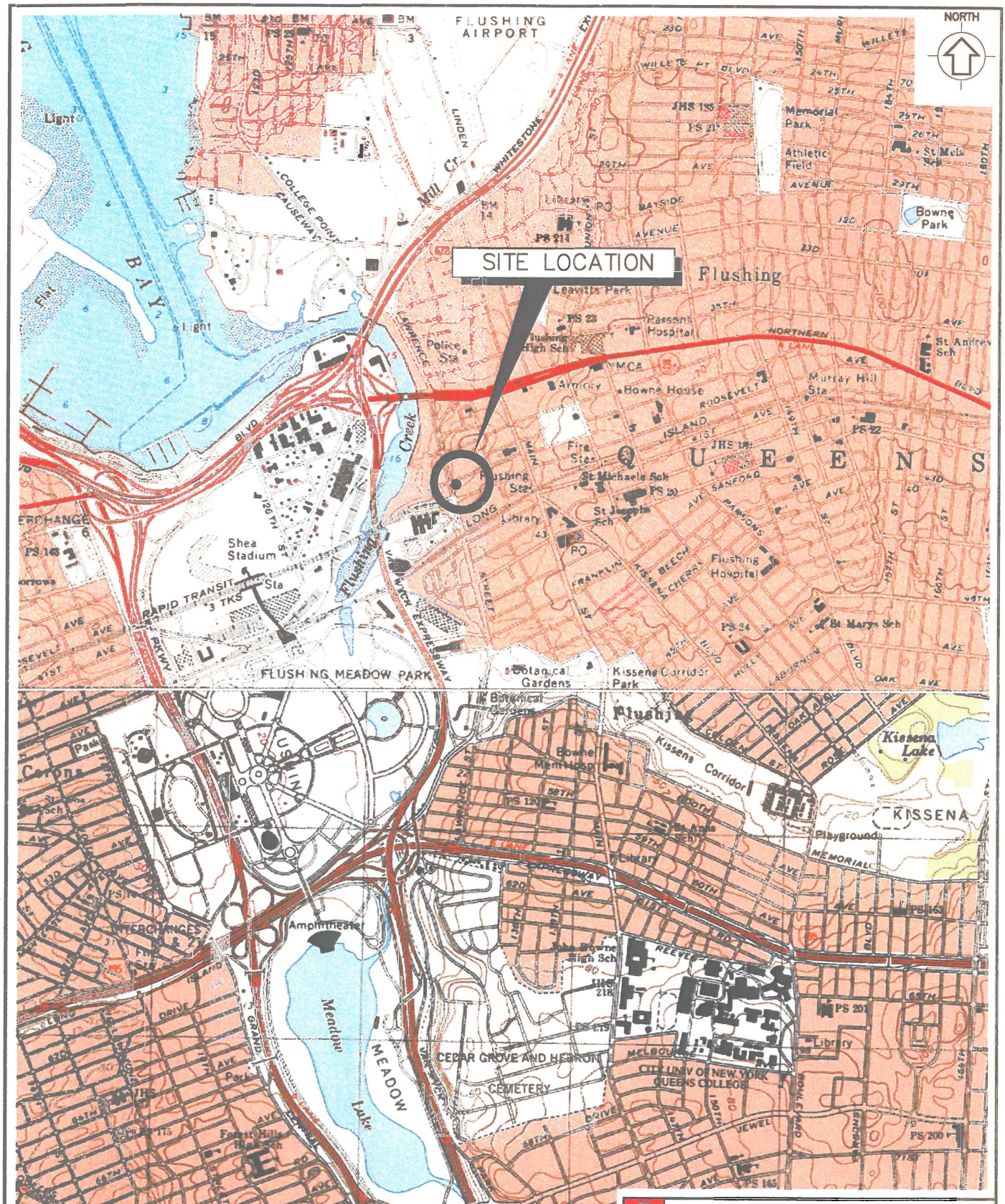
Phase I Environmental Site Assessment Report Update prepared by TAMS (an Earth Tech Company), September 11, 2006.

Soren, Julien, 1971. Groundwater and Geohydrologic Conditions in Queens County, Long Island, New York, USGS, Water Supply Paper 2001-A.

Soren, J. 1978. Subsurface Geology and Paleogeography of Queens County, Long Island, New York USGS Water Resources Investigation Open File Report 77-34.

United States Geological Survey (USGS). 1966 (photorevised 1979), Topographic Map, 7.5 Minute Series, Flushing, NY.

FIGURES



SOURCE: USGS FLUSHING, NY QUADRANGLE – 1979

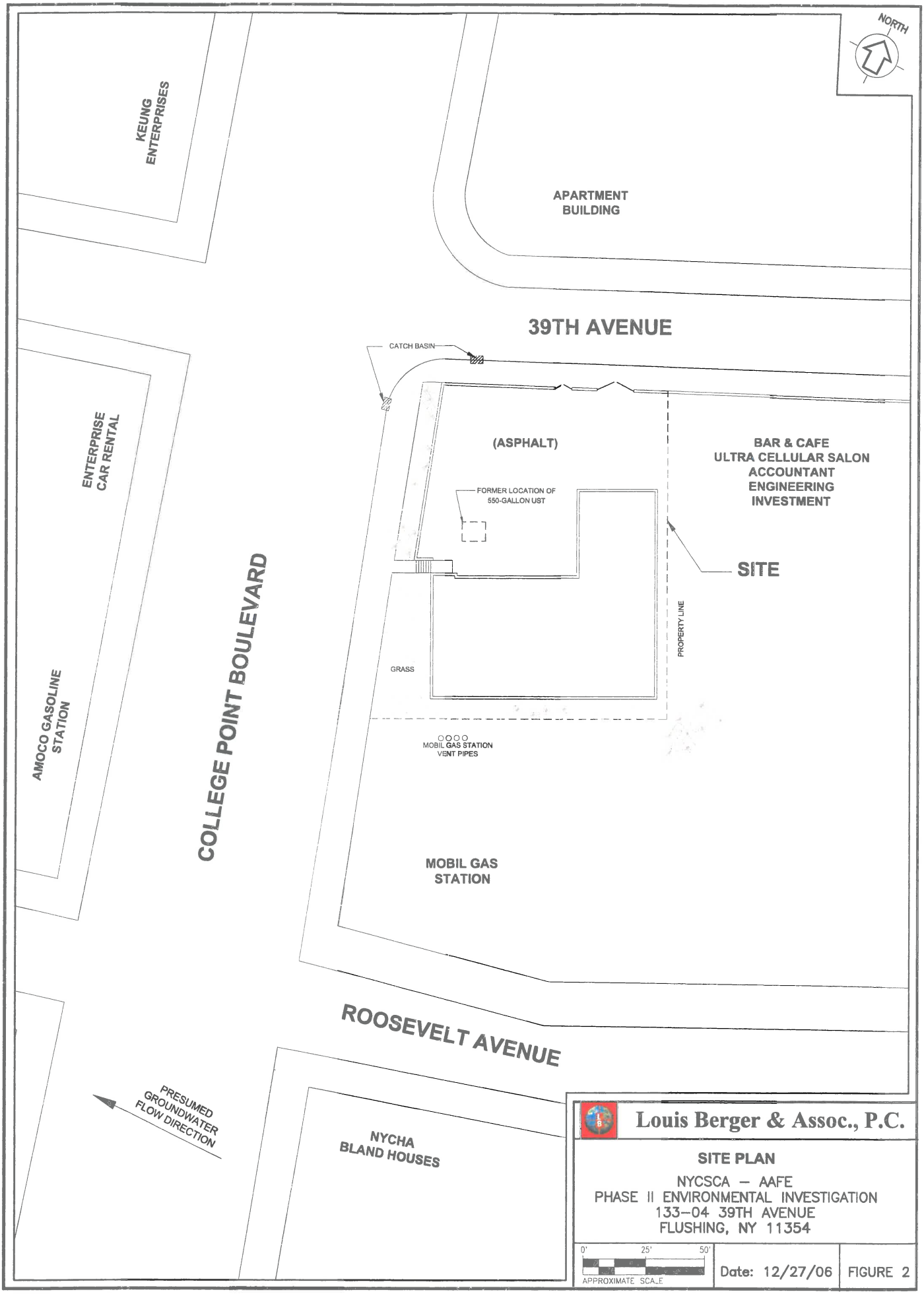
Louis Berger & Assoc., P.C.

SITE LOCATION MAP

NYCSCA – AAFE
PHASE II ENVIRONMENTAL INVESTIGATION
133–04 39TH AVENUE
FLUSHING, NY 11354

Scale: 1:24,000	Date: 12/27/06	FIGURE 1

N:\NYCCAD\CADDTEMP\NYCSCA-2006\JG-3259-ASIAN AMERICAN\FIGURE 1.dwg Dec 27, 2006



Louis Berger & Assoc., P.C.

SITE PLAN

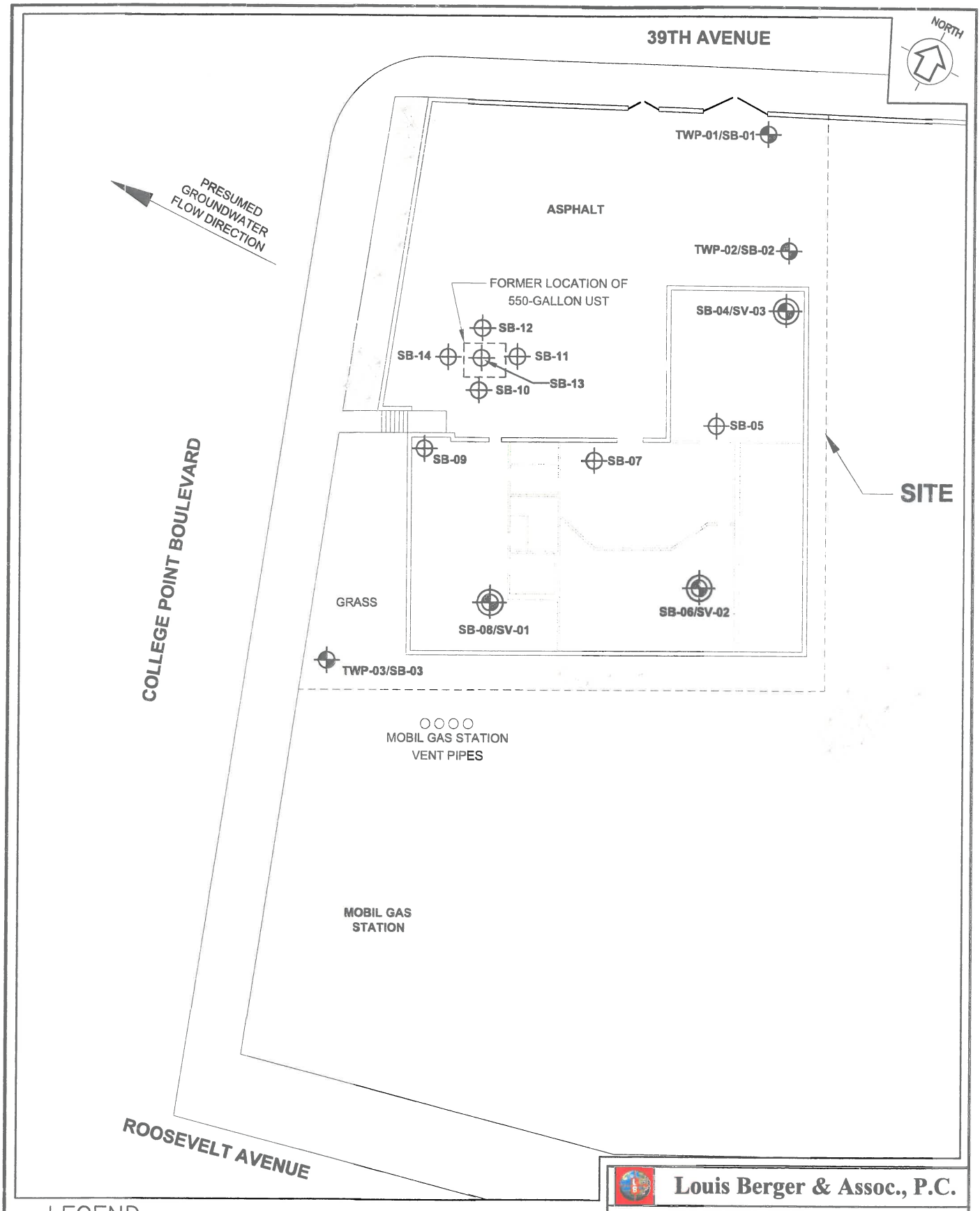
NYCSCA – AAFE
PHASE II ENVIRONMENTAL INVESTIGATION
133–04 39TH AVENUE
FLUSHING, NY 11354

0' 25' 50'
APPROXIMATE SCALE

Date: 12/27/06

FIGURE 2

N:\NYCCAD\CADDTEMP\NYCSCA-2006\JG-3259-ASIAN AMERICAN\FIG.2-REVISION 1-SITE PLAN.dwg Dec 27, 2006



LEGEND

- SOIL BORING SAMPLE LOCATION
- SOIL BORING AND TEMPORARY WELL POINT SAMPLE LOCATION
- SOIL BORING AND SUB-SLAB VAPOR SAMPLE LOCATION

Louis Berger & Assoc., P.C.

SOIL BORING, TEMPORARY WELL POINT & SUB-SLAB VAPOR LOCATIONS
NYCSCA – AAFE
PHASE II ENVIRONMENTAL INVESTIGATION
133-04 39TH AVENUE
FLUSHING, NY 11354

0' 15' 30'
APPROXIMATE SCALE

Date: 12/27/06

FIGURE 3

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APPENDIX A

SOIL BORING LOGS

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 4	**BORING NO.:** SB01 **WELL NO.:** TWP-1

CLIENT: New York City School Construction Authority		**PROJECT NO:** JG-3259
PROJECT: AAFE		**DATE STARTED:** 11/5/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing		**DATE FINISHED:** 11/5/2006
DRILLING METHOD: Hollow Stem Auger		**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J.Kass
Diameter (in): 8	**Completion:** 11/5/2006	**NORTHING:** N/A
Total Depth (ft): 50.00	**Total Depth (ft):** 50.00	**EASTING:** N/A
Sampler: Split Spoon	**Screen Length (ft) /Slot (in):** 20	**GROUND ELEVATION:** N/A
Depth to Water (ft): 39.5	**Depth to Water (ft):** 39.5	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES: Collected groundwater sample from 2" diameter temporary well

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		GP			7 6 5 5	0	Olive black (5Y2/1) medium to fine GRAVEL, trace medium to fine Sand; dry.	**Gravel**
	2		SP-SM			9 5 11 20	0	Dark yellowish orange (10YR6/6) medium to fine SAND, little Silt, with 2-inch Gravel layer at 2.2 feet; dry.	**Sand**
	4		SP			11 13 38 33	0	Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt; dry.	
	6		SP			6 8 11 15	0	Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt; dry.	
	8		SP			31 29 16	0	Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt; dry.	

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB01
	Page 2 of 4	WELL NO.: TWP-1

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SP			14 17 12	0	Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt; dry.	
	11					16 15			
	12		SP			8 8	0	Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt; dry.	
	13					8 8			
	14		SP			10 10	0	Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt; dry.	
	15					10 11			
	16		SP-SM			8 14	0	Dark yellowish orange (10YR6/6) medium to fine SAND, little Silt; moist.	**Sand**
	17					20 23			
	18		SP-SM			10 21	0	Grayish orange (10YR7/4) medium to fine SAND, little Silt; moist.	
	19					25 30			
	20		SP-SM			9 19	0	Grayish orange (10YR7/4) medium to fine SAND, little Silt; moist.	
	21					16 19			
	22		SP-SM			10 15	0	Dark yellowish orange (10YR6/6) medium to fine SAND, little Silt; moist.	
	23					19			

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB01
	Page 3 of 4	WELL NO.: TWP-1

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	24		SP-SM			18 15	0	Dark yellowish orange (10YR6/6) medium to fine SAND, little Silt; moist.	
	25		ML			30 32 30	0	Moderate yellowish brown (10YR5/4) SILT; moist.	Silt
	26		SP-SM SP			30 23 26 29	0 0	Grayish orange (10YR7/4) medium to fine SAND, little Silt; moist. Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt; moist.	Sand
	28		ML			33 19 19 42	0	Light olive gray (5Y5/2) SILT; moist.	Silt
	30		SP			40	0	Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt; moist.	Sand
	31		ML			25 26 30	0	Light olive gray (5Y5/2) SILT; moist.	Silt
	32		ML			11 26 27 30	0	Light olive gray (5Y5/2) SILT; moist.	
	34		SM			22 24 25 30	0	Dark yellowish orange (10YR6/6) medium to fine SAND, some Silt; wet.	Silty Sand, Collected SB01 from 34-35 ft bgs.
	36		ML			13 15 18	0	Dusky yellowish brown (10YR2/2) SILT; wet.	Silt

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB01
	Page 4 of 4	WELL NO.: TWP-1

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	38		ML			21 17 18	0	Dark yellowish brown (10YR4/2) SILT; wet.	
	39		ML			17 22	0	Light olive gray (5Y5/2) SILT; saturated.	▽ Water Level at 39.5 ft. bgs.
	40		ML			9 13	0	Light olive gray (5Y5/2) SILT; saturated.	
	41					15 19			
	42		SP			10 12	0	Grayish brown (5YR3/2) medium to fine SAND, trace Silt; saturated.	Sand
	43					15 17			
	44		ML			15 14	0	Grayish orange pink (5YR7/2) SILT; saturated.	Silt
	45					14 20			
	46		SP-SM			10 20	0	Dark yellowish brown (10YR4/2) medium to fine SAND, little Silt; saturated.	Sand
	47					14 14			
	48		SP			30 35	0	Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt; saturated.	
	49					40 42			End of Boring at 50 ft.
	50								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 4	**BORING NO.:** SB02 **WELL NO.:** TWP-2

CLIENT: New York City School Construction Authority			**PROJECT NO:** JG-3259
PROJECT: AAFE			**DATE STARTED:** 11/4/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing			**DATE FINISHED:** 11/4/2006
DRILLING METHOD: Hollow Stem Auger			**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**		**INSPECTOR:** J. Kass
Diameter (in): 8	**Completion:** 11/4/2006		**NORTHING:** N/A
Total Depth (ft): 50.00	**Total Depth (ft):**		**EASTING:** N/A
Sampler: Split Spoon	**Screen Length (ft) /Slot (in):** 20		**GROUND ELEVATION:** N/A
Depth to Water (ft): 39	**Depth to Water (ft):** 39		**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES: Collected groundwater sample from 2" diameter temporary well

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SP				0	Top 3 inches Asphalt. Dark yellowish brown (10YR4/2) coarse to fine SAND; dry.	Sand
	1								
	2		SP				0	Moderate yellowish brown (10YR5/4) medium to fine SAND; dry.	
	3								
	4								
	5		SP			5 11	0	Dark yellowish orange (10YR6/6) medium to fine SAND; dry.	
	6					24 28			
	7		SP			48	0	Dark yellowish orange (10YR6/6) medium to fine SAND; dry.	
	8					24 17			
	9					15			

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB02
	Page 2 of 4	WELL NO.: TWP-2

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SP			7 9 10 10	0	Dark yellowish orange (10YR6/6) medium to fine SAND; dry.	
	11		SP			20 12	0	Dark yellowish orange (10YR6/6) coarse to fine SAND; dry.	
	12					13 14			
	13		SP			15 18	0	Dark yellowish orange (10YR6/6) medium SAND; dry.	
	14					21 24			
	15		SP-SM			12 15	0	Moderate yellowish brown (10YR5/4) to dark yellowish orange (10YR6/6) medium to fine SAND, little Silt; dry.	
	16					19 20			
	17		SM			21 5	0	Moderate yellowish brown (10YR5/4) to dark yellowish orange (10YR6/6) medium to fine SAND, and Silt; moist.	**Silty Sand**
	18					19 20			
	19		SP			17 24	0	Moderate yellowish brown (10YR5/4) to pale yellowish orange (10YR8/6) medium to fine SAND; moist.	**Sand**
	20					35 35			
	21		SM			34 33	0	Dark yellowish orange (10YR6/6) medium to fine SAND, and Silt; moist.	**Silty Sand**
	22					37 39			

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB02
	Page 3 of 4	WELL NO.: TWP-2

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	23		SM			15 19	0	Grayish orange (10YR7/4) medium to fine SAND, and Silt; moist.	**Silty Sand**
	24					21 33			
	25		SM			25	0	Grayish orange (10YR7/4) medium to fine SAND, and Silt, with a 2-inch layer of fine Sand at 25.3 feet; moist.	
			SM			29	0		
	26					33		Grayish orange (10YR7/4) medium to fine SAND, and Silt; moist.	
						39			
	27		ML			15 13	0	Dark yellowish orange (10YR6/6) SILT, some medium to fine Sand; moist.	**Sandy Silt**
	28		SM			29 33	0	Very pale yellowish orange (10YR8/2) medium to fine SAND, some Silt; moist.	**Silty Sand**
	29		SM			20 20	0	Grayish orange (10YR7/4) medium to fine SAND, some Silt; moist.	
	30		ML			25 48	0	Dark yellowish brown (10YR4/2) to olive gray (5Y4/1) SILT; moist.	**Silt**
	31		SM			15 21	0	Olive gray (5Y4/1) SILT; moist.	**Silty Sand**
	32					28 30			
	33		SM			16 25	0	Dark yellowish orange (10YR6/6) medium to fine SAND, some Silt; moist.	
	34					31 40			
	35		SM			15 21	0	Dark yellowish orange (10YR6/6) to light brown (5YR5/6) medium to fine SAND, some Silt, with a 2-inch layer of Silt at 35.25 feet; wet.	**Collected SB02 from 35-39 ft. bgs.**
	36		ML			25	0	Dark greenish gray (5G4/1) SILT; wet.	**Silt**

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB02
	Page 4 of 4	WELL NO.: TWP-2

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	37		ML			30 13	0	Dark greenish gray (5G4/1) SILT; wet.	
			SM			15	0	Dark yellowish orange (10YR6/6) medium to fine SAND, some Silt; wet.	**Silty Sand**
	38		SM			17 29	0	Dark greenish gray (5G4/1) medium to fine SAND, some Silt; saturated.	**Water Level at 39 ft. bgs.** ▽
	39		ML			15 35	0	Greenish black (5GY2/1) SILT; saturated.	**Silt**
	40					40 45			
	41		ML			15	0	Greenish black (5GY2/1) SILT; saturated.	
	42		SP-SM			17 21	0	Light olive gray (5Y6/1) medium to fine SAND, little Silt; saturated.	**Sand**
	43		ML			17 21	0	Light olive gray (5Y6/1) SILT; saturated.	**Silt**
	44					22 23			
	45		ML			21 22	0	Greenish black (5GY2/1) SILT; saturated.	
	46					30 35			
	47		ML			25 32	0	Medium bluish gray (5B5/1) SILT; saturated.	
	48					35 39			
	49								**End of Boring at 50 ft.**
	50								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 4	**BORING NO.:** SB03 **WELL NO.:** TWP-03

CLIENT: New York City School Construction Authority			**PROJECT NO:** JG-3259
PROJECT: AAFE			**DATE STARTED:** 11/6/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing			**DATE FINISHED:** 11/6/2006
DRILLING METHOD: Direct Push			**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**		**INSPECTOR:** J.Ganz
Diameter (in): 2	**Completion:** 11/6/2006		**NORTHING:** N/A
Total Depth (ft): 50.00	**Total Depth (ft):**		**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** 20		**GROUND ELEVATION:** N/A
Depth to Water (ft): 35	**Depth to Water (ft):** 35		**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES: Collected groundwater sample from 1" diameter temporary well

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SP-SM				0	Dark yellowish brown (10YR4/2) coarse to medium SAND, little Silt; moist.	Sand
	1		SP				0	Dark yellowish orange (10YR6/6) coarse to medium SAND, trace fine Gravel; moist.	
	2		SP-SM				0	Light olive gray (5Y6/1) coarse to fine SAND, little Silt, little fine Gravel; moist.	
	3								
	4								
	5		SP				0	Moderate yellowish brown (10YR5/4) coarse to medium SAND, little medium to fine Gravel; moist.	
	6								
	7								
	8								
	9								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB03
	Page 2 of 4	WELL NO.: TWP-03

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SP				0	Moderate yellowish brown (10YR5/4) coarse to medium SAND; moist.	
	11								
	12								
			SP				0	Very light gray (N9) coarse to medium SAND, and coarse to fine Gravel; dry.	**Gravelly Sand**
			SP				0		
	13							Moderate yellowish brown (10YR5/4) coarse to medium SAND; moist.	**Sand**
	14								
	15		SP				0	Dark yellowish orange (10YR6/6) coarse to medium SAND; moist.	
	16								
	17								
	18								
	19								
			ML				0	Moderate yellowish brown (10YR5/4) SILT, trace fine Sand; moist.	**Silt**
	20		SP				0	Dark yellowish orange (10YR6/6) coarse to medium SAND; moist.	**Sand**
	21								
	22								
			ML				0	Moderate yellowish brown (10YR5/4) SILT, trace fine Sand; moist.	**Silt**
	23								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB03
	Page 3 of 4	WELL NO.: TWP-03

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	24								
	25		ML				0	Pale yellowish brown (10YR6/2) SILT; wet.	
	26								
	27								
	28								
	29								
	30		ML				0	Pale yellowish brown (10YR6/2) SILT, and coarse to fine Sand; saturated.	**Sandy Silt, collected SB03 at 34 to 35 feet bgs**
	31								
	32								
	33								
	34								**Water Level at 35 ft. bgs.**
	35		ML				0	Dark yellowish brown (10YR4/2) SILT, little fine Sand; saturated.	**Silt**
	36								
	37								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB03
	Page 4 of 4	WELL NO.: TWP-03

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	38								
	39								
	40		ML				0	Dark yellowish brown (10YR4/2) SILT, some fine Sand; saturated.	**Sandy Silt**
	41								
	42								
	43								
	44								
	45		ML				0	Dark yellowish brown (10YR4/2) SILT, little fine Sand; saturated.	**Silt**
	46								
	47								
	48								
	49								**End of Boring at 50 ft.**
	50								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 2	**BORING NO.:** SB04 **WELL NO.:** N/A

CLIENT: New York City School Construction Authority			**PROJECT NO:** JG-3259
PROJECT: AAFE			**DATE STARTED:** 11/7/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing			**DATE FINISHED:** 11/7/2006
DRILLING METHOD: Direct Push			**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**		**INSPECTOR:** J.Ganz
Diameter (in): 2	**Completion:** N/A		**NORTHING:** N/A
Total Depth (ft): 16.00	**Total Depth (ft):** N/A		**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A		**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A		**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CONCRET				0	Light gray (N7) CONCRETE.	**Concrete**
			FILL				0	Grayish black (N2) coarse to fine SAND, and medium to fine Gravel (100% fill material - slag); dry.	**Gravelly Sand (Fill)**
	1		SP-SM				0	Moderate yellowish brown (10YR5/4) medium to fine SAND, little Silt, trace fine Gravel; moist.	**Sand, collected SB04 (0.4 - 0.9)**
			SP-SM				0	Dark yellowish brown (10YR4/2) medium to fine SAND, little Silt; moist.	
	2								
	3		SP-SM				0	Moderate yellowish brown (10YR5/4) medium to fine SAND, little Silt; moist.	
	4								
	5		SP-SM				0	Moderate yellowish brown (10YR5/4) medium to fine SAND, little Silt; moist.	
	6								
			SP				0	Dark yellowish orange (10YR6/6) medium to fine SAND; moist .	
	7								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB04
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	8								
	9								
	10		SP				0	Dark yellowish brown (10YR4/2), dark gray (N3) coarse to fine SAND, trace Silt, trace medium to fine Gravel; moist.	
			SP				0	Moderate yellowish brown (10YR5/4) medium to fine SAND; moist.	
	11								
	12								
	13								
	14								
	15		SP				0	Moderate yellowish brown (10YR5/4) medium to fine SAND; moist.	**Collected SB04 (15-16)**
	16								**End of Boring at 16 ft.**

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 2	**BORING NO.:** SB05 **WELL NO.:** N/A

CLIENT: New York City School Construction Authority		**PROJECT NO:** JG-3259
PROJECT: AAFE		**DATE STARTED:** 11/7/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing		**DATE FINISHED:** 11/7/2006
DRILLING METHOD: Direct Push		**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J.Ganz
Diameter (in): 2	**Completion:** N/A	**NORTHING:** N/A
Total Depth (ft): 16.00	**Total Depth (ft):** N/A	**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A	**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL				0	Moderate yellowish brown (10YR5/4), dark yellowish brown (10YR4/2) medium to fine SAND, trace Silt, little medium to fine Gravel; moist.	**Sand (Fill), collected SB05 (0.6 - 1.1)**
	1		SP				0	Moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt, trace medium to fine Gravel; moist.	**Sand**
	2								
	3								
	4								
	5		SP-SM				0	Light brown (5YR5/6) medium to fine SAND, little Silt; moist.	
	6								
	7		SP				0	Dark yellowish orange (10YR6/6) medium to fine SAND; moist.	
	8								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB05
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	9								
	10		SP				0	Dark yellowish orange (10YR6/6) medium to fine SAND; moist.	
	11								
	12								
	13								
	14								
	15		SP				0	Dark yellowish orange (10YR6/6) medium to fine SAND; moist.	**Collected SB05 (15 - 16)**
	16								**End of Boring at 16 ft.**

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 1	**BORING NO.:** SB06 **WELL NO.:** N/A
CLIENT: New York City School Construction Authority		**PROJECT NO:** JG-3259
PROJECT: AAFE		**DATE STARTED:** 11/7/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing		**DATE FINISHED:** 11/7/2006
DRILLING METHOD: Direct Push		**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J.Ganz
Diameter (in): 2	**Completion:** N/A	**NORTHING:** N/A
Total Depth (ft): 8.00	**Total Depth (ft):** N/A	**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A	**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL				0	Dark yellowish brown (10YR4/2) medium to fine SAND, trace Silt, trace fine Gravel; dry.	**Sand (Fill), collected SB06 (0.5 - 1.0)**
	1		FILL				0	Dusky yellowish brown (10YR2/2) coarse to fine SAND, little medium to fine Gravel; moist.	
			FILL				0	Dark yellowish brown (10YR4/2) medium to fine SAND, little medium to fine Gravel; moist.	
	2								
	3								
	4		FILL				0	Dark yellowish brown (10YR4/2) medium to fine SAND, little medium to fine Gravel; moist.	
			FILL				0	Light brown (5YR5/6) medium to fine SAND, little Silt, trace fine Gravel; moist.	**Collected SB06 (7 - 8)**
	5								
	6								
	7								**End of Boring at 8 ft.**
	8								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 2	**BORING NO.:** SB-07 **WELL NO.:** N/A
CLIENT: New York City School Construction Authority		**PROJECT NO:** JG-3259
PROJECT: AAFE		**DATE STARTED:** 11/7/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing		**DATE FINISHED:** 11/7/2006
DRILLING METHOD: Direct Push		**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J.Ganz
Diameter (in): 2	**Completion:** N/A	**NORTHING:** N/A
Total Depth (ft): 15.00	**Total Depth (ft):** N/A	**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A	**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		CONCRETE				0	Light gray (N7) Concrete; dry.	**Concrete**
	1		FILL				177 89.1	Layer of olive black (5Y2/1) fine SAND, some Silt above light olive gray (5Y5/2) medium to fine SAND, trace Silt; moist.	**Layer of Silty Sand (Fill) with Petroleum Odor and Olive Black Staining, collected SB07 (0.8-1.3) above Sand (Fill) with Petroleum Odor**
	2								
	3								
	4								
	5		FILL				123 13.4	Layer of dark yellowish brown (10YR4/2) medium to fine SAND, some Silt above light gray (N7), dusky yellowish brown (10YR2/2) coarse to medium GRAVEL, and coarse to fine Sand; moist.	**Layer of Silty Sand above Sandy Gravel (Fill) Collected SB07 (5-7) Petroleum Odor**
	6								
	7								
	8								
	9								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB-07
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		FILL				68.2	Dusky yellowish brown (10YR2/2) coarse to medium SAND, and coarse to medium Gravel (100% fill material - coke); moist.	**Gravelly Sand (Fill), Collected SB07 (15-16) Petroleum Odor**
	11								
	12								
	13								
	14								
	15								**End of Boring at 15 ft.**

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 1	**BORING NO.:** SB08 **WELL NO.:** N/A

CLIENT: New York City School Construction Authority	**PROJECT NO:** JG-3259
PROJECT: AAFE	**DATE STARTED:** 11/7/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing	**DATE FINISHED:** 11/7/2006
DRILLING METHOD: Direct Push	**DRILLER:** J.Kamenicek
BOREHOLE DATA	**INSPECTOR:** J.Ganz
Diameter (in): 2	**NORTHING:** N/A
Total Depth (ft): 8.00	**EASTING:** N/A
Sampler: Macrocore	**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	

WELL DATA
Completion: N/A
Total Depth (ft): N/A
Screen Length (ft) /Slot (in): N/A
Depth to Water (ft): N/A
Permit No.: N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL				0	Dark yellowish brown (10YR4/2) medium to fine SAND, trace Silt; dry.	**Sand (Fill), collected SB08 (0.4 - 0.9)**
	4		FILL				0	Dark yellowish brown (10YR4/2) medium to fine SAND, trace Silt; moist.	**Sand (Fill)**
	5		SM				0	Moderate yellowish brown (10YR5/4) medium to fine SAND, some Silt; moist.	**Silty Sand (Fill), collected SB04 (7 - 8)**
	8								**End of Boring at 8 ft.**

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 1	**BORING NO.:** SB09 **WELL NO.:** N/A
CLIENT: New York City School Construction Authority		**PROJECT NO:** JG-3259
PROJECT: AAFE		**DATE STARTED:** 11/7/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing		**DATE FINISHED:** 11/7/2006
DRILLING METHOD: Direct Push		**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J.Ganz
Diameter (in): 2	**Completion:** N/A	**NORTHING:** N/A
Total Depth (ft): 8.00	**Total Depth (ft):** N/A	**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A	**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL				0	Grayish brown (5YR3/2) medium to fine SAND, trace Silt, little fine Gravel (10% fill material - brick); dry.	**Sand (Fill), collected SB09 (0.5 - 1.0)**
	1								
	2								
	3								
	4		FILL				0	Moderate yellowish brown (10YR5/4) medium to fine SAND, trace fine Gravel; dry.	**Collected SB09 (7 - 8)**
	5								
	6								
	7								**End of Boring at 8 ft.**
	8								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 2	**BORING NO.:** SB10 **WELL NO.:** N/A
CLIENT: New York City School Construction Authority		**PROJECT NO:** JG-3259
PROJECT: AAFE		**DATE STARTED:** 11/4/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing		**DATE FINISHED:** 11/4/2006
DRILLING METHOD: Direct Push		**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** B. Kizer
Diameter (in): 2	**Completion:** N/A	**NORTHING:** N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A	**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				0	Black (N1) Asphalt.	**Asphalt**
	1		FILL				0	Dark yellowish orange (10YR6/6), moderate yellowish brown (10YR5/4) medium to fine SAND, little medium to fine Gravel; dry.	**Sand (Fill)**
	5		FILL				0	dark yellowish orange (10YR6/6) medium to fine SAND, little medium to fine Gravel; dry.	

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB10
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		FILL				0	dark yellowish orange (10YR6/6) coarse to fine SAND, little medium to fine Gravel; dry.	
	11								
	12								
	13								
	14								
	15		FILL				0	dark yellowish orange (10YR6/6) coarse to fine SAND, little medium to fine Gravel; dry.	**Sand (Fill)**
	16								
	17								
	18								
	19								
	20								**End of Boring at 20 ft.**

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 2	**BORING NO.:** SB11 **WELL NO.:** N/A

CLIENT: New York City School Construction Authority		**PROJECT NO:** JG-3259
PROJECT: AAFE		**DATE STARTED:** 11/4/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing		**DATE FINISHED:** 11/4/2006
DRILLING METHOD: Direct Push		**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** B.Kizer
Diameter (in): 2	**Completion:** N/A	**NORTHING:** N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A	**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				0	Black (N1) Asphalt.	**Asphalt**
	1		FILL				0	Pale yellowish brown (10YR6/2) coarse to medium Gravel (15% fill material - brick); dry.	**Gravel (Fill)**
			FILL				0	Dark yellowish orange (10YR6/6) medium to fine SAND; dry.	**Sand (Fill)**
	5		FILL				0	Moderate brown (5YR4/4), moderate reddish brown (10R4/6) medium to fine SAND, little medium to fine Gravel; dry.	

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB11
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		FILL				0	Very pale orange (10YR8/2) medium to fine SAND, trace Silt, little medium to fine Gravel; dry.	
	11								**Collected SB-11 from 11-12 ft bgs**
	12								
	13								
	14								
	15		FILL				0	Dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt, little medium to fine Gravel; dry.	**Sand (Fill)**
	16								
	17								
	18								
	19								**End of Boring at 20 ft.**
	20								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 2	**BORING NO.:** SB12 **WELL NO.:** N/A

CLIENT: New York City School Construction Authority		**PROJECT NO:** JG-3259
PROJECT: AAFE		**DATE STARTED:** 11/6/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing		**DATE FINISHED:** 11/6/2006
DRILLING METHOD: Direct Push		**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** B. Kizer
Diameter (in): 2	**Completion:** N/A	**NORTHING:** N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A	**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				0	Black (N1) Asphalt.	**Asphalt**
	1		FILL				0	Dark yellowish brown (10YR4/2) coarse to fine SAND, trace Silt, trace medium to fine Gravel (3% Fill material - brick); dry.	**Sand (Fill)**
	2		FILL				0	Light gray (N7) coarse to medium GRAVEL, little medium to fine Sand (75% Fill material - concrete, brick); dry.	**Gravel (Fill)**
	5		FILL				0	Moderate yellowish brown (10YR5/4) medium to fine SAND; moist.	**Sand (Fill)**
	9								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB12
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		FILL				0	Dark yellowish orange (10YR6/6) medium to fine SAND; moist.	
	11								
	12								
	13								
	14								
	15		FILL				0	Dark yellowish orange (10YR6/6) medium to fine SAND; moist.	**Collected SB12 and DUP01 at 15 to 16 feet bgs**
	16								
	17								
	18								
	19								**End of Boring at 20 ft.**
	20								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 3	**BORING NO.:** SB13 **WELL NO.:** N/A

CLIENT: New York City School Construction Authority			**PROJECT NO:** JG-3259
PROJECT: AAFE			**DATE STARTED:** 11/4/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing			**DATE FINISHED:** 11/4/2006
DRILLING METHOD: Direct Push			**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**		**INSPECTOR:** B. Kizer
Diameter (in): 2	**Completion:** N/A		**NORTHING:** N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A		**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A		**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A		**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A		

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				0	Black (N1) Asphalt.	**Asphalt**
			FILL				0	Moderate yellowish brown (10YR5/4), dark yellowish brown (10YR4/2) medium to fine SAND, trace Silt; dry.	**Sand (Fill)**
	1								
	2								
	3								
	4								
	5		FILL				0	dark yellowish orange (10YR6/6) medium to fine SAND, little Silt; dry.	
	6								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB13
	Page 2 of 3	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	7								
	8								
	9								
	10		FILL				0	dark yellowish orange (10YR6/6) medium to fine SAND, little Silt; moist.	**Collected SB13 (11-12), Collected Composite Sample SB13 from 0 to 15 ft bgs**
	11								
	12								
	13								
	14								
	15		FILL				0	dark yellowish orange (10YR6/6) coarse to fine SAND, trace Silt; moist.	

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB13
	Page 3 of 3	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	16								Collected Composite Sample SB13 from 15 to 20 ft bgs
	17								
	18								
	19								End of Boring at 20 ft.
	20								

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	**Drilling Log** Page 1 of 2	**BORING NO.:** SB14 **WELL NO.:** N/A
CLIENT: New York City School Construction Authority		**PROJECT NO:** JG-3259
PROJECT: AAFE		**DATE STARTED:** 11/4/2006
DRILLING CONTRACTOR: Aquifer Drilling and Testing		**DATE FINISHED:** 11/4/2006
DRILLING METHOD: Direct Push		**DRILLER:** J.Kamenicek
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** B. Kizer
Diameter (in): 2	**Completion:** N/A	**NORTHING:** N/A
Total Depth (ft): 20.00	**Total Depth (ft):** N/A	**EASTING:** N/A
Sampler: Macrocore	**Screen Length (ft) /Slot (in):** N/A	**GROUND ELEVATION:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** N/A	

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				0	Black (N1) Asphalt.	**Asphalt**
	1		FILL				0	Moderate yellowish brown (10YR5/4) medium to fine SAND; dry.	**Sand (Fill)**
	5		FILL				0	Moderate yellowish brown (10YR5/4) medium to fine SAND; dry.	

Louis Berger and Assoc., P.C. 199 Water Street, 23rd Floor New York, NY 10038	PROJECT NO.: JG-3259	BORING NO.: SB14
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		FILL				0	dark yellowish orange (10YR6/6) medium to fine SAND, trace coarse to medium Gravel; moist.	
	11								
	12								
	13								
	14								
	15		FILL				0	dark yellowish orange (10YR6/6) medium to fine SAND; moist.	**Sand (Fill)**
	16								
	17								
	18								
	19								
	20								**End of Boring at 20 ft.**

APPENDIX B

ENVIRONMENTAL SAMPLES – SUMMARY TABLES