Remedial Investigation Report

For the Site

King Aristocrat (Operator/Dry Cleaners)
212 E. Hartsdale Avenue,
Hartsdale, New York 10530
Attn: Phillip Benincasa (Operator)
(914) 723 1008

Prepared for:

Hartsdale Village Square, LLC (Property Owners)
C/o Kenneth Shin
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New York, NY 10039
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ks@kdsdevelopersinc.com cell (917) 731 4818
Attorney: Phil Halpern, Esq. Managing Partner at
Collier, Halpern, Newberg, Nolletti & Bock, LLP

In Response to

Spill Report Case No 0903393
Attn: Janet Brown NYSDEC Region 3
Division of Environmental Remediation,
21 South Putt Corners Road, New Paltz, NY 12561
jebrown@gw.dec.state.ny.us (845) 256 3826
and
Case Manager: Robert Schick
rxschick@gw.dec.state.ny.us (518) 402 9662

by

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µg/kg microgram per kilogram (ppb)
µg/L microgram per liter (ppb)
µg/m3 microgram per cubic meter (ppb)
ASP Analytical Service Protocols
Bgs below ground surface
BTEX Benzene, Toluene, Ethylbenzene, Xylenes
CAMP Community Air Monitoring Plan
CEC Community Environmental Corporation
COC Constituents of Concern
Con Edison Consolidated Edison Company of New
CRDL Contract Required Detection Limit
DEP New York City Department of Env Protection
DNAPL Dense Non-aqueous Phase Liquid
DO Dissolved Oxygen
DUSR Data Usability Summary Report
GC Gas Chromatograph
GPR Ground-Penetrating Radar
HASP Health and Safety Plan
HSA Hollow Stem Augers
IDW Investigation-Derived Waste
LCSs Laboratory Control Standards
LNAPL Light Non-aqueous Phase Liquid
mg/kg milligram per kilogram (ppm)
mg/L milligram per liter (ppm)
MS Matrix Spike
MSD Matrix Spike Duplicate
NA Natural Attenuation
NAPL Non-aqueous Phase Liquid
NCP National Contingency Plan
NTU Nephelometric Turbidity Unit
NYCRR New York Code of Rules and Regulations
NYSDEC New York State Department of Environmental Conservation
NYSDOH New York State Department of Health
OLM Oil-Like Material
ORP Oxidation/Reduction Potential
PAH Polycyclic Aromatic Hydrocarbons
PID Photo-Ionization Detector
PPE Personal Protective Equipment
ppm parts per million
PCE same Tetrachloroethylene Perchloroethylene
QAPP Quality Assurance Project Plan
RI Remedial Investigation
ROW Right-of-way
RSCOs Recommended Soil Cleanup Objectives
SCS Site Characterization Study
SSBVs Site-Specific Background Values
SVI Soil Vapor Intrusion
SVOCs Semi-Volatile Organic Compounds
TAGM Technical and Administrative Guidance
TCE Trichloroethylene
TLM Tar-Like Material
USEPA United States Environmental Protection
USGS United States Geologic Survey
UST Underground Storage Tank
VCA Voluntary Cleanup Agreement
VOCs Volatile Organic Compounds

Remedial Investigation Report

King Aristocrat (Dry Cleaners), 212 E. Hartsdale Avenue, Hartsdale, NY (the Site)
Property Owner: Hartsdale Village Square, LLC,
Site Contact: Kenneth Shin Phone: 917 731 4818
Operator and PRP: King Aristocrat (Dry Cleaners) Attn: Phillip Benincasa
Site Contact: John Bee for Tapash Env Consultants Phone # 732 267 5722

1.0 Introduction

The site is a spill of solvent into a sump in the basement of King Aristocrat Dry Cleaners at 212 E Hartsdale Avenue in the Greenburgh Village of Hartsdale, New York, Figure 1.0.

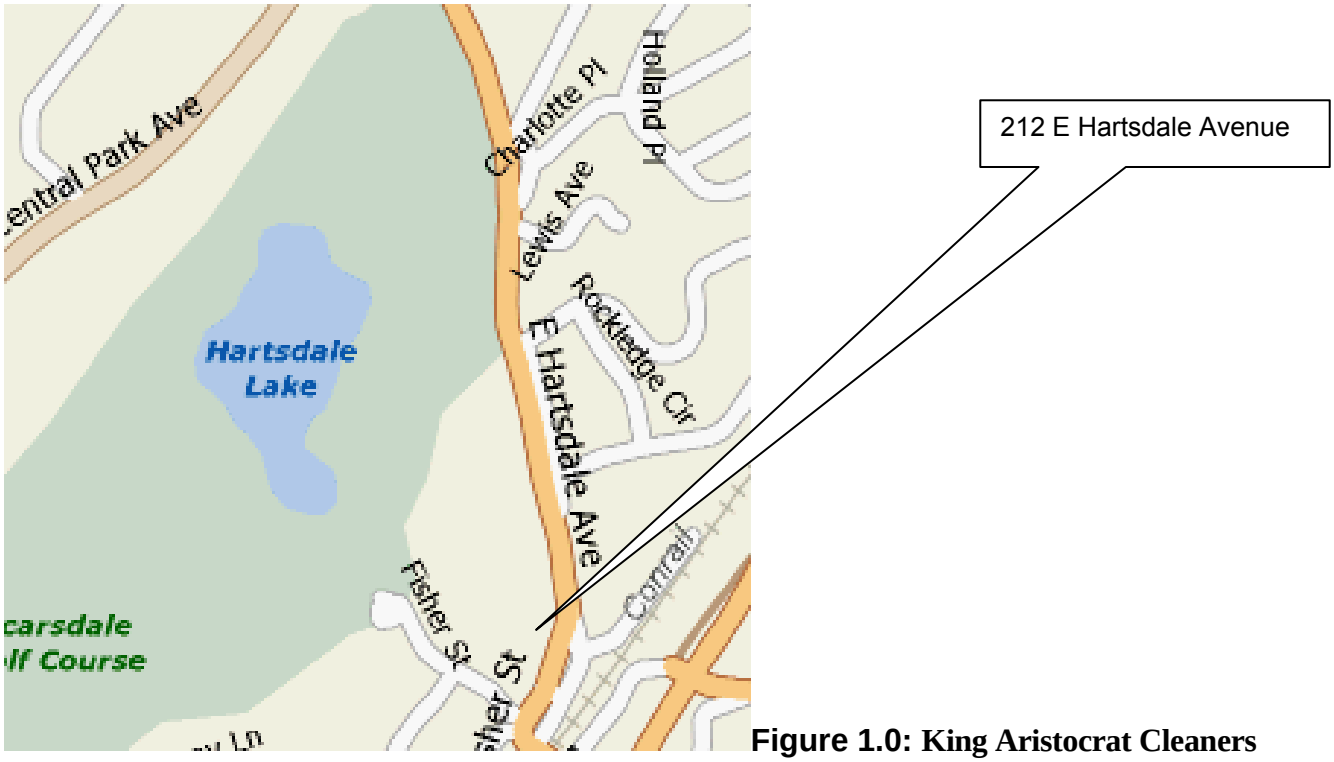


Figure 1.0: King Aristocrat Cleaners 212 East Hartsdale Avenue

1.1 Remedial Investigation Report

Purpose and Scope: The Remedial Investigation investigated the spills of solvent and petroleum fuel on site in phases. First we completed the Preliminary Assessment (PA) described in Section 2: Background Information. Then we conducted the Phase 3 Site Characterization (Site investigation) involving geoprobe sampling in the basement around the sump. Based on these results in consultation with the NYSDEC case manager, we may expand the scope of the Remedial investigation. This Remedial Investigation Report (RIR) was based on the information presented in the Phase 1 and Phase 2 studies and additional background research and prepared in accordance with NYSDEC Guidance DER-10**:** Technical Guidance for Site Investigation and Remediation. The activities described in the Phase 2 involved a subsurface soil investigation that is summarized in Section 2.

This Remedial Investigation was conducted at the request of Kenneth Shin of Hartsdale Village Square, LLC, following the recommendations of the Phase 2 Assessment. The purpose of this initial exercise is Site Characterization: There are three basic investigative phases used to address a potentially contaminated site or area of concern: 1) Site Characterization / Preliminary Assessment (PA) and 2) Site Investigation (SI) and 3) A more extensive full Remedial Investigation. The three phases of the PASI and full Remedial Investigation are closely related, differing mainly in level of effort and focus.

Report Organization

This Remedial Investigation Report is organized into the following Sections and Appendices

- **Section 1:** A description of the goals of this Remedial Investigation Plan and NYSDEC oversight:
- **Section 2:** A Preliminary Site Characterization: a description of the 212 E Hartsdale Avenue Site, site history and present site operations, surrounding properties and land use, regulatory review, site inspection and interview, previous investigations and geology and hydrology
- **Section 3:** A description of field investigation activities and sample analyses proposed during the RI.
- **Section 4:** A discussion of the Investigation Support activities such as the Health Safety Plan, QA/QC Plan and Community Participation Plan
- **Section 5:** the Report Findings with a discussion of the Extent of Contamination and a Summary of Analytical Results for environmental media sampled during the investigation along with maps and figures presented and a discussion on the Quality and Usability of the data.
- **Section 6:** A discussion of Contaminant Fate and Transport
- **Section 7:** A Risk Assessment: the qualitative evaluation of the risk of exposure on site and a Conceptual Site Model.
- **Section 8:** Determination if Rapid Action and Notification is required
- **Section 9:** Remedial Selection
- **Section 10**: Conclusions and Recommendations for future activities on Site.

Tables and figures were included in the Sections immediately following the appropriate text of each Section of the Remedial Investigation Report.
Each Section presents the references cited next to the text.

1.2 Investigation Support

Health & Safety Plan: All investigative and remedial activities associated with Remedial Investigation conformed to the specific Health and Safety Plans developed for this site

A Quality Control and Quality Assurance Plan was prepared to assure reliable data.

2.0 Site Background - Preliminary Assessment

An Assessment of Completeness of the Preliminary Environmental Phase I and 2 Surveys was completed

The Phase I Audit did not fully identify the potential environmental risks and liability because of past or current activities. More specifically the Remedial Investigation will:

- Provide adequate data to support a risk analysis or warrant further investigation.
- Qualify the level of environmental risk and liability associated with past and current practices and make recommendations.
- Demonstrate "Due Diligence" and good faith as to support potential future defense claims under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund).

It is, therefore, critical that certain standards of performance be set and a minimum scope of work be performed in a consistent manner outlined in the QA/QC Plan.

Conduct Additional Site Surveys

The Site Survey was incomplete see Section 2.6. The first task of our site survey was to visually inspect the property, buildings, associated structures, equipment and operational procedures for actual or potential sources of environmental contamination or impairment. Marksman Enterprises through diligent research noted that the site was formerly a dry cleaner and identified that the probable source of the contamination seems to be dumping solvent into the at least one sump in the basement of the building, that is connected to a regional sewer system. The records at the Engineering and Building Department were scrutinized to identify any building plans and utility plans.

Interviews

Interviews with personnel knowledgeable of the property history were completed. The dry cleaner has been operating for many years. The management and operators was interviewed to determine the operating methods and disposal procedures at the dry cleaner. The Township Engineer and Construction Inspector were interviewed. Environmental file documents and data bases were reviewed.

A Freedom of Information (FOI) Request was initiated on June 19 2009 to obtain site specific information from the local Greenburgh municipal officials such as the Town Engineer, the Construction Officials, the Consolidated Water Supply and Sewer Department and the Westchester Planning Officer. The Phase 2 identified a source for the solvent but was not designed to define the extent of contamination. Thus, additional work needs to be completed to fill gaps in the background research and evaluation for the site. Initially, the Site Characterization phase of the Remedial Investigation was completed.

In order to prepare a Vapor Intrusion Assessment for the NYSDEC, and research the Site History, Site Plans and Engineering Improvements on site
We request for 112 Hartsdale Avenue any and all record of
_x_ Engineering and Construction Drawings: Reports, Specifications and Maps
_ x_ Construction Applications and Engineering Reports
_x_ Soil Borings; Design and Location of Monitor Wells and Supply Wells; Well Logs
_x_ Architectural drawings including basements and utility trenches
_x_ Building Permits, UST and Demo Permits, Occupancy Permits, Building Violations
_x_ Tax Map, Planning Map and pertinent Ordinances, Land Use Designations
_x_ Zoning Map and Zoning Ordinance,
_x_ Storm Sewer Maps, Engineering Design, Diameter, Manholes, Discharge Location
_x_ Sanitary Sewer Maps Engineering Design, Diameter, Manholes, Discharge Location
_x_ Prior Septic System Location
_x_ Historical Maps showing past buildings and structures, Aerial Maps
_x_ Surrounding Historical Land Use
_x_ Reports of Spills and Past Manufacturing Processes, Waste Disposal Practices
_x_ Environmental Maps, Reports, Violations, Wetlands Map, Sample Results
_x_ Area History
_x_ Police and Emergency Services Responses
_x_ Dates of Utility Hookup, Suppliers, Utility Maps
_x_ Previous Owners, Tenants and dates of Tenancy
_x_ Demographics, Government District Designations, Elected Officials

1.3 Oversight

On August 26th, at the suggested of Janet Brown NYSDEC Hazardous Waste Section and Mary Barrie NYSDEC Site Control we applied for NYSDEC oversight in the Brownfields Cleanup Program (BCP). This was a voluntary program limited to this and any subsequent scopes of work submitted. There is a public notification requirement if the site is accepted into the BCP but also according to State Law. There is also a requirement to notify the tenants once the Soil Vapor Intrusion sampling has been completed and NYSDOH would assist in making the information provided to the public accurate and properly explained.
In addition, NYSDEC will review the Remedial Investigation Report and provide comment and direct the course of the investigation. NYSDOH will assess the potential exposure of resident and workers in and around the dry cleaners.

2.1. Site Location and Use

King Aristocrat Dry Cleaners is located at 212E, Hartsdale Avenue in the Greenburgh Village of Hartsdale, New York (Figure 2.1.1),
Location: *41.0' 48.8" Latitude (North): 73 47' 46.7" Longitude (West):*

King Aristocrat is located in the middle of a small strip mall (Photo 1.1) facing the train station at 212-218 E. Hartsdale Avenue, a major shopping street with a wide sidewalk in the front (2.1 thru 2.5) and a narrow alleyway (1.10 thru 1.11) and a 2-story parking garage in the rear (1.54 and 1.55). The dry cleaner has a Hartsdale Farms (1.53) market adjoining the North wall and a New York Sports gym (1.51) on the south wall. All the stores have basements that are approximately 8-feet high and each have sumps in which groundwater is observed at approximately one foot below the concrete floor. The strip mall is located on the West side of this major shopping street (1.3) in the hilly downtown urban area of Hartsdale, an unincorporated Hamlet within the Town of Greenburgh. Hartsdale consists of multi-family residences (1.56) and retail shops, commercial facilities and a Metro North Train Station in the valley bottom. This main street is a two-lane main street with wide sidewalks. The area is characterized as a mixed residential and commercial district. See Figure.2.1.1 Aerial Map and Site Photos

Building Construction and Alterations:

The row of small retail stored was constructed in 1940. Only minor alterations have been performed in the shops since 1963. The building is divided into three retail stores on the first floor: Aristocrat dry cleaner (1.1), Hartsdale Farm fish and vegetable market (1.53) and liquor store. The second floor is used as offices. Each tenant has individual entrances. The office on the 2nd floor is accessed by a separate steel stairs with a glass front door. The roof is a flat built up layered roof over plywood decking

Photo 1.52 is the view of Aristocrat Cleaners from the rear. Outside access to the basement is at the rear, down concrete steps that turn into a confined entry way in the rear (1.61). The drycleaners has a basement (1.62 thru 1.69) that shares an old cobblestone and cement dividing walls with the New York Sports gym and the market.

Behind the front counter on the 1st floor (street level) near the entrance door is the dry cleaning machine (1.71 and 1.74). The dry cleaning machine is located on the middle of the wood floor. The machine sits on 4' high secondary containment. The waste drum for the solvent was nearby also on 4" high secondary containment (1.72). All the waste containers or solutions were located at the rear of the machine (1.73). Some chemical solution and waste containers were scattered around the machine area. The management of the solvents and waste appeared to be appeared to be disorganized (1.73). The dry cleaner has a fan and vent that appeared to be working in good condition. The steaming press was done in the rear of the shop. The vent fan is located on the rear wall (1.52).

The foundations walls running at right angles to the main street are constructed of concreted native rock cobbles with steel beams on concrete footings and wood roof joists. The basement contains utilities, including the electrical panel, sewer trap, the water main and meter, compressors and the gas meters. The boilers are gas-fired (1.69). The sumps in the basement entrance feeds into the municipal sewer line (1.67). The steam boiler is located on the basement (1.69). It appeared that the dry cleaner used separate water, gas and electric services.

There is a sump in the middle basement under the dry cleaner (1.65 where black stains were found around the sump. The Phase 1 recommended appropriate investigation be done on the environmental impact from the dry cleaner. The long-time use of the store at 212 as a dry cleaner is considered as Recognized Environmental Condition (RECs): the use of toxic chemicals for the dry cleaning on the wood floor on the second floor, the prior storage tank in the basement and the sump in the basement.

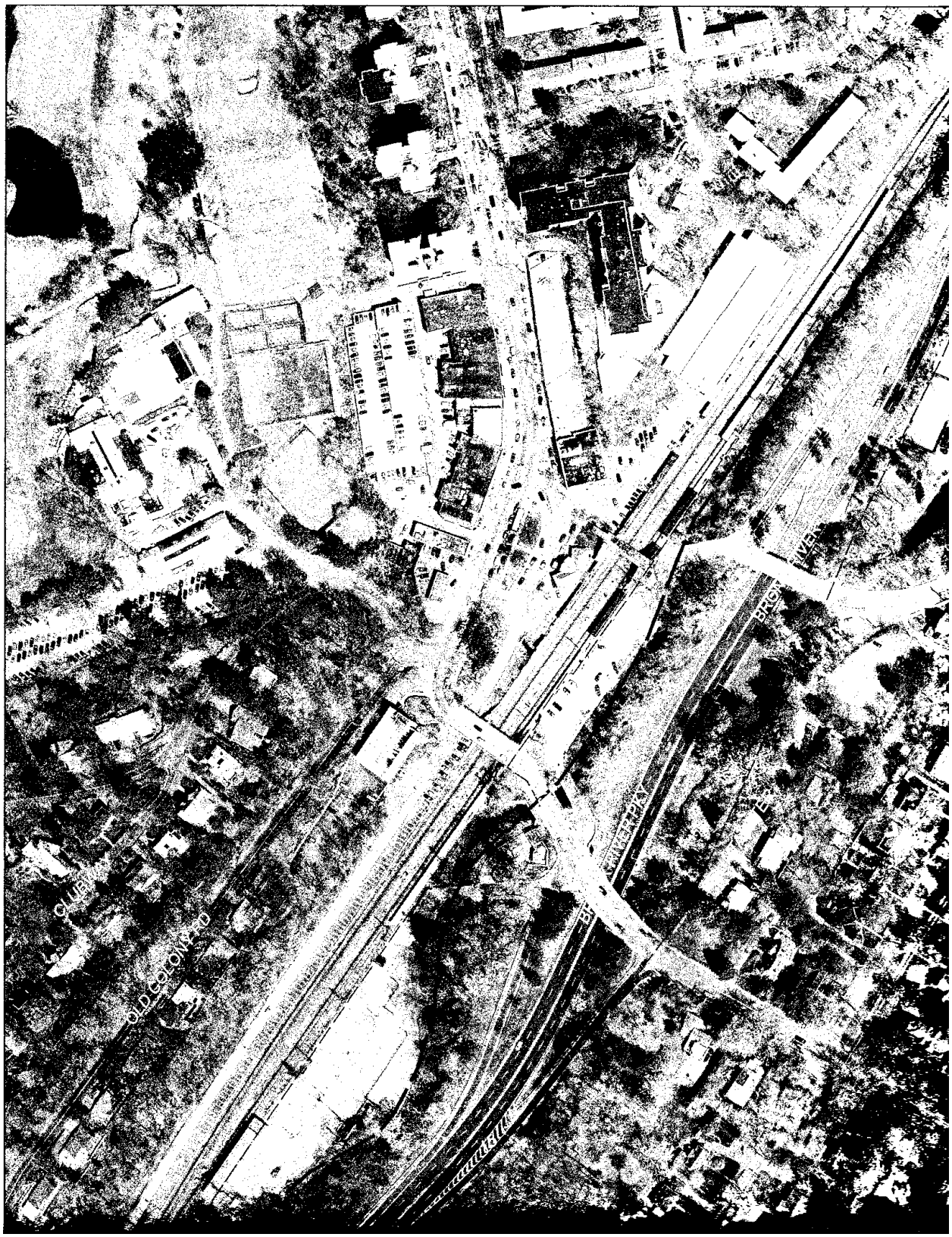
There is no oil fuel use in the building at the time of inspection. There used to be two underground oil tanks under the rear yard (1.11), but they had been removed in August 2007, as shown on the certificates in Appendix B.

Site Plan, Tax Lot and Block
The site is adjacent to Scarsdale in Block 8211 Lot 8 east of the Municipal Parking Garage and is zoned retail: The site has a retail frontage on E. Hartsdale Avenue of 87' 4". Figure 2.1.2: Site Map and 2.1.2: Tax Map. A site plan is presented as Figure 2.1: Site Plan.

Topography: The site is 179 feet above sea level above mean sea level. Detail of the White Plains NY USGS topographic quadrangle where the site is located is presented as Figure 2.1.3 Topo Map. The topography slopes down to the strip mall from the Scarsdale Golf Club through a 2-level parking deck (1.55). The strip mall sits in a bowl on the top of bedrock noted in outcrops in the surrounding slopes that forms a bench adjacent to the Train Station that is at a 10-feet lower level adjacent to the Bronx River.

A Hartsdale Metro North railroad station is located a distance of 300 feet away opposite the site across E. Hartsdale Avenue at 10 feet-lower elevation. The Metro-North Railroad line serves the residents of Hartsdale, New York via the Harlem Line. It is 20.6 miles (33.1 km) from Grand Central Terminal.

Town of Greenburg: The Town of Greenburgh comprises 30.53 square miles and is the most populous village in the central portion of Westchester County, within commuting distance from such urban centers as New York, White Plains, and Stamford CT. The Town is bound in the west by the Hudson Valley, on the north by the Towns of Mount Pleasant and Ossening, on the east by the City of White Plains and the Village of Scarsdale and on the south by the City of Yonkers.


OLD GLOUCESTER RD

2.2 Present Situation

The solvent spill was reported on June 22nd, 2009 after sample results were available and NYSDEC gave the following case number 0903393. The site was referred to NYSDOH and the Hazardous Waste Section, Division of Environmental Remediation: Janet Brandon (845) 256 3826 NYSDEC Region 3.

The solvent seems to be concentrated in and around the sump in the basement. The dry cleaner continues to operate on the main floor above the basement.

Toxicology

Tetrachloroethylene is a manufactured chemical that is widely used in the dry-cleaning of fabrics, including clothes. It is also used for degreasing metal parts and in manufacturing other chemicals. Tetrachloroethylene is found in consumer products, including some paint and spot removers, water repellents, brake and wood cleaners, glues, and suede protectors. Other names for Tetrachloroethylene include PERC, tetrachloroethene, Perchloroethylene, and PCE is a commonly used name.

Tetrachloroethylene is a nonflammable, colorless liquid at room temperature. It readily evaporates into air and has an ether-like odor. Because most people stop noticing the odor of Tetrachloroethylene in air after a short time, odor is not a reliable warning signal of Tetrachloroethylene exposure.

Environmental Safety in the Dry Cleaner:

People may be exposed to Tetrachloroethylene in air, water, and food. Exposure can also occur when Tetrachloroethylene or material containing Tetrachloroethylene (for example, soil) gets on the skin. For most people, almost all exposure is from Tetrachloroethylene in air.

Tetrachloroethylene gets into outdoor and indoor air by evaporation from industrial or dry-cleaning operations and from areas where chemical wastes are stored or disposed. Groundwater near these areas may become contaminated if Tetrachloroethylene is improperly dumped or leaks into the ground. People may be exposed if they drink the contaminated water. They may also be exposed if Tetrachloroethylene evaporates from contaminated drinking water into indoor air during cooking, washing and particularly showering. Tetrachloroethylene may evaporate from contaminated groundwater and soil into the indoor air of buildings above the contaminated area. Tetrachloroethylene also may evaporate from dry-cleaned clothes into indoor air or may get into indoor air after Tetrachloroethylene-products, such as spot removers, are used. Indoor air Tetrachloroethylene levels may peak if Tetrachloroethylene-products are used in poorly ventilated areas. Tetrachloroethylene vapors are heavier than air.

Potential Exposure in the Basement: Tetrachloroethylene is colorless and odorless in concentrations above the toxic level at 15 ppbv. At high vapor concentrations you can sense it as the typical dry cleaning smell.

There is a potential exposure for solvent fumes in the basement. The PID readings during the Phase 2 geoprobe soil boring indicated no exceedance in the breathing zone. Phillip Benincasa uses a PID sniffer in the Dry Cleaner on the ground floor above the basement and air monitoring on the first floor on the same day as the Phase 3 soil boring and sampling indicated a work area free of detectable solvents.

On August 12, 2009, at King Aristocrat dry cleaner at 212 E Hartsdale Avenue, during soil sample labeling, when the boring rig was inactive, the MiniRae total volatile analyzer peaked at 9999 ppm Total Volatile Organics (TVo) for 3 minutes indicating extreme exposure in the concrete stair well leading down to the basement during clothes pressing operations. These high air concentrations were well above the 15 ppbv NYSDOH air criteria and were analyzed by a MiniRae that was calibrated approximately one hour earlier against a 100 ppm standard of Isobutylene. The stair well is located below the rear vent of the dry cleaner first floor and adjacent to the 1" condensate pipe cooling the dry cleaner machine. The air pollution incident lasted three minutes from 9:18 AM to at 9:21 AM and was detected outside in the stair well during a pressing operation where steam was issuing from the 1"-diameter metal pipe of the exhaust condensate discharge. The condensate from the steam and the sediment into which the condensate dripped contained very little Tetrachloroethylene. In light of this air pollution event documented and reported as Spill # 09057423: the site will require a vapor intrusion assessment. See Section 3.4 for more details.

The **Vapor Intrusion Guidance Document:** The NYSDEC has finalized the Vapor Intrusion Guidance (October 2006) document to provide assistance in the evaluation of contaminated sites. The document consists of a phased approach to investigate the Vapor Intrusion Pathways. The Guidance document follows the basic provisions of the USEPA Vapor Intrusion Guidance, while incorporating New York specific factors/policies, when appropriate. The guidance includes a discussion of the Vapor Intrusion pathway, Vapor Intrusion screening levels to be used in the evaluation of a site, sampling and analytical requirements, site-specific screening options, remedial options, monitoring and maintenance requirements, community outreach, and a methodology to evaluate background air concentrations.

DNAPL: Tetrachloroethylene is relatively insoluble in water and in high concentrations it forms DNAPL in water that looks like clear globules of mercury distinguished by the different refractive index that are difficult to discern. No DNAPL was observed during the soil boring and sampling.

2.3 Site History

This most illuminating task involved the historical search of all available and readily obtainable documents to determine past uses of the property including land and improvements. In this Site Characterization report, the following information was researched: The dates of initial construction and the nature of major additions or alterations plans for future construction; archival records, usage records; historical aerial photos, site map and plans to map out potential sources of impairment, such as underground tank location, present and historical disposal methods.

Sanborn Fire Insurance Maps constitute a database of prior site uses of real property for many cities and towns in the United States. The maps were originally created to assist insurance underwriters in understanding the potential fire risk of structures requiring insurance. However, they can be useful for determining the previous uses of a property. Sanborn Maps also contain information relating to uses of individual structures, location of certain fuel storage tanks, chemical storage tanks, or both, and storage of other potentially toxic substances. Sanborn Maps began their coverage in 1867 and continue through the present. A search of Sanborn Maps was conducted to identify maps for the years 1867 through 2009.

The Sanborn Maps show that the building at 212 was originally a store, but in 1970 it became a dry cleaner. This is confirmed by the City Directory in 1971. The Sanborn Map and City Directory in Appendix E show that the dry cleaner has been in operation since at least 1970. (The store owner Mr. Phil Benincasa Sr. said it has been operated as a dry cleaner for 50 to 60 years). According to the Sanborn Maps in Appendix E, before 1940, the subject lot was a vacant land. The present building appeared on the map in 1940 and since that time the subject property has been used as four stores. The Certificate of Occupancy issued on October 21, 2005 from the Department of Buildings in Appendix B also shows that the use of the subject property as a retail store/ According to the sales agent Mr. John M. Barrett from Massey Knakal Realty, the previous owner purchased the property about 4 years ago: the building was being used as stores. The present owner continued this use.

Historical Use of the Property - The site has been a Dry Cleaner since 1940

Previous Owners of 212 E Hartsdale Avenue	**From**	**To**
Susanne and Shelly Grossbarth	1940	2005
John Aronian: Hartsdale Village 1&2 LLC cleaned up oil tanks in rear	2005	7/2008
Hartsdale Village Square LLC	7/2008	Present

The Aerial Photos in Appendix E appear to confirm the above uses of the property.

EDR-City Directory Abstract in Appendix E, the names and the addresses of the prior occupants of the strip mall are listed as: Flier Sam, Liquor store, Attorney Offices, Internet and Networking company, Blum & Bellino Inc. and F.Y. Young PC. These names also confirm the above-mentioned use of the subject properties.

Present Site Operations

According to Phillip Benincasa Jnr (914-723-1008) King-Aristocrat Dry Cleaners has been in operation for 15 years (since 1994). His father (Phillip Benincasa Snr) and he took over the facility from the previous owners, Susan Grossbarth (retired to Florida*) and Shelly Grossbarth (deceased). The Grossbarths had 1st generation (wet to dry) cleaning equipment on the ground floor with a 100 gallon solvent tank in the basement. This original machine first washed the clothes in solvent and then a separate machine dried them. There were no recycling- solvent machines involved and the process involved the transfer of solvent soaked clothes between the washing machine and the drying machine. They Grossbarths were using about 100 gallons of solvent per month and were RCRA Large Quantity Generators.

*Suzanne R Grossbath's address is 21755 Arriba Real, Apt 29H, Boca Raton Florida 33433-3173

King-Aristocrat (according to Phillip Benincasa Jnr.) renegotiated the lease to upgrade the dry cleaning equipment before they moved in. They took out the 100-gallon solvent tank in the basement and the wet to dry transfer machines and installed 3rd generation (Union L55 dry to dry) machines where the clothes go in dry and come out dry from the same machine and the solvent is recycled. Phillip Benincasa Jnr. maintains that he never spilled any solvent because he had the 3rd generation machines and took out the tank in the basement. He transfers waste solvent with a pump into a drum that is disposed by Safety Clean (records lost in flood) and indicates he uses 5 gallons per month with solvent recycling. Aristocrat is a RCRA Small Quantity Generator. Many of his records were destroyed in a recent flood. (Obtain manifests from Safety Clean with Phillip B's permission?). He has a solvent sniffer he uses to monitor the solvent in the air so he knows his operation is safe (Obtain data?).

212-218 E Hartsdale Avenue - Present Tenants

No	Address	Tenant (Use)	Area sq ft
1	212	Sara Benincasa (Dry Cleaners)	1700
2	214	James Lee Hartsdale Farm (Grocery Store –Market)	2200
3	216	Hartsdale Liquor Store Inc.	1022
4	218	Varsity Networks inc. (2nd Floor Office)	3000
		Total	**7922**

2.4 Surrounding Land Use Survey

A survey of the surrounding land use was conducted to identify potential on-site and off-site sources of contamination or downgradient receptors that could be an environmental liability to the site. The survey considered the following elements:

- Actual or potential sources of pollution, known contaminated areas, groundwater, uncontrolled listed sites, proximity to underground tanks, known air discharges or sources of odor, chemical storage and process areas.
- Proximity to sensitive ecological areas, floodplain/wetland, wildlife refuges, surface water, wells and drinking sources, residential areas, zoning and land use.

Direction	Surrounding Land Use:	Land Use:
North	Mixed Use: Strip Mall Gym & Residential Condos	Mixed Use
East	Train Station and Parking. Mixed Use: Strip Mall, Residential Condo, Senior citizen	Transportation Mixed Use
South	Mixed Use: Strip Mall with food	Mixed Use
West	Parking Garage, Golf Course	Parking Garage, Golf Course

See attached Aerial Photographs, Figure 2.11 Hartsdale Aerial April 2004

1. The land use in this area is primarily a commercial strip mall (2.1.thru 2.5) across from the train station (3.5) on this main shopping thoroughfare in Greenburgh. Ninety percent of the area is covered with the building or asphalt paving.
2. **Local Government:** Paul Feiner, Town Supervisor Town of Greenburgh Building Department. 177 Hillside Avenue, White Plains, New York 10607. (914) 993-1540, Fax: (914) 993-1541 pfeiner@greenburghny.com
   Bina Ramchandani Clerk of Town of Greenburgh Building Department.
   177 Hillside Avenue, White Plains, New York 10607.
   Telephone: 914-993-1561 Fax 914-993-1570. bramchandani@greenburghny.com
   Barbara Thorpe: Westchester County Department of Planning, 148 Martine Avenue, Room 432, White Plains, NY 10601-4704 (914) 995-4400 bjt3@westchestergov.com
2. **Adjacent property north:** New York Sports, 208 E Hartsdale Ave, Hartsdale, NY 10530-3505, (914) 725-8447
   Adjacent property south: Hartsdale Farm 214 E Hartsdale Ave, Hartsdale, NY 10530-3505, (914) 725-8371
   On the west (same) side of E Hartsdale Avenue north of Aristocrat cleaners are apartments 170 East**.** 170 E Hartsdale Avenue, Mary Jane Pastor, Owner 914-682-1799 Photo (1.56)
   Rite Aid, 196 E Hartsdale Ave, Hartsdale**,** NY 10530. 914-725-8890.
   Hartsdale Bake Shop: 200 East Hartsdale Avenue NY 10530
   New York Sports gym (Photo 2.1).
   On the west (same) side of E Hartsdale Avenue south of Aristocrat Cleaners are
   Hartsdale Chinese Restaurant 222 East Hartsdale Avenue (914) 739-3913
   Bagel shop (Photo 2.2), Masala Kraft Café, 206 East Hartsdale Avenue, NY 10530
   Trustco Bank 220 East Hartsdale Ave NY 10530 and

Harry's Italian rest 230 E Hartsdale Avenue**,** Hartsdale NY 10530 914-472-8777
Across E. Hartsdale Avenue is
Dee Francetic Hair Salon 181 East Hartsdale Avenue, Hartsdale**,** NY 10530-3502. Phone: (914) 723-0120,
Flower and Flowers 183 East Hartsdale Avenue**,** Hartsdale, NY 10530
Salon Flair. 193 East Post Road White Plains, NY 10601-4902. (914) 946-1811,
Hartsdale Veterinary Hospital: 193 East Hartsdale Avenue Hartsdale NY 10530 Phone: 914-723-4006,
Barber Shop 197 East Hartsdale Avenue**.** Hartsdale, NY 10530
Juice & Java, 201 E Hartsdale Ave, Hartsdale, NY 10530-3502 (914) 472-6916
Cassano pizza *203 E Hartsdale Ave, Hartsdale (914) 722-2666*

3. **Local News Media;** The Journal News, Christine Mautone, One Gannett Drive, White Plains, NY 10604 914) 694-5030 rfrederi@lohud.com
   Television: Larchmont Mamaroneck Community Television: 740 West Boston Post Road, Suite 311, Mamaroneck, NY 10543
   Radio: , Bronx, NY 10458WFUV, Fordham University
4. **Public Water Supplier:** Randy Kairns, Asst. Superintendent, Consolidated. Water & Sewer District 177 Hillside Ave, White Plains, New York 10607 (914-993-1592)
5. **Any person who requested to be placed on the contact list**
   Robert Schick, NYSDEC Case Manager 518 402 9662 , NYSDEC Region 3 Division of Environmental Remediation, 21 South Putt Corners Road, New Paltz, NY 12561 rxschick@gw.dec.state.ny.us
6. **There are no schools** or day care facilities located near the site
7. **Location of Document Repository:** Greenburgh Library 300 Tarrytown Road, Elmsford, **NY** 10523 . Other environmental organizations as directed by NYSDEC
8. Hartsdale Train Station (Photo 3.6) DiSanti Plaza, Hartsdale Ave, Hartsdale, NY 10530-3502
9. On the rear of Aristocrat Cleaner is an access road (1.10 and 1.11) and Municipal Parking Garage "A" (1.54 and 1.55). Our site reconnaissance did not find any visible environmental impact on the subject property from the adjacent and nearby properties and no sign of the solvent leaving the property.

2.5 Regulatory Review

As part of the regulatory review, a search of public records was completed for known or potential contamination that may have impacted the site. Information was collected and documents and records reviewed that describe the past and present activities at the site.

FOIL Request: On June 19th 2009 we requested public records: environmental records, maps, and plans for 112 Hartsdale Avenue from the Town Clerk of Greenburgh; See attached FOIL Request Form. Federal, state and local officials were interviewed along with local citizens and facility employees (past and present) that might have knowledge of the site. Additional inquiry was made of governmental agencies that have some jurisdiction over environmental matters at the site. It appears from initial enquiries that the Township Engineers and West Chester Planning Dept answered many of the unanswered questions regarding the flood on site, the stratigraphy and the groundwater flow. Examples of agencies that were contacted are: State Environmental Agencies and agencies such as the US Geological Survey (USGS) regional Water Quality Control Boards, County Health Departments, Town Engineer for Greenburgh, Fire Department, building inspectors, and Consolidated Water and Sewer District.

The Bureau of Engineering of Greenburgh and Michael Lepre, P.E. Town Engineer for Greenburgh was interviewed: He directed us to the Westchester Planning Dept that had many resources.

The site is noted on FINDS, NYSPILL, DRYCLEANERS and RCRA small quantity generator data base

There is another dry cleaner: Cross Westchester Cleaning 194 E Hartsdale Ave less than 1/8 mile away and at a higher elevation,

Hazardous Materials Incidents: Fire Chief Kapica indicated the closest actual hazmat incident on Hartsdale Avenue involved a gasoline spill which occurred at the intersection of West Hartsdale Avenue and Dobbs Ferry Road on December 6, 1991.

Existing Oil Storage Tank: There is no Existing Oil Storage Tank in the property. This is confirmed by the building supervisor Mr. Nick Smajalj and previous owner's representative Mr. John Barrett of Massy Knakal Realty.

Historical Storage Tank: The two Historical storage tanks in the rear yard had been removed on August 8, 2007 and August 102007, as shown in Appendix B.

Storage Tank Leaks: One fuel oil tank leaked at the rear of the property. The tank was removed from the back of the strip mall near the Sports Authority and an assessment and investigation was completed by The Town of Greenburgh. Evidently the tank was above ground on a steel cradle that may have been overturned and damaged by the April 2007 flood. Fuel oil is suspected to have travelled with the flood water and may account for some of the contaminants found in the samples from the sump.

Environmental Records, Federal and State

A search of the available environmental records was conducted on the Internet. This search was conducted in accordance with the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-97. Search distances are per ASTM standard distances. See Appendix E for The EDR-Radius Map with GeoCheck. The search of available ("reasonably ascertainable") government records included the following:

FEDERAL ASTM STANDARD

NPL National Priority List
Proposed NPL Proposed National Priority List Sites
CERCLIS Comprehensive Environmental Response, Compensation, and Liability Information
System
CERC-NFRAP CERCLIS No Further Remedial Action Planned
CORRACTS Corrective Action Report
RCRA-TSDF Resource Conservation and Recovery Act Information
ERNS Emergency Response Notification System
STATE ASTM STANDARD
SWF/LF Solid Waste Facility Directory
SWRCY Approved Class B Recycling Facilities
FEDERAL ASTM SUPPLEMENTAL
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
Delisted NPL National Priority List Deletions
HMIRS Hazardous Materials Information Reporting System
MLTS Material Licensing Tracking System
MINES Master Index File
NPL Liens Federal Superfund Liens
PADS PCB Activity Database System
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
ODI Open Dump Inventory
US ENG CONTROLS Engineering Controls Sites List
UMTRA Uranium Mill Tailings Sites
INDIAN RESERV Indian Reservations
RAATS RCRA Administrative Action Tracking System
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
SSTS Section 7 Tracking Systems
STATE OR LOCAL ASTM SUPPLEMENTAL
NJ MAJOR FACILITIES List of Major Facilities
NJ PF Publicly Funded Cleanups Site Status Report
NJPDES New Jersey Pollutant Discharge Elimination System Dischargers
DRYCLEANERS Drycleaner List
ENG CONTROLS Declaration Environmental Restriction/Deed Notice Sites
EDR PROPRIETARY HISTORICAL DATABASES
Coal Gas Former Manufactured Gas (Coal Gas) Sites
BROWNFIELDS DATABASES
US BROWNFIELDS A Listing of Brownfields Sites
US INST CONTROL Sites with Institutional Controls
Brownfields Database
INST CONTROL Classification Exception Area Sites

Data Base Search

Of the total 123 sites of concern identified by the database search, 21 of them are located within 1/8 mile from the subject property.
Records search investigation reveals that the subject property was listed in LTANKS, RCRA.CESQG, FINDS, DRYCLEANERS and MANIFEST databases with FIND #110019466380, due to its use as a dry cleaner at the store #212.

It appears that the government regulation of the dry cleaner on the subject property started in 1986.

From the data bases, the dry cleaner produced 520 pounds of spent halogenated solvents and other chemicals in 1986, 135 + 270+135+135+135 +270 pounds in 1988, 135+135+135+210+135 pounds in 1992, 585+390+270+195 pound in 1995, 390 pounds in 1998, 390+585 pounds in 2001 and 450 pounds in 2005.

Records also show that an environmental spillage occurred on the property on April 21 2007, probably from the leak of the underground oil tanks under the rear yard. But as mentioned above, the tanks had been removed in August 2007 and the cases had been closed on September 10, 2007.

Federal Records

RCRA-SQG Small Quantity Generators
Since this site is more than *1/8* mile away from the subject property. It is not of environmental concern.

RCRA-NonGen
Although this site is with 1/8 mile from the subject property, it is not adjacent to the subject property and is not of environmental concern.

State and Local Records

LTANKS
The nearest two leaking TANKS sites within 1/8 mile higher than the subject property are at least one block away from the subject property and their status are closed; corrective actions were taken. The remaining sites are more than 1/8 mile away or at a lower elevation, so they are not of environmental concern. Their status are closed and they are "known release with minimal potential for fire or hazard and DEC Response. “Willing Responsible Party - Corrective action taken." The other sites are more than 1/8 mile away or at a lower elevation, obviously not of immediate concern.

UST (Underground Storage Tank)
As the 2 nearest UST sites within *1/8* mile are not adjacent to the subject property, they are not of environmental concern. The sites are at lower elevation or more than 118 mile away and do not pose a potential environmental concern to the subject property.

AST (Aboveground Storage Tank)
All the sites are more than 1/8 mile away from the subject property and do not pose environmental concern at the subject property.

MANIFEST (Hazardous Waste Manifest Information)
The site within 1/8 mile (Mobil Gas Station) is not adjoining to the subject property. It is not of environmental concern.

NY SPILLS
Although all the 6 sites are within 1/8 mile, they are not adjacent to the subject property. Their cases are all closed. For these cases of the oil spills and tank leaks, according to the *Report,* most of them were very small amount and they are classed as either "inactive, event completed or corrective action being taken". So they little risk of polluting the soil under this property.

NY HIST SPILLS
Although all the 4 sites are within 1/8 mile, their cases are all closed. For these cases of the oil spills and tank leaks, according to the *Report,* most of them were very small amount and they are either inactive, event completed or corrective action being taken. So there is no danger to pollute the soil under this property.

Drycleaners
The other dry cleaner site 194 E. Hartsdale Avenue) is within 1/8 mile and at a higher elevation and may be of environmental concern.

Conclusions Drawn from Data Base Search

Because #212 of the subject property is used as a dry cleaner, the dry cleaner is the recognized environmental conditions (RECs) from the *Records* search

2.6 Initial Site Survey

An on-site inspection was conducted on July 22, 2009. The storage of solvent at Aristocrat cleaners was observed in drums and miscellaneous gallon jugs around the dry cleaning machine and the recycling machine in secondary containment connected to a waste drum in side secondary containment in the middle of the wooden ground floor. No other storage or handling of hazardous substances was observed in the areas inspected during the site reconnaissance, except the dry cleaner. No air monitoring exceedance was noted during the initial inspection using a MiniRae PID meter

Polychlorinated Biphenyls (PCBs): Since no electrical transformers were in the property, it is unlikely a PCB coolant problem exists at the property. No known or suspected PCB-containing equipment or materials were observed on-site during the site reconnaissance.

Sumps, Trenches, Floor Drains, and Industrial Discharge Sources; There are three sumps in the basement under the dry cleaner: one sump near the entrance door (that was installed within the last year) and the other sump that was in the middle of the basement floor adjacent to the wall of the Hartsdale Farm basement wall and a boiler sump that has not worked for many years. All the sumps need to be investigated along with the discharge into the sewer line in the ceiling.

Surface Staining; No significant areas of staining or other unusual surface conditions were observed on site reconnaissance, except the area around the dry cleaning machine.

No Stressed Vegetation: The yards on the subject property were paved by concrete. But the area surrounding the subject property showed no disfigured, discolored, dying, or otherwise stressed vegetation during the site reconnaissance.

Other Environmental Concerns or Conditions; There was no evidence of environmental concerns, conditions, and/or impairments observed during the site reconnaissance, except at the dry cleaner.

Site Security conditions were evaluated in the initial site inspection
The site is a dry cleaner where the public come and go with their laundry. Main access is through the front door on the E Hartsdale Avenue shopping street
Access to the basement and the contaminated sump is restricted to the business owner and his employees. The basement has a locked door to restrict access.

INDOOR AIR BUILDING SURVEY and SAMPLING FORM - July 22, 2009
Preparer's name: John Bee Date Phone#: 732_ 247 **5722**
Preparer's affiliation: Tapash LLC Consultant Case#: ___**0903393**_____
Property Contact: _____Kenneth Shin, Phillip Benincasa_____
Contact's Phone ____212 926 1500_____ _____

212-218 E Hartsdale Avenue Present Tenants

No	Address	Tenant (Use)	Area sq ft
1	212	Sara Benincasa (Dry Cleaners)	1700
2	214	James Lee Hartsdale Farm (Grocery Store –Market)	2200
3	216	Hartsdale Liquor Store Inc.	1022
4	218	Varsity Networks inc. (2nd Floor Office)	3000
		Total	**7922**

Building occupants: Children under age 13: **None.** Children age 13-18: N**one**. Adults: 6

Building Characteristics
Year constructed: 1940 Building type: Brick strip mall / commercial office 2nd floor
Describe building: basement with sump see Section 2 Site Plan: see Figure 2.1
Foundation Plans: not available Utility Plans inc manholes see Figure 2.11.13
Sensitive population: day care / nursing home/hospital (specify): __General Public__
Number of floors below grade: _1 basement with concrete floor_____
Number of floors at or above grade: _____2_____
Depth of basement below grade surface: _10 feet_. Basement size: __900 ft2___
Basement floor construction: ___concrete_____
Foundation walls: _____native cobbles set in concrete _____
Basement sump present? Yes 2 Water in Sump: Yes - 1 feet water in sump
Type of heating system (circle all that apply):___gas_____
Type of ventilation: Ventilation Fan at rear 1st floor overlooking stair well to basement_
Type of fuel utilized (circle all that apply): _ Natural gas and electric_____
Are the basement walls or floor sealed with paint or epoxy coatings? No
Ventilation system: Is there a whole house fan? Yes
Septic system ___No__ Irrigation private well ___No__
Type of ground cover outside of building: ___Asphalt and concrete _____
Existing subsurface depressurization (radon) system in place ___ None ___
Sub-slab vapor/moisture barrier in place? _____ No____ Type of barrier: ___None_

Part III - Outside Contaminant Sources
Contaminated site (1000-ft. radius): __None based on Data Search_____
Other stationary sources nearby (gas stations, emission stacks, etc.): None observed
Heavy vehicular traffic nearby (or other mobile sources): Yes, Main Street, Train Station

Part IV — Indoor Contaminant Sources
Identify all potential indoor sources found in the building (including attached garages), the location of the source: Dry cleaning machine on 1st (ground) floor above basement. Historic storage in 100-gallon solvent tank in basement adjacent to black stained sump

Potential Sources	Location(s)	Removed
Gasoline storage cans / equipment	No	
Kerosene storage cans	No	
Paints I thinners / strippers	No	
Cleaning solvents	Yes	No
Carpet / upholstery cleaners	No	
Other house cleaning products	Di Minimus	
Moth balls/ Polishes / waxes	No	
Insecticides	No	
Furniture / floor polish /Nail polish /	No	
Hairspray/Cologne / perfume	No	
Air fresheners	No	
Fuel tank (inside building)	No	
Wood stove or fireplace	No	
New carpeting I flooring	No	
Hobbies - glues, paints, etc.	No	

Ventilation after removal of potential source items was completed at least 24 hours prior to the commencement of the indoor air sampling event.

Part V — Miscellaneous Items

Do any occupants of the building smoke? How often? _____ Unknown _____
Last time someone smoked in the building? _____Unknown_____ hours /days ago
Does the building have an attached garage directly connected to living space? __No__
Are gas-powered equipment or cans of gasoline/fuels stored in the garage? __No__
Do the occupants of the building have their clothes dry cleaned? __Yes __
Do any of the occupants use solvents in work? _Yes _ What types: Tetrachloroethylene
Any pesticides/herbicides been applied around the building or in the yard? __ No__
Has there ever been a fire in the building? __No _____
Has painting or staining been done in the building in the last 6 months? __ No __

Part VI— Sampling Information

Sample Technician: _____I Phone number: **(732)** 267. 5722
Sample Source: Indoor Air / Sub-Slab / Near Slab Soil Gas / Exterior Soil Gas
Sampler Type: Tedlar bag / Sorbent / Stainless Steel Canister / Other (specify):
Analytical Method TO- 15 / other: _____Cert. Laboratory: _____
Sample locations (floor, room): # ___Basement and 1srt Floor_____ Field ID#
Were "Instructions for Occupants" followed? Yes /No If not, describe modifications: __
Provide Drawing of Sample Location(s) in Building

Part VII- Meteorological Conditions

Was there significant precipitation within 12 hours prior/during) the sampling event? No/
Describe the general weather conditions: _____

Part VIII— General Observations: Solvent in drums/gallon jugs around dry cleaning machine

2.7 Previous Investigation

A Phase I Site Assessment was conducted by Sun Tao Associates, Inc. in June 2008. The subsequent report indicated that one of the storefronts has been a dry cleaning operation for more than 38 years and recommended that "…an appropriate investigation on the environmental impacts (to detect the presence of hazardous substances or petroleum products) …is necessary").

Marksmen Enterprises, LLC (Marksmen) was retained by Hartsdale Village Square, L.L.C. to conduct a limited Phase 2 site investigation at a commercial property in Hartsdale, New York. On June 5, 2009, Marksmen conducted a limited site investigation at the dry cleaning facility located at 212-218 E. Hartsdale Avenue in Hartsdale, New York. Soil samples were collected at various levels below grade in the basement and from a location adjacent to the rear door of the dry cleaners.

Using a Geoprobe® with a 20-inch macro-core sampler, Marksmen collected one soil sample from 9.5 feet below grade (corresponding to approximately 1 foot below the basement floor grade) at a location adjacent to the rear door of the facility. Marksmen then cored through a concrete basement floor at three locations and collected soil samples from levels ranging from 15 inches to 60 inches beneath the basement floor.

Soil Sample Collection

Marksmen collected soil samples from four locations at the dry cleaning facility: S-1 through S-4, were collected. Samples S-1 was collected from 60 inches below grade (corresponding to 12 inches below the basement floor) from a location adjacent to the rear door of the dry cleaning facility. Samples S-2, S-3 and S-4 were collected from 15 inches, 20 inches and 60 inches beneath the basement floor, respectively. All samples were screened in the field with a PID. Each of the soil samples were analyzed for VO using the EPA 8260B protocol. The sample locations are illustrated on Figure 2.7.

Qualitative Results and Olfactory Observation
The results of the observations and PID readings are listed in the Table 1 below:
Table 1: **212-218 E. HARTSDALE AVENUE**
QUANTITAVE RESULTS SUMMARY June 5, 2009

Sample Designation	PID Reading	Olfactory Observation
S-1	12.2	Fuel Oil Odor
S-2	Greater than 5,000	Strong Dry Cleaner Odor
S-3	69.5	Strong Fuel Oil Odor
S-4	10.2	Fuel Oil Odor

The four soil samples were delivered to Aqua ProTech Laboratories (APL). The samples were analyzed for volatile organics (VO) using the EPA 8260B protocol. The locations were biased toward the most likely areas where hazardous materials may have been released; outside the rear door and into the oldest of three (3) sumps in the basement beneath the dry cleaners.

Marksmen also examined the sediment in the sump. When the sediment was disturbed, a petroleum sheen appeared on the water. It was reported that the basement flooded two years ago and that heating oil from an off-site source had impacted the basement. It was also reported that the basement had been thoroughly cleaned after the waters receded. The soil samples in the Phase 2 borings consisted predominantly of urban fill that graded into native medium coarse sand at deeper levels. The sample closest to the sump had strong solvent odors. Samples further away from the sump exhibited moderate to strong petroleum odors. The sample adjacent to the rear door of the facility had no odor. The samples were screened with a photoionization detector (PID). The sample closest to the sump recorded readings greater than 5,000 PID units. The samples were submitted to a certified New York State laboratory and analyzed for volatile organics using the STARS protocol. Analytical results indicated the presence of dry cleaning solvent and its decomposition products in concentrations exponentially greater than current New York Department of Environmental Conservation (NYDEC) Soil Cleanup Objectives. Based on these results, remediation of the area beneath the dry cleaners is recommended. Remediation of the soil located beneath the basement floor at this location is warranted.

Soil Sample Analytical Results

Volatile organic compounds associated with dry cleaning solvent and petroleum hydrocarbons were detected in three of four of the samples collected. Compounds associated with dry cleaning solvent were detected in levels that exponentially exceeded the NYDEC Allowable Soil Concentration and the NYDEC Recommended Soil Cleanup Criteria. Of note are the concentrations of dry cleaning solvent and its decomposition products that were detected in samples S-2 and S-3. The levels of these compounds were sufficiently high in samples S-2 and S-3 that it was necessary to dilute the samples to obtain accurate analytical results. In the case of sample S-2, three successive dilutions were necessary. Tetrachloroethene was initially detected in sample S-2 at a concentration of 78,900 micrograms per kilogram (μg/kg). The result was inaccurate as the sample needed to be diluted. The maximum concentration of Tetrachloroethene detected in sample S-2 was 4,960,000 μg/kg (4690 mg/kg) when the sample was diluted 20-fold. When the dilution was 1,000-fold, the concentration was 1,160,000 μg/kg. Tetrachloroethene was also detected in sample S-3 at 6,490 μg/kg. The concentration of Vinyl Chloride present in sample S-2 at 302 μg/kg also exceeded the NYDEC Recommended Cleanup Objective. Other decomposition products of dry cleaning solvent that were detected are 1,2-Dichlorobenzene, 1,1-Dichlorethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, Trichloroethene, Tetrachloroethene and Vinyl Chloride. These compounds and their respective concentrations are summarized in see Figure 2.7 Basement Map and Table 2 of Sample Results and lab data are in Appendix D.

Spill Report: When the initial sampling results became available, Tapash called the spill into the NYSDEC Hot-line (800) 457-7362 on June 22, 2009 As per ECL 17-1743, 6 NYCRR 613.8 and 17 NYCRR 32.3 notifying the NYSDEC of the discharge. Case No 0903393 was assigned to the spill. Alicia Bodner took the call and Tapash subsequently transmitted the Phase 2 report to Todd Ghiosay NYSDEC Groundwater. The case was being managed by Manager Janet Brandon 845 256 3826 NYSDEC Region 3 Division of Environmental Remediation, 21 South Putt Corners Road, New Paltz, New York 12561.

2.8 Nature and Extent of the Problem

The investigation of the nature and extent of the problem is incomplete, but was completed by an assessment of potential on-site and off-site health impacts and environmental effects.

The method used by Marksman to screen the soil boring samples with a Photoionization Detector is insensitive: usually capable of detecting to a quantitation limit of 1 ppm of solvent. No chromatograms were generated by their method. A portable Photovac Voyager GC was used in this Remedial Investigation allowing the analysis of far more soil and groundwater samples and water seeps to be screened that may yield a pattern of trace soil contamination and migration that will assist in identifying the extent of the source area and its impact. This method Tapash used for soils sample screening is sensitive to 10 ppb solvent and generate innumerable chromatograph signatures. Duplicate soil samples was analyzed in the laboratory. Individual trace solvent levels was presented on an isopleth map: contoured to identify potential sources.

Qualitative and quantitative analytical results of soil samples from the Phase 2 investigation indicated that high levels of dry cleaning solvent and its decomposition products have impacted the soil beneath the basement floor below the dry cleaners at the site. Concentrations of some of these compounds exceed NYSDEC Recommended Cleanup Objectives, see Figure 2.7.

2.9 Site Maps and Plans

The properties owned by Hartsdale Village Square LLC is composed of three structures rented out to four tenants: Aristocrat cleaners is the central building with New York Sports Club and the Hartsdale Farm market on either side. The Aristocrat building is a one-story concrete block and brick rectangle in the rear with concrete steps providing access to the basement and on the frontage a two story brick structure adjacent to a one-story brick housing Aristocrat Cleaner, see Figure 2.1.2: Site Map and 2.1.2: Site Plan.

212-218 E Hartsdale Avenue - Present Tenants

No	Address	Tenant (Use)	Area sq ft
1	212	Sara Benincasa (Dry Cleaners)	1700
2	214	James Lee Hartsdale Farm (Grocery Store –Market)	2200
3	216	Hartsdale Liquor Store Inc.	1022
4	218	Varsity Networks inc. (2nd Floor Office)	3000
		Total	**7922**

The scaled site plans attached provide detailing lot and block numbers, property and leasehold boundaries along with details of the present building construction. We will seek additional foundation maps and present photos where fill or cover material has been brought on-site along with paved and unpaved areas. No distressed vegetation was observed as there is no vegetation around the building – the building occupied 95% of the Lot. There is no active and inactive well on site.

Scaled historical site plans and facility as-built construction drawings are presented along with a copy of historic and the most recent United States Geologic Survey (USGS) 7.5 minute topographic quadrangle, Figure 2.1.3 Topo Map, that includes the site and an area of one mile radius around the site. Additional maps detail the location of all samples taken and their results compared to the applicable standards and cleanup criteria and describe all areas of environmental concern (AOCs) and include the extent of contamination in all media and groundwater flow direction.

The historical and recent development patterns were considered: The area was built out by 1970 at a Main Street with two story stores of the tree lined-street, adjacent to the parking lot of the Train Station. The municipal garage at the rear of Aristocrat Cleaners was build less than 10 years ago.

2.10 Tax and Zoning Maps

The Tax Map is presented in Figure 2.1.2 and the Zoning Map in Figure 2.1.2: Zoning
The zoning for the property is designated Commercial shopping area

2.11 Environmental Features

Site visits, mapping and a review of historic and environmental file documents and data bases were conducted to obtain information on the Environmental Features of the site:

Geological, Hydrological and Topographical Assessment - Incomplete

The assessment of the geological, hydrogeological, hydrological, topographical, and historical storm trends of the site aids in the understanding of the environmental transport routes, dispersal patterns and risks, past, present or future pollutants spilled or discharged on or into the ground or water. Geological survey and soil reports were reviewed that detail the structural and hydrologic features of the area. Cross-sections of the site were developed. The soil/rock structure, the location of wells and their yield and the relationship of surface and groundwater systems will indicate the hydrogeologic conditions at the site.

2.11.1 Topography

The site is on the northwest shoulder of the Bronx River valley, through which runs the Bronx River Parkway in a 40-foot deep gorge flanked by shale, gneiss and shale outcrops on either side of E. Hartsdale Avenue and across the parkway to the East in the fountain Terrace District. The elevation of the subject site appears to be 179 feet (Page A-2 in GeoCheck) above mean sea level. The topographic gradient is downward toward the south. The site appears to be in a bowl on the top of bedrock noted in outcrops in the surrounding slopes that forms a bench adjacent to the Train Station at a 10 feet lower level. The elevations on the eastern .the western and the southern sides of the valley within 1 mile are higher than the subject site. The site is generally level and at grade with the rear access road at the rear and the side walk of E Hartsdale Avenue at the front of the store. The basement is accessed by steep concrete steps descending 10 feet into the rear. The 1967 USGS Topographic map at 1:24000 scale is provided Figure 2.1.1 Aerial Photo., see also 2.1.2.

On the northwest side of the valley Scarsdale Golf Club is show at the top of the ridge and on the south east side of the gorge Brite Road runs along the top of the ridge.

During the site reconnaissance and the review of historical maps and photographs, no streams, no wetland, no lagoons, and no ponds were seen to currently exist at the surface on the subject site or on properties adjoining the subject site. However, there is a major storm water drain, carrying a former stream from Central Avenue, that flows behind the subject strip mall, that was subsequently put in a storm drain, with an invert about 10 feet below grade at approximately the same elevation as the sumps. In addition, the 48”-diameter Kensico Reservoir - Bronx Aqueduct, built in the late 1800’s, runs under E Hartsdale Avenue down from Central Avenue and crosses at about 10 feet depth under DiSanti Park, the little triangular park adjacent to the train station. These major pipes with their backfill - the channelized stream and the Kensico-Bronx Aqueduct - running adjacent to the site will have a major influence on local groundwater flows southward towards the Bronx River (see Water Supply and Drainage sections to follow).

2.11.2 Slopes

Major slopes with bedrock outcrops are noted in the valley sides running down E. Hartsdale Avenue and in the valley of the Bronx River as indicated on Figure 2.11.2.

Slopes have been defined in three classes: 1) 15-25%; 2) 25% and greater; and 3) 25% and greater spanning an area of ten acres or greater and a height differential of 100' or more.

The slopes are mapped in Figure 2.11.2 and highlight the topographic form of the area that correlates well with existing drainage divides and location of river valleys.

Slope as used on the maps is the ratio of the elevation difference to the horizontal distance. A 15% slope will have an elevation difference of 15' per 100', 30' in 200' and 60' in 400' which, on a 10' contour 1,000 foot scale map, was six contour spaces in four-tenths of an inch.

2.11.3 Drainage Basins

The site lies within the Bronx River Drainage Basin represented on the map Figure 2.11.*2* as an area having a system of streams, lakes and man-made structures that gather and conduct precipitation to the lowest point – the Bronx River. Heavy dotted lines (Drainage Basin Lines or Divides) between basins represent the divides which separate surface water runoff as well as major groundwater movement divides towards lakes, streams and wetlands. These divides are shown by heavy, dashed lines which follow ridges and relatively high areas, and have been defined from interpretations of the topographic maps. The accuracy of the map divides or drainage separations is within 100' or 0.05" in areas of rugged topography. This level of accuracy decreases rapidly in areas of low, gentle topography and in areas where man-made underground storm sewers have been constructed.

Definition of natural drainage systems is necessary for an understanding of natural surface water flow and groundwater flow directions and preliminary sanitary sewer design since most sanitary sewers are constructed to flow by gravity. For this reason all natural drainage basins shown on the maps were defined during the Water Quality Planning program and were grouped for planning purposes into six major basin units. The "Major Basins" are defined In the County Waste Management Plan as Long Island Sound. Bronx River, Croton River, Lower Hudson River and Upper Hudson River. The names of the individual drainage basins are the names of the principal river or stream in each drainage area.

2.11.4 Regional Geology

Westchester is largely underlain by a heavily-metamorphosed bedrock of Precambrian and Paleozoic sedimentary and igneous rocks (see Figure 2.11.4 "General Geology Map" from the Westchester Environmental Atlas). For the most part, the dominant outcrops are gneiss, schist, and granite. Hollis soils formed over these rocks.

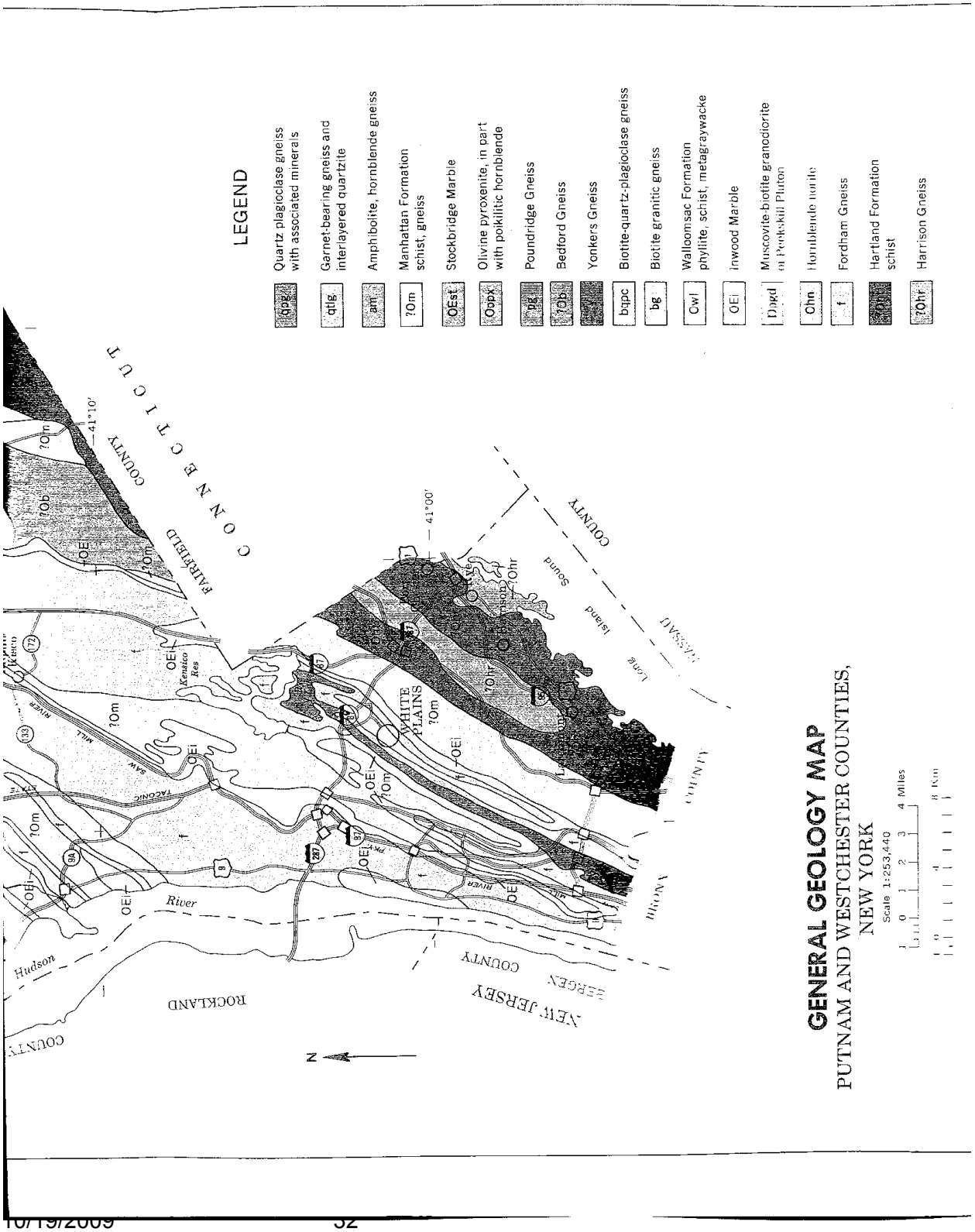
The bedrock underlying Westchester County is the Manhattan Prong of New England Province. The county is marked by a series of distinct north-south trending ridges that are the residual low hill of tightly-banded fractured shale alternating with granite dikes and metamorphic banded schist and gneiss rock. As the glaciers retreated, the softer marble formation was more easily eroded, as compared to the harder schist and gneiss formations creating a series of North –South valleys.

The basic pattern of hills and valleys reflects the structure and variation in composition of the underlying bedrock. Streams followed softer, more easily eroded rock units and zones that were more intensely fractured along structural breaks or faults. This topographic pattern was further modified by the intense erosion caused by the continental glaciers that moved southward as far as Long Island and northern New Jersey. Further modification took place as the glaciers melted and retreated, leaving a complex sedimentary covering or overburden of moraines, terraces, outwash plains, lakes, and marshes.

When the ice front stalled and subsequently retreated, glacial meltwater deposited stratified gravel and sand in many areas, particularly in the major valleys. Riverhead soils are common in these outwash deposits.

Glacial lakes formed as the meltwater occupied low areas. Silt and very fine sand dominate the deposits in these lakes. Raynham soils formed in these types of deposits.
The thickest glacial deposits are in the Hudson River Valley. The thickness of these deposits exceeds 500 feet in some places in the valley.

Figure 2.11.4. Soil Survey "General Geology Map." Westchester Environmental Atlas



The variety of rocks and formations, ranging in relative age from the Middle Proterozoic (Precambrian) to the Upper Triassic are presented in Figure 2.11.4. Geology Map Key in the text are defined in the legend of the Map.

The oldest of the rocks of the Middle Proterozoic age are quartz plagioclase gneiss (qpg). These rocks may contain pyroxenes, horneblende, and biotite. Some areas are interbedded with amphibolite. Other rocks of the Middle Proterozoic are biotite granitic gneiss (bg); amphibolite, pyroxene amphibolite, and hornblende gneiss (am); garnet-bearing gneiss and interlayered quartzite (qtlg); and biotite-quartz-plagioclase gneiss (bqpc) in the Hartsdale area. Rocks of the Upper Proterozoic are Poundridge gneiss (pg), Yonkers gneiss (y), and Fordham gneiss (f). Poundridge gneiss is high in biotite or hornblende quartz-feldspar, or both. Yonkers gneiss consists of biotite and hornblende quartz-feldspar gneiss. Fordham gneiss includes garnet-biotite-quartz-plagioclase gneiss and amphibolite, sillimanite-garnet schistose gneiss and quartzite, and garnet-biotite-quartz plagioclase gneiss and amphibolite.

The oldest rocks of Paleozoic age are from the Hartland Formation (Oht). These rocks consist of basal amphibolite overlain by pelitic schists. Next in age is Harrison gneiss (Ohr), which is biotite-hornblende-quartz-plagioclase gneiss and contains garnet and sphene. Bedford gneiss (Ob) is next in age, followed by the Manhattan Formation (Om). Other Paleozoic rocks are from the Middle and Upper Ordovician period. They are Stockbridge marble (OEst), Inwood marble (OEi), the Walloomsac Formation (Owl), olivine pyroxene (Oopx), and hornblende norite (Ohn). The youngest rocks in the area are from the Devonian period of the Paleozoic era: they are intrusions of muscovite-biotite granodiorite (Dpgd).

Local Geology

The tightly-banded bedrock pattern in Westchester County is clearly visible around the site, particularly in the rocky outcrops in the valley sides. The bands of Manhattan schist (labeled Om) are the same kind of rock that underlies New York City.

The bedrock under the site is a highly fractured metamorphic Shale, and Biotite Schists and Gneiss, injected with granite and quartz dikes. The rock strata steeply dip into the ground at @ 70^{o} and a strike Southeast-Northwest parallel to the strike of the rail line and Bronx River valley.

The significance of the deeply dipping, fractured formation is that:

- It is unlikely there was a confining layer to retain any solvent reaching bedrock
- The fractures will facilitate the migration of any solvent that reaches bedrock.

The path of groundwater and solvent migration is likely to be towards the Bronx River.

Blocky Metamorphic shale & biotite gneiss injected with granite dikes dipping @ 70° Northwest parallel to the strike of the rail line and Bronx River valley.

On the west side of the gorge, behind the dry cleaners, the rocky outcrops are stabilized with the retaining walls of the Parking Garage A.

Many of the streams and rivers coincide with bands of Inwood marble (labeled OCi), which is the most-easily eroded rock type in Westchester and underlies most of the Southwest-Northeast trending valleys.

Beneath the Hudson River, the relatively softer rocks of the Newark Lowlands come into contact with the harder rocks of the Manhattan Prong, and some fairly unique geology is the result. The water flowing from melting glaciers cut a very deep valley for the Hudson River into the rock here that filled in over time, primarily with clay – in some places, there is as much as 700 feet of sediment overlying bedrock.

The soil of Westchester County that overlies the bedrock at a given spot and the properties of that soil depend most directly on the source material (essentially, the rock type from which it was originally eroded), and the means by which the soil was placed (such as from direct contact of a glacier with bedrock, or sediment that settled out from historic or current lakes and rivers, etc.). Similar soil types are grouped by the Natural Resources Conservation Service (NRCS) into 'soil series.' There are more than 15 soil types in Westchester County, See Figure 2.11.4: Soil Survey

2.11.5 Hydrogeology of the Area

Commercial sites, businesses, and manufacturing facilities in Westchester use groundwater resources for their supply. Aquifers in this region are used both as sources of water supply and as receivers of wastewater discharges. These potentially conflicting uses of the County's aquifers require evaluation and management.

Groundwater is found in aquifers, which are geologic formations through which groundwater slowly seeps toward discharge points. Groundwater is extracted by wells and provides flow to streams as it discharges naturally from aquifers into wetlands, streams or other open water bodies. Businesses and municipalities relied upon groundwater for facility cooling, water supply and irrigation.

Surficial geology in Westchester County consists of a wide range of sediments deposited by glaciers. Glacial sediments include clay-rich glacial till on hillside and upland areas, and sandy outwash or ice contact deposits and glacial lake deposits in the County's valleys). Glacial till is generally clay-rich and contains varieties of angular and variously sized rock fragments and boulders. Glacial till is the most common soil substrate on hillsides and upland areas in Westchester County and is normally not used for water supply both because it lies in higher, unsaturated elevations and because it general exhibits low permeability that prevent installation of viable wells.

Bedrock aquifers underlie all parts of Westchester County. Groundwater migrates through fractures in these formations. Wells in bedrock aquifers yield water where they intersect water-bearing fractures. Well yields in bedrock aquifers are generally low but are acceptable for domestic well purposes. Occasional higher-capacity wells are, and can be, sited in the County's bedrock aquifers.

Threats to aquifers and the surface streams that they feed are groundwater contamination by solvents and petroleum spills commonly found in commercial and industrial areas. Petroleum spills from buried home heating oil tanks can impact groundwater quality in residential areas.

A recent USGS study also indicates that at least 60 percent of annual streamflow in the region comes from aquifer discharges (Heisig, 2000), making aquifer protection and management critical also to the preservation of Westchester County's aquatic resources and surface water sources of water supply.

2.11.6 Well Data

Only 4% of the County's water supply comes from wells. Reference well locations shown in the Hydrologic Features maps are from the U.S. Geological Survey Bulletin GW-35, The Groundwater Resources of Westchester County, New York, Part 1, New York State DEC, Water Power and Control Commission, Albany, New York, 1955. This bulletin includes tables of information from drillers' logs and tests showing the material penetrated in 96 wells and borings, and tables containing information on the construction, use, water-bearing material, and other data for more than 1,100 wells. The locations were plotted according to the Bulletin index maps where wells are arbitrarily numbered in the order in which the records were collected. Because of both the scale and date of the base maps used in the Bulletin, the plotting of the wells shown cannot be taken as an exact location on a parcel(s) of land. Most of the wells provide water for individual homes. These low-yield wells are drilled and completed to pump water from fractures and openings in bedrock. Some wells have been completed at relatively shallow depths to provide water for municipal and community systems. Water in these wells is pumped from porous sands and gravel which yield a higher rate and volume. Community and municipal wells, shown with a crosshatch, were taken from the Geologic Series maps and from information provided by municipal managers. Some of these wells also contain a number which is the reference to data in Bulletin GW-35.

Groundwater is the sole source of potable water in large areas of the north part of the county. It also contributes an essential part of the natural stream flow and is necessary for the viability of wetlands, permanent lakes, natural reserve storage for reservoirs and water quality generally throughout the county. The Geologic Series maps and report "Technical Groundwater Section of the 208 Areawide Waste Treatment Management Planning for Westchester County" prepared by Geraghty & Miller, Inc., were reviewed and provided the background and principles of ground-water occurrence in Westchester.

No wells were found in the area within 1000 feet of the site.

CONTAMINANT	STANDARDS OF STATE SANITARY CODE MAXIMUM CONTAMINANT LEVELS (MG/L OR PPM)*
INORGANIC CHEMICALS	
Arsenic/Lead	0.05
Cadmium	0.01
Chloride/Sulfate	250.0
Fluoride	2.2
Iron/Manganese	0.3
Mercury	0.002
Nitrate	10.0
ORGANIC CHEMICALS	
Endrin	0.0002
Lindane	0.004
Mathoxychlor/2,4-D	0.1
Toxaphene	0.005
2,4,5-TP Silvex	0.01
Total trihalomethanes	0.10
MICRO-BIOLOGICAL	
Coliform bacteria	Not to exceed 1 per 100 ml mean for a sampling period
SECONDARY PARAMETERS	
Hardness: Soft: 0-16; Hard: 120+	
pH: Neutral: 7	

* Milligrams per liter (mg/l) and 1 part per million (ppm) are units used inter-changeably in chemical analyses. A few conversions may facilitate the interpretation of your test results:

1 teaspoon in 1,000 gallons = 1.3 ppm
10 ml = 0.000353 oz
1 liquid qt = 940 ml or 0.94 liters

These levels are the levels in effect as of the publication date. The levels may change as a result of changes in the Safe Drinking Water Act and the State Sanitary Code.

2.11.7 Classification of Waters

- The classifications shown on the maps have been taken from a NYSDEC map based on a coding system covering all waters in the state.
- The Bronx River near Hartsdale is classified as Freshwater **C(T)**
- **"C" -** Suitable 'for fishing and all other uses except as a source of water supply for drinking, culinary or food processing purposes and primary contact recreation.
- **T" -** The waters suitable for secondary contact recreation and any other usage except human consumption and food processing

The lowest receiving water is named followed by each tributary and sub-tributary. In all cases, the classification is given at the mouth of the tributary and applies to all upstream segments until a new category is designated.

The specifications for all fresh waters prohibit or limit man-made turbidity, color, suspended colloidal or settleable solids from sewage, oil and floating substances, taste and odor-producing substances, toxic wastes, thermal discharges.

Conditions applying to all classifications and standards (a) In any case where the waters into which sewage, industrial wastes or other wastes effluents discharge are assigned a different classification than the waters into which such receiving waters flow, the standards applicable to the waters which receive such sewage or wastes effluents shall be supplemented by the following: "The quality of any waters receiving sewage, industrial wastes or other wastes discharges shall be such that no impairment to the best usage of waters in any other class shall occur by reason of such sewage, industrial wastes or other wastes discharges." (b) Natural waters may on occasion have characteristics outside of the limits established by the standards, The standards relate to the condition of waters as affected by the discharge of sewage, industrial wastes or other wastes.

The classification system is related to the natural conditions and quality of waters as originally described in the New York State Conservation Department Biological Survey (1936) Number XI. "Best uses" are based on a combination of natural conditions and water use needs, For example, "AA" and "A" classifications have been established when the water body is needed for human consumption. There may also be segments of streams which have the quality but the best usage is classified as "B" or "C". Standards have now been set in the NYSDEC regulations to limit the levels of pollutants which may arise from man's activities in order to maintain the quality of water for each best use category. The chart summarizes use limitations under each category. It is important to note, however, that the State classification and regulations are used to protect waters up to the level which can be maintained and is necessary for the "Best Use" and any other use except those for which the quality and conditions are not adequate.

- "**AA" -** Source of water supply for drinking, culinary or food processing purposes and any other usages.
- **"A" -** Source of water supply for drinking, culinary or food processing purposes and any other usages.
- **"B" -** Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.
- **"C" -** Suitable 'for fishing and all other uses except as a source of water supply for drinking, culinary or food processing purposes and primary contact recreation.
- "**0" -** These water are suitable for secondary contact recreation, but due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery or stream bed conditions, the waters will not support the propagation of fish. The waters must be suitable for fish survival. **"SA" -** The waters shall be suitable for shell fishing for market purposes and primary and secondary contact recreation.
- **"SB" -** The waters shall be suitable for primary and secondary contact recreation and any other use except for the taking of shellfish for market purposes.
- **"sc" -** The waters shall be suitable for fishing and all uses except for primary contact recreation and for the taking of shellfish for market purposes,
- **"SO" -** All waters not primarily for recreational purposes, shellfish culture or the development of fishlike and because of natural or man-made conditions cannot meet the requirements of these uses.
- **“T” -** The waters shall be suitable for secondary contact recreation and any other usage except for primary contact recreation and shell fishing for market purposes. This classification is found in the lowermost segment of many tributaries to Long Island Sound and the Hudson River. It is primarily intended to cover the zone of tidal affect.

2.11.8 Wetlands

There are no wetlands in or around the site, **see Figure 2.11.2.**

The Freshwater wetland areas mapped are those areas where wetland characteristics are expected to conform to the New York State definition: "Lands and submerged lands called marshes, swamps, sloughs, bogs and flats having seasonal or permanent flooding or sufficiently water-logged soils to give .wetland vegetative species a competitive advantage over other vegetation"

The accuracy of wetland boundaries is limited by available data and map scales. Boundaries are accurate to within 0.025 inches or 50 feet where there is a sharp change in slope or a distinct vegetative change. Accuracy may decrease to as much as 0.2 inches or 400 feet in areas of gradual slope change and broad mixed vegetative zones,

Wetlands are a significant feature of the hydrologic cycle. They may constitute an environmental setting which is the habitat for important wildlife and are frequently significant as natural stormwater detention areas. The high water table, soils and sedimentary components which are found in wetlands generally constitute undesirable conditions for foundations and basements, site drainage, septic systems, access roads and trenching for utilities such as sewer lines. Since wetlands are often problem areas for these activities, many municipalities have adopted wetland ordinances and permit requirements for all wetlands. Large wetlands, 12.4 acres or greater, are also regulated under State law to protect their significant habitats and natural water purification capability,

The County considered wetlands four acres or greater to be protected and has excluded these areas in estimating maximum development under existing zoning. Incomplete soils definition and mapping accuracy limitations contribute to a potential margin of error which may become a significant percentage of the total area in small wetlands. In general, however, mapped wetlands greater than four acres are large enough to cause the elimination of one or more building sites, unless the local provision for determining the maximum number of dwelling units based on "buildable land" allows wetland acreage to be included in the calculation,

2.11.9 Drainage and Flooding

The FEMA Flood Zone is located to the southeast of the site following the Bronx River Parkway. The site is in the unshaded area "X" determined to be outside the 0.2% annual chance flood plain **Figure 2.11.9 FEMA Flood Zone.**

The Flood Map Panel number 36119C – 0268F Sept 28, 2007 Flood Zone "X"
Is presented in Figure 2.11.9 Flood Zone and Census Map
The major streams in the county generally follow preglacial stream valleys, whose alignment was determined by the structure or hardness of the underlying bedrock. The northern part of Westchester County is drained by the Croton and Saw Mill Rivers and their tributaries. The east-central part is drained by small streams that flow across Connecticut and into Long Island Sound. The narrow southern part of Westchester County is drained by small streams that flow into the Hudson River or Long Island Sound. Hartsdale is drained by the Bronx River.

Flood Hazard Areas: The site is not in the 100-year Flood Zone based on the Westchester Environmental Atlas Map presented in Figure 2.11.2 based on an interpretation in which FEMA elevations were projected into the contours of the topo sheet. The flood data is based on published information from the National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency (FEMA). Enacted in 1968, this program is both an insurance program providing low-cost insurance for residential and commercial properties, and a flood plain management program aimed at protecting lives and new construction from future flooding.

The flood data shown on the Atlas map is a generalization of the flood insurance maps, and will only be used in determining the approximate extent of flood hazard and the need for further investigation and compliance with NFIP requirements. In no case will the flood boundaries shown on the Atlas maps be used for site design and planning, since the level and extent of flood hazard can only be determined by interpretation of the official NFIP map or through the conduct of accurate field surveys.

April 21. 2007 Flood: According to Phillip Benincasa (Jnr) there was a flood in the basement of all the stores in the strip mall in April 2007 that was between 8 to 13 feet deep in the basements of the strip mall and floated a car in the rear of the buildings. The flood water infiltrated the vent pipes of some underground tanks and fuel oil was forced out by the flood water into the basement. He also noted one fuel-oil tank was at the rear of the property. The tank was removed from the back of the strip mall near the NY Sports gym and an assessment and investigation was completed by The Town of Greenburgh. Evidently the tank above-ground tank at the rear of the NY Sports gym was on a steel cradle that was overturned and damaged by the flood. Fuel oil is suspected to have travelled with the flood water and may account for some of the contaminants found in the samples from the sump.

According to Paul Feiner, Greenburgh Town Supervisor, the April 21, 2007 flood affected the residents at the apartment block at 170 E Hartsdale Avenue, the Rite Aid drug store and the Mobil gas station as well as the strip mall. Over the following weekend of the Rite Aid drug store and Mobil gas station opened up. The residents of 170 E Hartsdale Avenue were moving back in on April 24th, 2007.

Phillip Benincasa is part of a class-action law suit with other local businesses and residents impacted by the flood of April 2007. They are suing the Town of Greenburgh and the owner (Tony Ritter) of the driveway under which a drain runs from under the impacted buildings. Phillip Benincasa maintains that the flood occurred because the drain was neglected and after 8" of water fell on April 21, 2007, an 8" x 4 foot tree limb became stuck at a bend in the drain, along with 4 cu yd of garbage, thereby blocking the drain. The 4 cu yd of garbage and the tree limb were removed. The Town and the property owner now both clean the drain on a regular basis. Subsequently after a 4" rain 2 months ago there was no water in the basement and Phillip never had a problem in the wet June 2009. The drain issues into the Bronx River. Kenneth Shin bought the property one year ago, after the flood – the previous owner had "had enough with the flood." Kenneth Shin went for a mortgage and his Bank required a Phase 1 that prompted this investigation.

Greenburgh's Historian, Frank Jazzo indicated a stream from Central Avenue used to flow behind the subject strip mall, that was subsequently put in a storm drain, with a invert of about 10 feet below grade (at approximately the same elevation as the sump).
The storm drain then turns and flows under DiSanti Park to empty into the Bronx River downstream from the train station. The backfill to the storm sewer could transmit solvent to the Bronx River.

2.11.10 Watersheds

Hartsdale sits in the Bronx River Watershed see Figure 2.11.2. Watershed properties shown on the maps are the lands owned by water agencies and companies to provide a permanent restricted zone around water supply reservoirs and certain tributary streams. The boundaries of these land holdings are the limits of direct control and restriction of surface uses. During the years since the lands were acquired, many parcels in the New York City land holdings have been leased or easements have been granted for surface uses. For the most part, however, actual waterfront access uses have not been allowed.

In other parts of the United States the uppermost headwaters of streams flowing to water supply reservoirs are protected through ownership by various levels of government. In Westchester, the headwater areas are in private ownership and subject to development. For this reason, it is important that effective controls over non-point source pollution be accomplished through implementation of the County Best Management Practices Manuals.

2.11.11 Water Supply

Since the early 1800's, the water resources in the area have been strained with local increase in population and the needs of New York City.

In both Putnam and Westchester Counties, individual wells, drilled primarily in the gneiss bedrock, provide water for domestic purposes. The quantity and quality of the water from the individual wells vary, but none of the wells is adequate to supply community needs. Few, if any, wells in unconsolidated material provide substantial amounts of water.

In the mid and late 1800's, New York City started to develop water impoundments to supply the ever increasing needs of the city. Dams were constructed along the Croton River and its tributaries, and the water was brought to the city through a system of aqueducts. Among the larger lakes that were created are the East and West Branch and Croton Falls Reservoirs in Putnam County and the Amawalk, Titicus, New Croton, and Kensico Reservoirs in Westchester County. By agreement with New York City, the communities through which this water supply passes can withdraw stipulated amounts of water for their needs. Individual communities that do not have access to the New York City water supply have constructed water impoundments of their own. In northeastern Westchester County, a few small impoundments provide water to communities in Connecticut. The water needs of the two counties are an integral part of the needs of the greater metropolitan area of New York City and of the entire southeastern part of New York.

In response to a FOIL request dated 6/19/2009, Hartsdale clerk Bina Ramchandani indicated, “The Water Dept. has no records of any wells or ground water levels in Greenburgh.” The Engineering Department however did provide water supply piping maps - the invert of these pipes may be above the source of the solvent spill. Randy Kairns. Asst. Superintendent of the Water Department (Consolidated Water & Sewer District) was contacted for further information and indicated, “All of our public drinking water is purchased from the NYC water supply system from their Delaware and Catskill Aqueducts which go through the Town of Greenburgh. Their water is 100% Surface Water from upstate reservoirs.” The Bureau of Engineering of Greenburgh does not maintain any records of water supply or bedrock level information, does not maintain general records of Greenburgh Physical Geography or Geology and does not maintain master plan information for Greenburgh. The NYSDEC, Planning Dept County of Westchester, as well as the United States Geological Survey and the USDA Natural Resource Conservation Service were contacted. However the best information was obtained from the Environmental Atlas published by Westchester County Planning Department.

2.11.12 Aqueducts

The county is traversed by three aqueducts which convey water to New York City and provide a major portion of all potable water used by Westchester residents. The aqueducts are large tunnels, as much as 400' below the surface through much of the county. New York City owns and maintains the land only where the aqueducts are at or near the surface, and at the location of access shafts. These parts of the systems are visible as cleared right-of-way strips and stone structures over some of the shafts. New York City does not maintain surface easements where the tunnels are deep and pass beneath homes, buildings, roads and other surface uses.

Randy Kairns (914-993-1592) indicated a 48" Kensico Reservoir - Bronx Aqueduct, built in the late 1800's, runs under E Hartsdale Avenue down from Central Avenue and crosses at about 10 feet depth under DiSanti Park, the little triangular park adjacent to the train station, then runs under Aqueduct Drive to run parallel to the Bronx River, downstream from the train station. Frank Jazzo indicated a blow-off valve can be accessed from a manhole in DiSanti Park. The backfill to the aqueduct could transmit solvent to the Bronx River, however the County owned water main is under pressure and the solvent would never enter the operating line.

2.11.13 Site Easements and Utilities

Water supply, aqueduct and storm drain easements run adjacent to the site
The site is provided with public sewer and water services supplied by the Greenburgh Municipal Utilities Authority. On July 22, 2009 Greenburgh Municipal Building Department and the Engineering Department indicated that the site is provided with public sanitary sewer and drainage and water services from Catskill Reservoirs supplied by the Greenburgh Water Department.

Utility	**Provider**
Electricity	Con Ed
Natural Gas	Con Ed
Sanitary Sewerage	Greenburgh Municipal Utility Authority
Potable Water	Greenburgh Municipal Utility Authority
Solid Waste Removal	Greenburgh and Private Dumpsters

HVAC: The building is heated and cooled by 3 gas-fired boilers in the basement. Tenants are separately metered for gas and electricity.
Electric: The electric capacity supplied to the building is 120 and 220 volts. Circuit overload is provided by circuit breakers
The Sanitary Sewer lines are presented in Figure 2.11.13.1
Plumbing: 1-2 restrooms are provided in each unit, typically in the rear of each unit.
The Water Supply line are presented in Figure 2.11.13.2
The water pipe in the sidewalk outside of the dry cleaner is a 6"diam line
The Storm Drains are presented in Figure 2.11.13.3

2.11.14 Areas of Concern

Chemical storage, waste streams, and waste storage areas were investigated as additional suspected sources. Above and below ground storage tanks and piping were investigated along with sumps, pits, dry wells, drainage patterns, sanitary sewers; stained and odorous soil and groundwater. Foundations, site easements and utility trenches were investigated that could act as conduits for contaminant migration or interfere with drilling. Photographs were taken to document environmental features of the site.

The foundations and the Kensico Aqueduct are below the groundwater table and could influence groundwater flow directions and rates

Historically Recognized Environmental Conditions

AOC-1 Dry Cleaning Spills: King-Aristocrat Dry Cleaner is considered an Area of Concern/Recognized Environmental Condition (REC) because the subject property has been used as a dry cleaner for more than 38 years, operated at #212 before the government regulation of the waste disposal of solvent in 1986 and because highly contaminated soil was detected on site.

AOC-2- USTs: The two removed underground oil tanks in the rear yard are historical recognized Environmental Conditions (RECs) from this assessment.

Oil spillage cases caused by the April 21, 2007 flood have been closed by NYSDEC and the Town. However, evidence of impact of the fuel oil may have been detected in the sumps in the basement, particularly in the sump near the basement entrance and BOR-3 and Monitor well MW-3 at the entrance.

We note that the sump near the basement entrance has a sump pump that dumps water into the solvent impacted sump in the center of the basement before all accumulated groundwater is pumped into a drain pipe located in the ceiling of the basement. This dewatering system will cross-contaminate the sumps and will act as a groundwater sink in the basement.

2.12 Research for Preliminary Assessment - PASI Enquiries

The goal of this report was:

- Qualify the level of environmental risk and liability associated with Vapor Intrusion at the site and make recommendations.
- Comply with NYSDEC Regulations.
- Demonstrate "Due Diligence" in assessing any risk from Vapor Intrusion
- Scope out the site investigation and document any Cleanup at the site.

In July 2009, we requested any and all records from the Clerk of the City of Greenburgh that would help assess the potential risk for Vapor Intrusion. The construction plans of the present owner and the records at the Greenburgh Building Department were scrutinized along with Aerial Photographs to identify the location of buildings and any utility trenches in relation to the spill. The following information was researched: The dates of initial construction and the nature of major additions or alterations. plans for future construction;, land use records, archival records, usage records; historical aerial photos, site map and plans to map out potential sources of impairment, such as underground tank location. Interviews with personnel knowledgeable of the property history were completed.

On July 22, 2009, we visited the County Planning Dept of Westchester who provided a wealth of information on the environmental features around the Town: an aerial map of the Village and geology and hydrology map and text, soils maps and Water supply, topographic maps, a wetlands map, information about the classification of waters, a map of slopes and surrounding wells and boring logs and aqueducts from their **Environmental Atlas** - by far the most accessible resource we came across.

Sanborn Fire Insurance Maps

Sanborn Maps constitute a database of prior site uses of real property for many cities and towns in the United States. The maps were originally created to assist insurance underwriters in understanding the potential fire risk of structures requiring insurance. However, they were useful for determining the previous uses of a property. Sanborn Maps often contain information relating to uses of individual structures, location of certain fuel storage tanks, chemical storage tanks, or both, and storage of other potentially toxic substances. Sanborn Maps begin their coverage in 1867 and continue through the present. A search of Sanborn Maps was conducted to identify maps for the years 1867 through 2002.

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Aerial Photographs

Aerial photographs were available, and extremely valuable in documenting the history of site operations and conditions. Aerial photographs from the period 1943 to 2004 revealed the location of old and new buildings in relation to the Spill and that the site had been developed between 1953 and 1967, Appendix E.

3.0 Remedial Investigation Scope of Work Phase 3: Site Specific Field Sampling Plan

This Remedial Investigation Report was prepared by Tapash
Our case manager has 25 years of experience in preparation and implementation of remedial investigations, feasibility studies and cleanup plans for CERCLA, UST and NJPDES sites in New York, Pennsylvania, New York, Maryland, Ohio, West Virginia, Louisiana, North Carolina, Texas and Puerto Rico. Each staff member offers extensive experience in conducting Superfund remedial investigation and cleanup.

Introduction

In order to develop an effective investigation, it is essential to define the purpose of the information. **The investigation is designed to define the nature and extent of contamination of soil and groundwater, determine the stratigraphy and hydrogeology of the site, identify any contaminant sources and mechanisms of contaminant transport and make decisions regarding potential exposure risks and solutions.**

The tasks remaining in the Phase 1 and 2 were completed.

The development of a work plan for in-depth site investigation was essential. The time taken to formulating this comprehensive plan will increase the effectiveness of the subsequent investigation in addressing the site problems.

In this Section 3 of the Remedial Investigation the field work is described along with the tasks completed. The appropriate standard operating procedures to accomplish these tasks were described in the Quality Assurance and Quality Control Plan.

Data was acquired by soil borings, surface and subsurface soil and water sampling, well drilling, groundwater sampling, air monitoring and Summa canister air sampling with comprehensive chemical analysis to determine the extent of contamination.

As the site now has the attention of the NYSDEC, the site will go through the NYSDEC evaluation of a Remedial Investigation. It would be a waste of time to overlook a leaking buried tank of solvent or body of contaminated soil that would be a chronic source of groundwater contamination and render any remedial efforts futile Thus, a rigorous site investigation was proposed. The Scope of Work is based on our knowledge of site conditions and NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation.

3.1 Notices

The NYSDEC DER was notified at least five (5) business days prior to the initiation of field activities at the site.

A Written Notice will be sent to the adjacent property owners at the site and other impacted or interested members of the public as well as to municipal officials upon completing of the Remedial Investigation and prior to the issuance of the decision document(s). For addition information on the procedure, see Section 3.1 Quality Assurance and Quality Control Plan (QA/QCP).

3.2 Underground Utility Clearance

Prior to the initiation of intrusive fieldwork, Dig Safely New York was contacted to arrange for the marking of all underground utilities in the vicinity of the proposed test soil borings, and monitoring well locations. For addition information, see Section 3.2 QA/QCP.
The location of underground utilities are presented in Figures 2.11.13.
We obtained markout # NY 07319-154-053 on August 4, 2009.

3.3. Geophysical Survey

A geophysics site investigation may be completed but does not at present seem probable as the underground tanks at the site have been removed along with the 100-gallon solvent above-ground storage tank, see Section 3.3 QA/QCP.

3.4 Initial Air Sampling

A NYSDOH Soil Vapor Intrusion survey will be conducted during the next heating season and will typically involve summa canisters in the occupied spaces in the building (presumably the first floor), sub-slab vapor samples, and an outdoor ambient air sample that will follow the NYSDOH SVI guidance.

In the interim, to see if there was a volatiles air quality problem at the site immediately, we obtained two summa canister samples in the dry cleaner work area on the first floor and adjacent to the central sump in the basement known to have contaminated soil and groundwater. Thus, before any field work was conducted, one ambient air sample was obtained as a grab sample in a summa canister according to TO-15 protocol in the breathing zone in the basement and one ambient air sample in the work space above in the dry cleaners.

The results are reported in the following Table 3.4.1

Table 3.4.1: Initial Ambient Volatile Air Sampling - Analytical Results

Compound (ug/kg)	**Basement**		**Dry Cleaners**			**Air STD**
	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	mcg/m3
Acetone	22.9	54.4	7.9	19		
Benzene	1.5	4.8	0.19	0.61		
Chlorobenzene	1.9	8.8	ND	ND		
Chloroform	0.12	0.59	ND	ND		
Carbon Tetrachloride	0.11	0.69	ND	ND		
cis-1,2 Dichloroethene	1.0	4	ND	ND		
Trans-I ,2-Dichloroethane	ND	ND	ND	ND		
Ethylbenzene	0.69	3	0.11	0.48		
Methylene Chloride	0.41	1.4	0.16	0.56	10	60
Tetrachloroethylene	**128**	**868**	**23.5**	**159**	15	100
Toluene	3.7	14	0.55	2.1		
Trichloroethylene	**3.4**	**18**	0.48	2.6	1	5
Vinyl Chloride	0.12	0.31	ND	ND		
Xylenes (Total)	3.5	15	0.47	2		

Air Sample Analysis: Samples from evacuated 6-liter Summa canisters were analyzed by EPA Method TO-15 that includes a wide range of Volatile Organics.
A site-specific analyte list in the table above was developed, including the following:

- Volatile chemicals which have been previously detected in environmental media (e.g., soil, groundwater and air) at the site; Tetrachloroethylene and Trichloroethylene components of dry cleaning fluid
- Volatile chemicals which are known or demonstrated constituents of the contamination in question (e.g., petroleum products from the former diesel spill) such as BTEX, Alkanes and Naphathalene detected in soil boring samples (below)
- Expected degradation products of the principal solvents such as Dichloroethene(s), and Vinyl Chloride.

The air sample taken in a Summa canister adjacent to the central sump in the basement contained Tetrachloroethylene at 128 ppbv (868 ug/m^3) above the 15 ppbv (100 ug/m^3) NYSDOH Tetrachloroethylene air quality standard and Trichloroethylene at 3.4 ppbv (18 ug/m^3) also above the 1 ppbv (5 ug/m^3) NYSDOH Trichloroethylene air quality standard indicating a vapor intrusion into the basement area.

The Summa canister air sample taken in the dry cleaner work area on the first floor contained Tetrachloroethylene at 23.5 ppbv (159 ug/m^3) also above the NTSDOH air quality standards indicating a contaminated work area.

3.5 Geoprobe Investigation

During this initial Phase 3 Site Investigation, samples were obtained by a Geoprobe soil boring rig.

Soils investigation
The soil borings was installed by a New York licensed well driller who obtained permits from NYSDEC. No permits were required by the Town of Greenburgh.

Soil Samples: Soil samples were taken continuously down the profile of the soil borings through the water table to determine the stratigraphy of the site. The samples were collected in hollow acetate tubes to preserve the soil intact. The soil profile was pieced together with an assessment of the soil types encountered. The soil samples were logged by a professional geologist and presented in borehole logs (attached in Appendix A). The depth to bedrock (anticipated to be shallow) appeared, in fact, to be more than 30 feet deep under the dry cleaner, perhaps the stream sediments of the Hartsdale Brook formerly running behind the strip mall noted in Section 2.

Soil samples were collected during the Remedial Investigation to determine the extent of soil contamination: indicating where the soils were clean: free of contaminants above cleanup or impact to groundwater criteria or the extent of contamination at the site boundaries. The samples defined the horizontal and vertical extent of contamination around the probable source: the central sump in the basement. The depth for the borings varied between 10 to 30 feet. With a minimum of effort, a complete soil column of samples for field screening were obtained along with selected samples for lab analysis that determined that the solvent contaminated soil around the central sump will serve as a chronic source contaminants and needs to be either removed or treated.

- Boring BOR-1 was drilled into the anticipated upgradient direction in the groundwater from the sump.
- Boring BOR-2 was drilled in the source area in the sump.
- BOR-3. investigated the entrance sump and
- BOR-4 and BOR-5 were drilled side gradient to the central sump.
- BOR-6 was drilled 15 feet from the central sump in the anticipated downgradient groundwater flow direction (towards the Bronx River.
- BOR-7 was drilled 47 feet from the central sump in the anticipated downgradient groundwater flow direction.

The locations of geoprobe borings and soil samples are presented in Figure 3.5.

The headspace over soil samples obtained from each soil boring was screened with the MiniRae Photoionization Detector (PID).

Table 3.5.1: Industrial Hygiene – Soil Monitoring Data

Date Time	Min(ppm)	Alarm		Avg (ppm)	Alarm	Max(ppm TVo)
8/12/2009 7:26	0	10.1		**100.8**	**H Calibration 100 ppm TVo**	
Bor-2					**H Bor-2, 2-3' Silty Sand 1698 ppm**	
8/12/2009 9:40	17	372	H	**3207 ppm**	**TVo**	
8/12/2009 9:41	24.5	580.4	H	**1233**	**H Bor-2, 2-3' Silty Sand**	
8/12/2009 9:53	2.6	32.5		**461**	**H Bor-2, 8-9' 8.9 ppm TVo**	
8/12/2009 10:00	2.4	29.3		**146.9**	**H Bor -2, 9-12' 37 ppm TVo**	
8/12/2009 10:11	16.5	365.6	H	**1708.6**	**High TVo ppm Concentration were noted during drilling Bor-2**	
8/12/2009 10:30	0.2	1.2		**10.6**	**Bor-2, 15' 37 ppm TVo**	
8/12/2009 10:55	0	0		**0**	**Bor-2, 18' 4.9 ppm TVo**	
Bor-6						
8/12/2009 12:37	0	0		0.7 ppm	Bor-6, 2-3' 13 ppm TVo	
8/12/2009 12:48	0	2.2		10.3	Bor-6, 4-7', 13.7 ppm TVo	
8/12/2009 13:11	0	0		0.1	Bor-6, 7-10', 1.1 ppm TVo	
Bor-4						
8/12/2009 13:42	4.3	4.9		7.2 ppm	Bor-4, 4'	5.4 ppm TVo
8/12/2009 13:45	4.3	5.3		6.4	Bor-4-6'	5.5 ppm TVo
8/12/2009 13:55	3.1	3.4		3.8	Bor-4, 8-10'	5.4 ppm TVo
8/12/2009 13:55	3.1	3.4		3.8	Bor-4, 8-10'	5.4 ppm TVo
Bor-7						
8/12/2009 14:37	3.2	3.7		4.5ppm	Bor-7, 4' 6.6 ppm TVo	
8/12/2009 14:38	3.6	4		4.6	Bor-7, 6' 7.3 ppm TVo	
8/12/2009 14:54	3.9	4.1		4.5	Bor-7, 10' 9.7 ppm TVo	
8/12/2009 14:55	3.7	4		4.3	Bor-7 10' 8.5 ppm TVo	
Bor-3						
8/12/2009 15:10	4.6	4.7		4.9ppm	Bor-3, 1' 7 ppm TVo	
8/12/2009 15:20	4.9	7.6		16.4	Bor-3, 4' 9.7 ppm TVo	
8/12/2009 15:35	4.5	4.9		5.4	Bor-3, 6' 5.4 ppm TVo	
Bor-5						
8/12/2009 17:06		0		0	Bor-5, 13'	

See Appendix D: Industrial Hygiene - Soil Log Data Aug 12, 2009

Table 3-5.2 was prepared to summarize the sample designation, depth, date, collection method, rationale, and laboratory analyses for surface soil samples collected during the RI.

3.6 Field Screening for Volatiles

In the Site Characterization (Phase 3), all the soil and groundwater samples were field screened by an accurate field analysis using the Photovac Voyager Gas chromatograph to screen as many samples as possible, see Figure 3.6 Field Screening Samples.

Field screening was performed by head-space analysis with a portable gas chromatograph (GC). A 60 cc vial was filled 2/3 full with soil or groundwater and the vapor space (head-space) over the sample was drawn into a 100 mL syringe and injected into the GC.

Using this sophisticated portable instrument we were able to quickly define the extent of contamination with samples analyzed in the field using the GC that is capable of detecting most volatiles, including solvents and components of fuels, to the low parts-per-billion (ppb) concentrations.

Calibration Procedures for Field Instrumentation
All field analytical instrumentation was calibrated prior to use in the field each day. Each instrument was calibrated and maintained according to the manufacturer's instructions. A calibration log was incorporated into the printout for the instrument.

The Voyager gas chromatograph was calibrated with a 1 ppm Benzene, Trichloroethylene and Tetrachloroethylene standard supplied by Accutest Laboratories, see attached chromatogram.

GC Operation: The strength and presence (or absence) of chromatograph peaks similar in retention time to that of the BTEX, Trichloroethylene and Tetrachloroethylene standard determined the horizontal and vertical extent of the hydrocarbon contaminants in the subsurface soils. The real-time results were used to direct the site investigation. Soil samples from the geoprobe drilling program were analyzed to define the vertical extent of soil contamination with occasional soil samples being selected for the more expensive Lab GC analysis. The Voyager gas chromatograph was operated by the Tapash geologist and screened selected samples. The chromatograph results were available in 15 minutes.

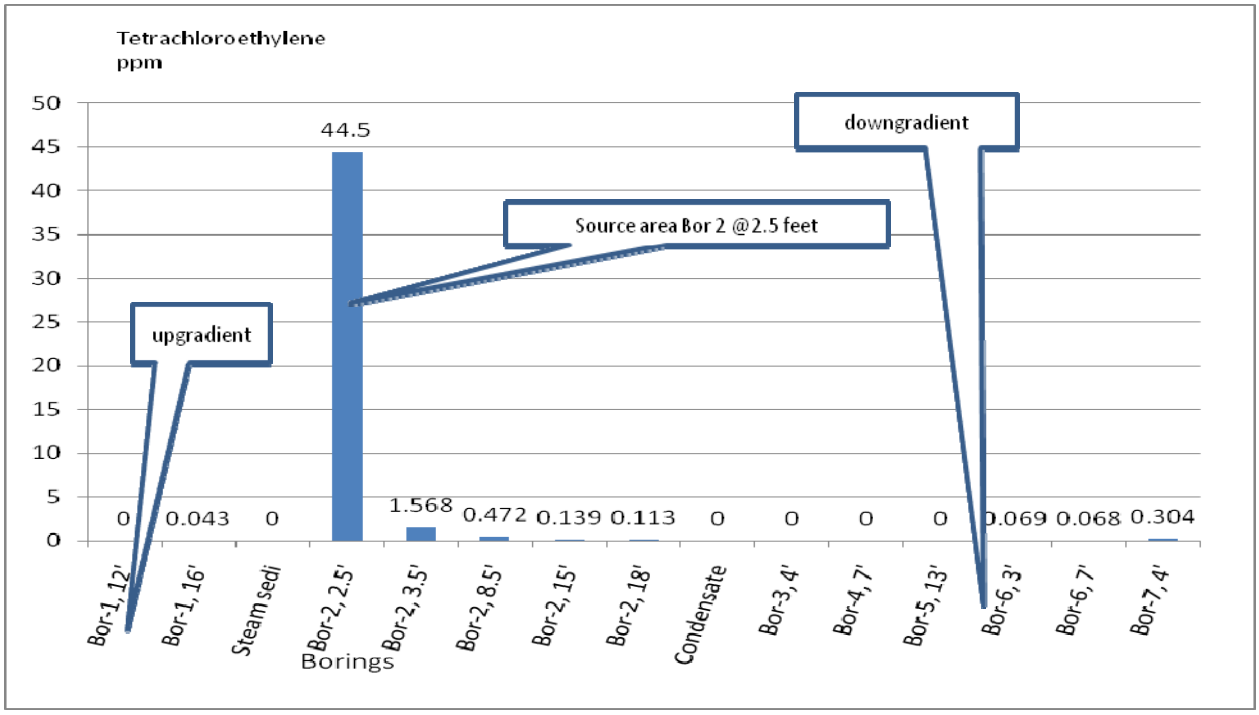
After the initial injection of the I ppm standard, five distinct peaks printed out within 800 seconds that were labeled Benzene, Ethylbenzene, Tetrachloroethylene, Ethylbenzene, Trichloroethylene, Toluene and Xylene. Thereafter, the headspace samples were injected and the appropriate peaks recognized by the Voyager data logger. Representative Chromatograms are presented in Appendix D.

Results are presented in Table 3.6.1 below. The graph of the solvent-contaminated soils results indicates the contaminated soils are restricted to the soils closely around the central sump and above 15 feet deep.

Duplicates of at least 10% of the samples were selected for lab analysis presented in Section 3.7.

Photovac Voyager GC - Field Screening file:

					Soil	ppm	
Date	Location	Depth	Analysis	Run	Toluene	Tetra	Xylene
Aug 12 2009	Calibration			B9081301	1 ppm	1 ppm	1 ppm
Aug 12 2009	Bor-1	12'	VO-GC-PID	311	ND	ND	3.567
Aug 12 2009	Bor-1	16'	VO-GC-PID	312	ND	0.043	0.684
Aug 12 2009	Sediment under Steam exhaust			313	ND	ND	0.665
Aug 12 2009	Bor-2	2-3'	VO-GC-PID	303	ND	44.5	47.1
Aug 12 2009	Bor-2	3-5'	VO-GC-PID	304	ND	1.568	33.8
Aug 12 2009	Bor-2	8-9'	VO-GC-PID	306	ND	0.472	10.7
Aug 12 2009	Bor-2	15'	VO-GC-PID	307	ND	0.139	3.633
Aug 12 2009	Bor-2	18'	VO-GC-PID	308	ND	0.113	3.527
Aug 12 2009	Condensate		VO-GC-PID	310	ND	ND	ND
Aug 12 2009	Bor-3	4'	VO-GC-PID	319	ND	ND	0..160
Aug 12 2009	Bor-4	7'	VO-GC-PID	318	ND	ND	0.273
Aug 12 2009	Bor-5	13'	VO-GC-PID	316	ND	ND	0.09
Aug 12 2009	Bor-6	3'	VO-GC-PID	313	ND	0.069	0.753
Aug 12 2009	Bor-6	7'	VO-GC-PID	314	ND	0.068	0.316
Aug 12 2009	Bor-7	4'	VO-GC-PID	317	ND	0.304	0.679
Aug 12 2009	Calibration			B9081301	1.733 ppm	2.755 ppm	1 ppm



Subsequently, the investigation will concentrate upon the analyses of key indicator compounds that characterize the site contamination, with additional comprehensive analyses at selected locations.

Dense Non-Aqueous Phase Liquid (DNAPL)

The Site Characterization defined the extent of free product (dense or light, non-aqueous phase liquid DNAPL or LNAPL) in the soil and groundwater. The presence of DNAPL was considered as a spill of pure product is involved and the contaminant concentrations in attempt was made drill a boring to the first aquitard but after 30 feet below the basement the limit of drilling was reached for the geoprobe drill rig. Samples were observed to identify any DNAPL by visual observation and head space screening of soil samples. DNAPL sampling was conducted in each Sump, see Figure 3.6

The following methods, acceptable to the DER, were used for the determination of the presence of free product in soil or water: by visual identification of sheens or other visible product, measurable thickness of product on the water table, the use of field instruments, and oil-water agitation.

3.7 Soil Sampling and Analysis

Surface and subsurface soil samples were taken to further characterize soil contaminant concentrations vertically and horizontally under the dry cleaners and to gather information on the physical characteristics of the soils. A detailed and comprehensive sampling plan was developed prior to actual sample collection to ensure the quality of all sampling and analysis data developed during the investigation (RIR Plan).

Each soil boring log described the soil lithology and saturation, depth, date, collection method, rationale, and laboratory analyses for each soil sample collected during the RI. The depth of each sample was presented in the soil boring/ well logs (BOR-1 thru BOR-7 attached in Appendix A. The final location of each boring was surveyed in and plotted on a base map. Soil samples were obtained at the groundwater table to indicate if any solvents, fuels or volatile organics have impacted the surficial groundwater and soils at the water table. Soil samples were obtained in the bottom of the undisturbed sump to check for DNAPL. No DNAPL was observed. No samples of the concrete were taken – there was only staining around the central sump and there was no sub-floor insulation. For additional detail on Soil Sampling protocol see the QA/QC Plan. The soil samples were collected in hollow acetate tubes to preserve the soil intact. The soil cores were screened for organic vapors, geologically logged and the material photographed prior to removal from the spoon. Where more than one soil type was identified in the sampling tube, and where recovery permitted, the samples for analysis were collected from each soil or fill type. Select sampling intervals from the recovered materials were chosen by the geologist to representative any indicated stratification. Sample locations were selected in such a manner as to:

- Identify pollutants and designated hazardous substances on-site.
- The initial sampling and analysis was comprehensive, determined by the suspected contaminants and previous use.
- Show whether or not contaminants are entering or leaving the site from or to the adjoining property. The location of these soil borings were presented in Figure 3.7

Lab Sample Analysis

10% of the soil samples were submitted to Accutest Laboratory (a NY State Elap Certified lab) and analyzed for Volatiles + 10 Tentatively Identified Peaks (TICS) using the EPA 8021 protocol, Base Neutrals + 10 TICs using method 8270, TPHC-DRO and Lead analysis from the site to define the concentration of contaminants remaining on site.
Table 3.7 was prepared to summarize the sample results.

Table 3.7 BOR-1 and BOR- 2 Soil Analytical Results

Compound (ug/kg)	Bor-1 12' deep	Bor-2 2'	Bor-2 8-9'	Bor-2 10-12'	Bor-2 15'	NYDEC Unrestricted use mg/kg	NYDEC Restricted Commercial Cleanup mg/kg Objective
Benzene	ND	ND	NA	ND	ND	0.06	44
1,2 Dichlorobenzene	ND	56.4	NA	ND	ND	1.1	500
cis-1,2 Dichloroethene	2.9	508	NA	0.38	ND	0.25	500
Trans-I ,2-Dichloroethane	ND	ND	NA	ND	ND	0.19	500
Ethylbenzene	ND	2.9	NA	ND	ND	1	390
Methylene Chloride	ND	ND	NA	ND	ND	0.05	500
Tetrachloroethylene	**62,600**	**79,400**	NA	7.1	3.7	1.3	150
Toluene	0.39	0.97	NA	ND	ND	0.7	500
Trichloroethylene	21,8	**5,980**	NA	ND	ND	0.47	200
Xylenes (Total)	1.4	51.9	NA	ND	ND	0.26	500
Total TICs Volatiles	739	622	NA	0	0		
Acenaphthene	NA	ND	ND	ND	NA	20	500
Anthracene	NA	35	ND	ND	NA	100	500
Benzo(a)Pyrene	NA	ND	ND	ND	NA	1	1
Chrysene	NA	ND	ND	ND	NA	1	56
Fluoranthene	NA	16	ND	ND	NA	500	500
Fluorene	NA	141	ND	ND	NA	30	500
Phenanthrene	NA	207	ND	ND	NA	100	500
Pyrene	NA	27.8	ND	ND	NA	100	500
Total TICs Semi-volatiles	NA	**50,900**	ND	0	NA		
TPH-DRO (mg/kg)	NA	679	12.7	ND	NA		
Lead (mg/kg)	NA	9.5	5.2	3.8	NA	63	1000

Bold = Exceeding restricted commercial cleanup objectives

- Mainly Naphthalene and Alkanes

1 mg/kg = 1000 ug/kg or 0.001 mg/kg = 1 ug/kg (E-3)
Previous Phase 2 investigations detected 4090 mg/kg of Tetrachloroethylene adjacent to the central sump in S-2 at 1' 3" deep. The concentrations of Tetrachloroethylene reduced significantly with 2 feet distance from the sump with 0.64 mg/kg of Tetrachloroethylene in S-I ? feet to the west, .8 mg/kg of Tetrachloroethylene in S-I ? feet to the west.

BOR-1A was drilled adjacent to the stair well into the basement and **BOR-1B** through the rear access road/parking lot to 18.5 feet deep. The boring Bor-1B at first drilled through 10 feet of urban sand fill and encountered the water table at 9.4 feet in a grey medium sand with silt. At 12 feet below the parking lot, at a similar elevation to the soils in the basement, the lab soil sample analysis detected 62.6 mg/kg (ppm) of Tetrachloroethylene solvent. 3.567 ppm of Xylene was detected by the Photovac GC-PID analysis # 311 but no components of fuel oil. There was only trace Tetrachloroethylene at 0.043 ppm in the 16-feet-deep soil sample.

BOR-2 was drilled through the 3"-thick concrete floor adjacent to the central sump in the basement into gray silty fine sand and encountered the water table at 6" below the slab. High concentrations of Total Volatile Organics (TVo) at 2085 ppm were detected under the basement floor slab and 1014 ppm TVo during initial drilling with Tetrachloroethylene at 79.4 mg/kg/ppm analyzed in soil samples by the lab at 2 feet deep immediately below the concrete floor ? feet from the sump along with 5.98 mg/kg/ppm Trichloroethylene. The high Tetrachloroethylene concentrations at 2.5 feet were confirmed by Photovac analysis of Tetrachloroethylene at 44.5 ppm and Xylene at 47.1 ppm. The concentration of solvents decays with depth with Tetrachloroethylene reduced to 0.071 mg/kg/ppm by12 feet deep and Trichloroethylene none detectable. Similarly, the semi-volatiles are reduced from 50.9 mg/kg at 2 feet to none-detectable at 12 feet deep.

BOR-3, BOR-4, BOR-5, BOR-6 and BOR-7 Soil Analytical Results

Compound (ug/kg)	**Bor-3 2'-deep**	**Bor-3 4' deep**	**Bor-4 4'deep**	**Bor-5 13'**	**Bor-6 3'**	**Bor-7 10'**	**Soil STD Mg/kg**
Benzene	ND	NA	ND	ND	ND	ND	44
1,2 Dichlorobenzene	ND	NA	ND	ND	ND	ND	500
cis-1,2-Dichloroethene	ND	NA	2.2	0.42	ND	0.88	500
Trans-I ,2-Dichloroethane	ND	NA	ND	ND	ND	ND	500
Ethylbenzene	ND	NA	0.73	ND	ND	ND	390
Methylene Chloride	ND	NA	ND	ND	ND	ND	500
Tetrachloroethylene	149	NA	20.3	ND	126	22	150
Toluene	ND	NA	1.4	ND	ND	ND	500
Trichloroethylene	ND	NA	1.7	ND	ND	ND	200
Xylenes (Total)	ND	NA	2.6	ND	ND	ND	500
Total TICs Volatiles	**26000**	NA	140.2	0	**76500**	0	
Acenaphthene	903	ND	ND	ND	141	ND	500
Anthracene	519	ND	22.4	ND	31.7	ND	500
Benzo(a)Pyrene	458	ND	72.7	ND	ND	ND	1
Chrysene	410	ND	145	ND	ND	ND	56
Fluoranthene	929	ND	129	ND	ND	ND	500
Fluorene	2200	ND	ND	ND	328	ND	500
Phenanthrene	3540	ND	108	ND	466	ND	500
Pyrene	1320	ND	106	ND	ND	ND	500
Total TICs Semi-volatiles	**62900**	0	**10280**	170	**80400**	1520	
TPH-DRO (mg/kg)	**10700**	0	760	53.9	1110	0	
Lead (mg/kg)	150	3.1	17.1	3.5	6.3	4.6	1000

Bor-3 was drilled through the basement floor slab adjacent to the sump at the entrance to the basement and encountered the water table at 6" below the slab. The surficial soils contained trace amounts of solvent and volatiles at 3 feet deep with Tetrachloroethylene at 0.149 mg/kg no detected Xylenes but significant Volatile TICs at 26 mg/kg with fuel-oil-stained surficial soil and a petroleum odor that was confirmed by high concentrations of Base Neutral TICS at 62.9 mg/kg mainly Alkanes and Naphthalenes and 10.7 mg/kg of Diesel Range Organics (DRO) but none was detected below 4 feet deep.

Bor-4 that was side-gradient to the central sump was drilled adjacent to the north wall of the basement and encountered the water table at 6" below the slab. The gray coarse sand in this boring at 4 feet contained trace volatiles with Tetrachloroethylene at 0.20 mg/kg and Xylene 0.026 mg/kg and total Volatile TICs at 0.14 mg/kg, Base Neutral TICs of 10.2 mg/kg and DRO at 760 mg/kg

Bor-5 was drilled through the side access parking lot to 18.5 feet deep through urban sandy fill into gray speckled coarse sand and encountered the water table at 10.25 feet. The sandy soil at 13 feet deep contained no detectable Tetrachloroethylene and no Xylene but no total Volatile Tics but DRO at 53.9 mg/kg.

Bor-6 was downgradient from the central sump and like Bor-3 contained fuel-oil stained soils with only trace solvent but high Volatile TICS at 26 mg/kg and Base Neutral TICS at 80.4 mg/kg (mainly Naphthalenes) and DRO at 1110 mg/kg in the gray speckled sand at 3 feet deep. The soil boring encountered the water table at 6" below the slab.

Bor-7 was drilled at the far end of the basement nearest the Bronx River and encountered the water table at 6" below the slab. The gray coarse sand in this downgradient borehole was free of volatile and base neutral contamination.

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3.8 Groundwater Investigation

Monitor Well Installation

The Remedial Investigation will delineate the vertical and areal extent of groundwater contamination and the sources of groundwater contamination, without regard to property boundaries, including, but not limited to, the extent of free product (dense or light, non-aqueous phase liquid-NAPL). The Remedial investigation must determine which on site sources contribute to that contamination and will collect sufficient data to evaluate remedial measures to address that contamination. If additional groundwater delineation is requires outside of the source area, additional monitor wells will be installed:

- MW-1 was installed in the anticipated upgradient groundwater flow direction as defined by local topography and the adjacent Bronx River.
- MW-2 was installed within the source area to define the highest concentrations of contaminants
- MW-3 was installed adjacent to the entrance sump
- MW-4 and MW- 5 were side gradient in the water table
- installed beside the sumps if they are contaminated
- MW-6 was installed in the anticipated downgradient groundwater flow direction
- MW-7 was installed beyond the zone of groundwater contamination exceeding soil and groundwater cleanup standards and criteria to act as a sentinel well to delineate the downgradient extent of the dissolved phase solvent plume based upon groundwater flow and prior groundwater sample results.

During installation of the wells, soil samples were taken at the water table and analyzed using a Photovac GC. During drilling any odors or sheen or soil staining was noted along with the lithology and degree of saturation of the soils. Detailed well logs were prepared presenting the soil profile and sample results and cross sections and contaminant isopleth maps of the site were developed. The site investigation was supervised by a geologist with 25 years of experience in site investigation and site remediation.

The wells in this unconfined aquifer were screened across the water table and above the bedrock with generally 10 feet of screen to a tentative depth of 10.5 feet below the basement floor slab, subject to the vertical extent of contamination in the groundwater detected by the Photovac GC soil screening. There were no confining layers encountered. The wells MW-3 through MW-6 was installed through generally clean native soils outside the source, upgradient, sidegradient and downgradient in the water table. MW-7 will serve as a sentinel well. The Location of these wells was presented in Figure 3.8.

The water-table wells were constructed of 1”-diameter .020 slot PVC well screen and solid PVC riser. The well screen was backfilled with Moiré well sand with a cap of 00 sand and a bentonite plug and then tremie grouted with cement. A protective water-tight locking cap was installed. Each well was developed by pumping for about 10 minutes or until clear discharge water is obtained. Copies of the geologic well logs are presented in Appendix A.

After well installations, the depth to groundwater was measured, once stabilized, under non-pumping conditions. The wells and soil boring locations were surveyed by a licensed surveyor.

Well Development: Each well was monitored for Conductivity, pH, Dissolved Solids, Oxygen Content and Conductivity and developed until clear water is obtained or the conventional parameter reach a plateau in concentrations.

Draft ? Insert water level table and contour map

Additional Monitor wells installed through a confining layer will be double-cased wells, cemented into the confining layer and nested adjacent to a shallow well depending upon the prior findings. The drilling method will be capable of maintaining the integrity of the borehole walls and preventing migration of the contaminants down the well packing between confining layers and into bedrock. – No confining layers were encountered to 30 feet.

Bedrock wells: Additional wells into bedrock may be installed to define the groundwater quality in bedrock and will be installed with a rotary hammer rig or similar method and will be deep double-cased wells, cemented into bedrock and nested adjacent to a shallow well depending upon the prior findings.

Groundwater Samples

The geoprobe borings in and around the basement and the source area were completed as 1”-diameter monitor wells and screened across the water table to serve as groundwater monitor wells and soil vapor monitoring points. The wells were installed across the water table in the geoprobe holes in order to measure the groundwater elevation, define groundwater qualities and to define the direction of groundwater flow. The vapor monitoring points will be used to assess the concentration of solvent vapors in the soil in the source area, see Section 3.9.

Groundwater samples were taken on September 24th, 2009 from each well, two weeks after the wells were installed and developed. A minimum of three groundwater monitoring wells or piezometers were required in each affected aquifer or water bearing zone to triangulate the groundwater flow direction in that zone. Monitoring multiple water bearing zones (including bedrock aquifers if appropriate) may be needed to define the vertical migration of contamination in groundwater, especially for contaminants which are heavier than water or where contaminants have migrated a significant distance from their sources, thus having a greater amount of time to be displaced downward.

Groundwater Sampling Method

Groundwater sampling and water level measurements were performed in accordance with the NYSDEC Technical Requirements. Each well was sounded for total depth and the depth to water was measured. The water column and well volume was calculated and at least 3-5 well volumes was evacuated. Groundwater data was measured for well pumping rates and parameters such as Dissolved Oxygen, pH, Temperature, Redox Potential (Eh) and Conductivity and was included in the table and in the field notes in Appendix A. The groundwater sample were collected after two weeks from within the first two feet of the static water level following evacuation of the required well volumes. The drop in water level in each well during sampling was monitored and the well will not be allowed to go dry during sampling.

One round of groundwater samples was collected for unfiltered groundwater samples that was analyzed for Volatile Organics +10 TICs, Base Neutrals + 10 TICs, Total Diesel-Range Organics (DRO) and Lead. The analytical methods, container size and type, preservation procedures, and holding time for each parameter are given in Table 3.8.

Table 3.8 Groundwater Analytical Results MW-1 – MW-7 Draft (?) add GW criteria

Compound (ug/L)	**MW-1**	**MW-2**	**MW-3**	**MW-4**	**MW-5**	**MW-6**	**MW-7**
Benzene	ND	ND	0,66	ND	ND	ND	ND
1,2 Dichlorobenzene	ND	0.28	20.6	ND	ND	ND	ND
cis-1,2 Dichloroethene	**1180**	208	30	351	39.8	414	107
Trans-I ,2-Dichloroethene	9.8	2.5	ND	6	0.38	2.2	2.5
Ethylbenzene	2	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	**747**	**424**	**13.4**	**34.3**	**120**	**51.2**	**150**
Toluene	5.5	ND	ND	ND	ND	ND	ND
Trichloroethylene	**220**	**75**	**4**	**3.7**	**14.2**	**13.8**	**13.2**
Xylenes (Total)	6.3	ND	0.43	ND	ND	ND	ND
Total TICs Volatiles	**739**	15.8	**999**	0	17.3	**235**	0
Acenaphthene	NA	ND	8.5	ND	NA	NA	NA
Anthracene	NA	ND	ND	ND	NA	NA	NA
Benzo(a)Pyrene	NA	ND	ND	ND	NA	NA	NA
Chrysene	NA	ND	ND	ND	NA	NA	NA
Fluoranthene	NA	ND	2.2	ND	NA	NA	NA
Fluorene	NA	ND	14.1	ND	NA	NA	NA
Phenanthrene	NA	ND	25.3	ND	NA	NA	NA
Pyrene	NA	ND	3.2	ND	NA	NA	NA
Total TICs Semi-volatiles	NA	64.5	945	5.6	NA	NA	NA
TPH-DRO (mg/kg)	0.497	0.262	39.2	0.17	0.711	36.4	0.148
Lead (mg/kg)	NA	12.6	**2570**	49.9	NA	NA	NA

High concentrations of solvent were analyzed in the lab samples from MW-1 and MW-2.

In MW-2 the assumed source area had 424 ug/L (ppb) Tetrachloroethylene and 75 ug/L Trichloroethylene. However the solvent appears to have moved towards the prior stream bed into MW-1 yielding groundwater containing 747 ug/L (ppb) Tetrachloroethylene and 220 ug/L Trichloroethylene along with 1180 ug/L of cis-1,2 Dichloroethene.

Heating oil contamination was noted in MW-3 consistent with the flow of fuel oil into the sump with the receding flood waters contaminated with fuel oil from the upturned fuel tanks.

The monitoring wells including MW-6 and MW-7 located in the basement further towards the Bronx River had trace levels of contamination.

? Add more detail

During well sampling in fractured rock, the well may be logged to determine the location and velocity and concentration of seeps and these different zones may be sampled with a well packer capable of isolating individual sections of the borehole.

3.9 Air Monitoring and Sampling

Air Monitoring

Prior to all field work the MiniRae PID TVo monitor was calibrated

Date Time	Min(ppm)	Alarm	Avg(ppm)	Alarm	Max(ppm)	Alarm
Calibrated MiniRae with 100 ppm Isobutylene						
8/12/2009 7:19	49.5		64.6	L	90.1 ppm	L Calibration
8/12/2009 7:20	38.6		43.3		49.2	
8/12/2009 7:21	31.8		34.9		38.5	
8/12/2009 7:22	26.4		28.9		31.6	
8/12/2009 7:23	0		1.3		26.4	
8/12/2009 7:24	0.2		0.3		0.7	
8/12/2009 7:25	0.4		21.8		96.7	L Calibration
8/12/2009 7:26	0		10.1		100.8 ppm	H Calibration

Typical background readings were recorded:

Date Time	Min(ppm)	Alarm	Avg(ppm)	Alarm	Max(ppm)	Alarm
8/12/2009 7:29	0.4		0.6		1	Hotel Room
8/12/2009 7:30	0.3		0.6		1	Travel to Site
8/12/2009 7:59	0.7		0.7		0.8	On site

The air at the entrance to the basement and over the water standing in the central sump and various other locations were monitored before fieldwork began:

8/12/2009 8:50	0	0	0	Open Air Basement Entrance
8/12/2009 8:51	0	0	0	Open Air Basement Entrance
8/12/2009 8:52	0	0	0	Open Air Basement Entrance
8/12/2009 8:53	0	0	0.2	Open Air Basement Entrance
8/12/2009 8:54	0	0.4	3	Open Air Basement Entrance
8/12/2009 8:55	0	0.6	3.3	Entrance sump 0.0 ppm
8/12/2009 8:56	0	0	0	Boiler room 0.0 ppm
8/12/2009 8:58	0	0	3.4	Central Sump 3.4 ppm
8/12/2009 8:59	0	0	0	Far end Basement

Both areas – the dry cleaners on the 1st floor and the basement were monitored continuously with a PID meter, see Figure 3.4: Initial Air Samples.
The air in the dry cleaners was monitored before fieldwork began

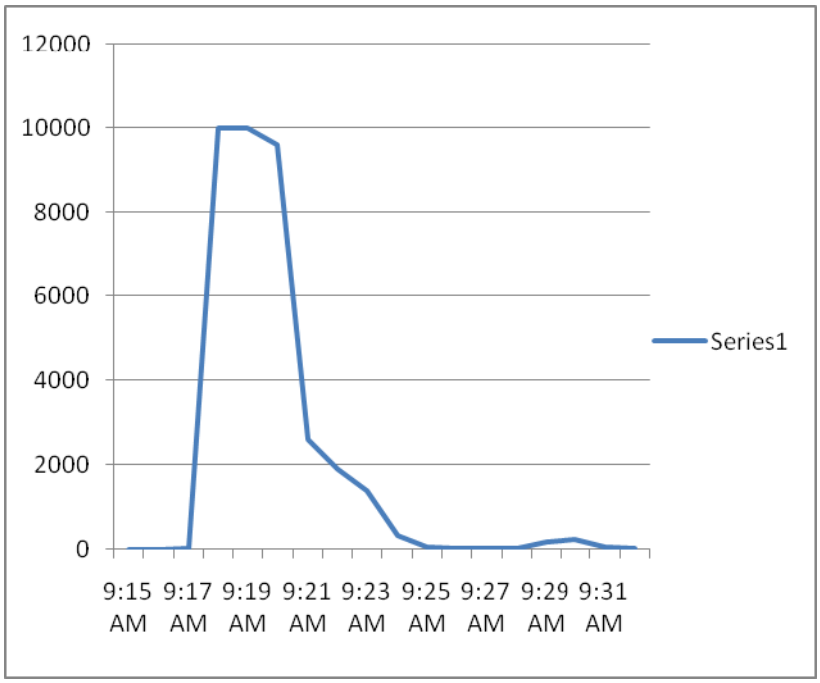
8/12/2009 9:00	0	0	0	Back end of Cleaner machine
8/12/2009 9:01	0	0	0	Walk back to basement
8/12/2009 9:03	0	26.3	101.2	H Check Calibration
8/12/2009 9:04	0	0	0	Walk through Dry Cleaners
8/12/2009 9:05	0	0	0	Waste Drum
8/12/2009 9:08	0	0	0	Walk back to basement

Early on August 12th the MiniRae PID meter was calibrated against a 100 ppm Isobutyl standard and then before work began in the basement, the dry cleaner work area and the basement was monitored for Total Volatile Organics (TVo) with the MiniRae. The instrument was programmed to log TVo air quality once per minute during work activities throughout the 10 hour day. Duplicate reading were recorded by the environmental scientist at least every 15 minutes throughout the day on a separate form (attached) along with specific observations and readings of TVo soil vapor readings from the soil cores with the MiniRae.

During a period of soil sample labeling, when the boring rig was inactive, the MiniRae total volatile analyzer suddenly peaked at 9999 ppm for 3 minutes indicating extreme exposure in the concrete stair well into the basement where the field crew were standing. The stair well is located below the rear vent of the dry cleaner first floor and adjacent to the 1" condensate pipe cooling the dry cleaner machine.

Date Time	Min(ppm)	Alarm	Avg(ppm)	Alarm	Max(ppm)	Alarm
8/12/2009 9:18	47.5		3777	H	**9999 ppm**	Air Quality Exceedance Basement Entrance
8/12/2009 9:19	6553	H	9969	H	**9999**	Air Quality Exceedance Basement Entrance
8/12/2009 9:20	2566.2	H	4769	H	**9613**	Air Quality Exceedance Basement Entrance
8/12/2009 9:21	1841.6	H	2119.3	H	**2608.9**	Air Quality Exceedance Basement Entrance
8/12/2009 9:22	1404.6	H	1634.2	H	**1908.1**	Air Quality Exceedance Basement Entrance
8/12/2009 9:23	333.6	H	844.7	H	**1401.4**	Air Quality Exceedance Basement Entrance
8/12/2009 9:24	63.4	L	154.7	H	326.5	Air Quality Exceedance Basement Entrance
8/12/2009 9:25	30.6		42.4		61.9	Air Quality Exceedance Basement Entrance
8/12/2009 9:26	21.7		26		32.8	Air Quality Exceedance Basement Entrance

Time	Concentration ppm
9:15 AM	1.7
9:16 AM	0.6
9:17 AM	32.7
9:18 AM	9999
9:19 AM	9999
9:20 AM	9613
9:21 AM	2608.9
9:22 AM	1908.1
9:23 AM	1401.4
9:24 AM	326.5
9:25 AM	61.9
9:26 AM	32.8
9:27 AM	30.4
9:28 AM	22.4
9:29 AM	182.4
9:30 AM	239.4
9:31 AM	61.1
9:32 AM	37.4



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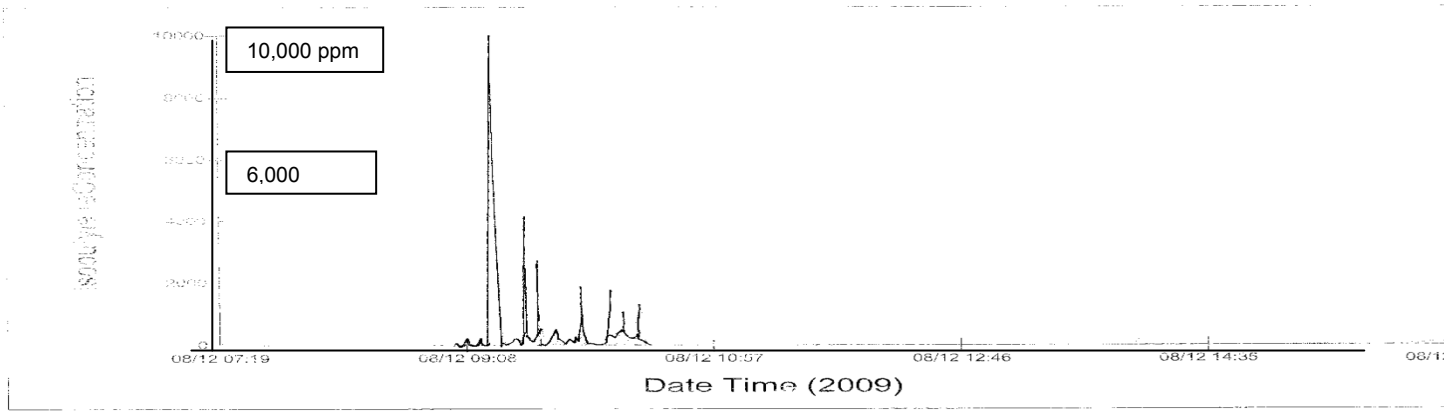
Data from MiniRae monitor was downloaded to a field laptop computer on a daily basis. The recorded logs were reviewed for any exceedances. During the RI, because CAMP action levels (PID readings greater than 1 ppm) were exceeded at the work site, the work was stopped and samples taken of the water vapor issuing from the condensate pipe (no exceedance) and the soil under the condensate pipe (only trace solvents).

Figure 3.4 Total Volatile Organic Concentration
8-hour work day August 12 2009



Date Time	Min(ppm)	Alarm	Avg(ppm)	Alarm	Max(ppm)	
8/12/2009 9:30	52.4	L	182.4	H	239.4ppm	H Soil from under Steam Pipe

Based on the air quality monitoring data, the assessment was made that we could not at that time determine the source of the TVo exceedance but it was not a passing vehicle. The boring activity was not the source of the negatively impacted air quality at the Site but it did not extend to the environs.

At the same time the air in the boiler room was monitored:

Date Time	Min(ppm)	Alarm	Avg(ppm)	Alarm	Max(ppm)	
8/12/2009 9:34	29.4		515.9	H	**3522 ppm**	H Air in Boiler room
8/12/2009 9:35	51.9	L	271.6	H	796.2	H Air in Boiler room
8/12/2009 9:36	59.4	L	221.3	H	454.8	H Air in Boiler room
8/12/2009 9:37	52.7	L	170.7	H	428.1	H Air in Boiler room
8/12/2009 9:38	41.4		97.1	L	218.1	H Air in Boiler room
8/12/2009 9:39	31.7		76.4	L	175.3	H Air in Boiler Room 48 ppm

Volatile Organics in the air adjacent to the work zone were monitored at all times during fieldwork with the MiniRae PID meter. Air monitoring during drilling and interior IRM activities was conducted adjacent to the geoprobe drill rig. Background volatiles levels were obtained for one hour with the same unit before site activities begin. Once activity begins, a reading of over 9999 ppm TVo stopped work. The source of the vapors will be investigated.

Vapor Intrusion Sampling

Samples will be collected to investigate:

- Soil vapor intrusion pathways:
- Current human exposures;
- The potential for future exposures, if a currently vacant building should be occupied
- Site-specific attenuation factors - the ratio of indoor air to sub-slab vapor concentration.

A pre-sampling inspection was performed prior to each air sampling event to identify and minimize conditions that might have interfered with the proposed testing See Section 2

Air monitoring was conducted in the drilled soil boring holes

Date Time	Min(ppm)	Alarm	Avg (ppm)	Alarm	Max(ppm)	
8/12/2009 14:04	2.1	231.8	H	1040.4	Vapor in Bor-2 drilled well	
8/12/2009 14:08	5.4	15.3		26.7	Vapor in Bor-6 25.4 ppm	
8/12/2009 14:11	6.3	8.5		13.3	Air over central sump 13.4 ppm	
8/12/2009 14:18	4.7	12.9		21.4	Vapor in Bor-4 21.2 ppm	

Additional samples will be taken on at least two occasions: to evaluate changing site conditions and will proceed outward from known or suspected sources.

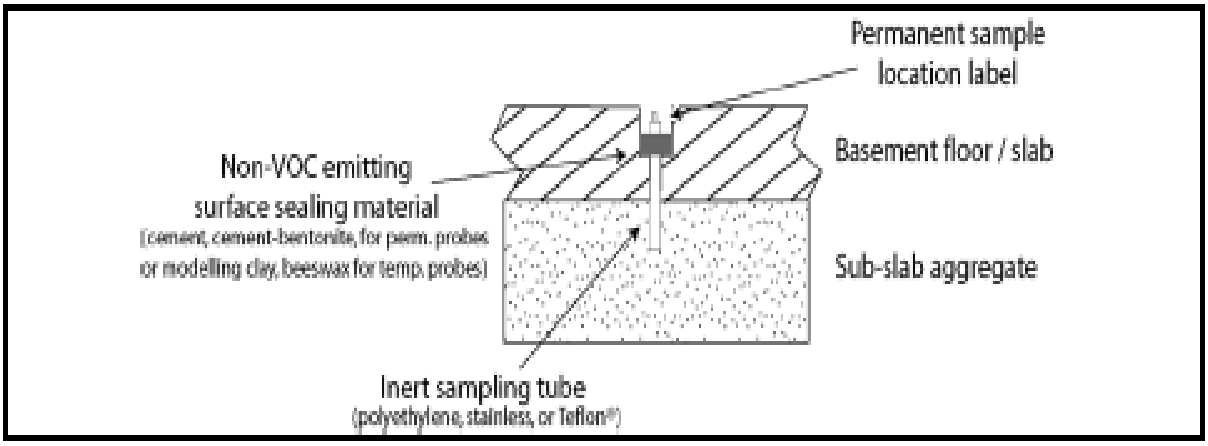
Subsurface Vapor Air Samples

- **Soil Vapor Samples** were collected from the seven wells/vapor sampling points MW-1 through MW-7 on September 30th, 2009. Samples from MW-2 through MW-6 taken from the head space in wells screened under the floor slab throughout the basement. MW-1 and MW-5 were outside the basement drilled in the urban fill under the parking lot. The location of MW-1 overlooks the entrance to the basement and the concrete stair well going down to the basement. MW- 5 is located at the rear of the Hartsdale Market and the Trustco Bank, outside the basement to the south, drilled through the pavement and urban fill under the parking lot. These soil vapor samples were collected to determine whether this environmental medium is contaminated, characterize the nature and extent of contamination and evaluate such remedial measures as vapor extraction. Care was taken with these soil vapor samples mostly collected under the floor slab between the shallow water table at 6" depth and the 3"-thick concrete slab by collecting the samples at a low flow rate (0.2 liters per minute) to avoid negative bias due to infiltration of outdoor air. All these soil vapor samples were collected adjacent to or above native and undisturbed soils away from the fill

material surrounding the building to avoid sampling in an area that may be influenced by the building's operations. The sub-slab vapor samples were taken immediately beneath the floor slab of a building and collected to characterize the nature and extent of any soil vapor contamination immediately beneath the building.

Soil vapor monitoring points were constructed to minimize ambient air infiltration and minimize possible discrepancies.

- Monitoring points were installed by geoprobe drilling: an appropriate method accepted by NYSDEC: methods that includes direct push, manually driven and auger drilling based on site conditions.
- The vapor points were backfilled with porous, inert sand
- The sampling zone was only 3 inches deep between the shallow water table observed in the central sump and the underneath of the floor slab;
- The points were fitted with inert Teflon® tubing 1/8 inch in diameter, closed off until sampling and sealed above the sampling zone with a bentonite slurry to prevent outdoor air infiltration.
- Set with a protective casing around the top of the probe - to minimize infiltration of water or outdoor air and to prevent accidental damage.



Soil vapor samples were collected in the following manner at all locations:

- Collected in evacuated 6-liter Suma Canisters one month after the installation of these permanent probes according to the NYSDEC Soil Vapor Intrusion Guidance;
- One to three implant probe volumes were purged prior to collecting the samples;
- Flow rates for both purging and collecting did not exceed 0.2 liters per minute to minimize outdoor air infiltration during sampling;

Crawl Space Air Samples were not collected in as the basements in this strip mall are immediately beneath a building with no crawl space foundation.

Indoor Air Samples were taken in the work space in the dry cleaner (3 feet above the floor) and in the basement see Section 3.4: Initial Air Samples

Additional air samples will be taken during the heating season to characterize exposures to air within the building (a strip mall), from the multiple tenant spaces at a height approximately three feet above the floor to represent a height at which occupants normally are seated.
These additional indoor air samples will be collected in the following manner:

- sampling duration reflect the exposure scenario being evaluated without compromising the detection limit or sample collection flow rate (e.g., an 8 hour sample from a workplace with a single shift versus a 24 hour sample from a workplace with multiple shifts). To ensure that air is representative of the locations sampled and to avoid undue influence from sampling personnel, samples was collected for at least 1 hour. If the goal of the sampling is to represent average concentrations over longer periods, then longer duration sampling periods may be appropriate. Typically, 24 hour samples was collected from residential settings;
- personnel will avoid lingering in the immediate area of the sampling device while samples are being collected;
- sample flow rates must conform to the specifications in the sample collection method and, if possible, was consistent with the flow rates for concurrent outdoor air and sub-slab samples; and
- Samples will be collected, using conventional sampling methods, according to the NYSDEC Soil Vapor Intrusion Guidance.

Outdoor Air Monitoring may be conducted to characterize site-specific background outdoor air conditions. Based on the vapor intrusion and soil sampling results, outdoor air samples may be collected simultaneously with indoor air samples outside in a manner consistent with that for indoor air samples

? Results to be Added when available in two weeks

Community Air Monitoring (CAMP)

Community air monitoring was performed and documented to provide real-time measurements of total VOCs upwind and downwind of each designated work area during the geoprobe investigation activities. The monitoring was designed to provide protection to the workers and public downwind of the work area from any potential releases of airborne contaminants due to investigation activities and to document air quality during these activities.

A hazardous atmosphere (over 9999 ppm Total Volatile Organics) was noted in the work zone at about 9:18 – 9:21 AM with the MiniRae TVo monitor in the basement stair well during the drilling. The instrument was calibrated 1 hour earlier at the beginning of the work day and the reading were recorded on separate field forms as well as logged on a graph and table by the instrument.

The instrumentation used during the investigation activities included the following: a MiniRae TVo PID to measure volatiles in parts per million (ppm). Site personnel noted a faint solvent and petroleum odor produced during the drilling activities.

The instruments were programmed to log air quality data once per minute during these work activities. Personnel recorded readings and any observations from these instruments approximately every 15 minutes on a separate CAMP field form. When elevated readings were observed, they was noted and the PID used to screen soil samples used to further investigate CAMP concerns. The recorded logs was reviewed for any exceedances and downloaded to a daily file with the work area location as the file name. During the RI, as CAMP action levels (PID readings greater than 1 ppm) were exceeded and investigation of downwind locations was initiated: the air release was restricted the stair well.

3.10 Decontamination

Decontamination procedures were established for both personnel and equipment decontamination.

Personnel Decontamination: As the hazardous condition noted in the work area was volatile organics and site personnel wore gloves to avoid soil contact, no decontamination pad set up in the contaminant-reduction zone.

Equipment Decontamination: All equipment that came in contact with contaminated surfaces was decontaminated.

Disposal of Wastes Generated: No significant liquids and solids were generated during the field investigation most of the soil was included in the soil samples. The remaining soil cores are stored on site. Groundwater generated was minimal as the diameter and depth of the wells are small.