



Proactive by Design



PHASE II ENVIRONMENTAL SITE INVESTIGATION REPORT

OCEAN BAY RETAIL DEVELOPMENT BEACH 53RD AND 54TH STREETS FAR ROCKAWAY, NEW YORK

CEQR NUMBER 16CHA003Q

November 2016

File No. 12.0076377.00



PREPARED FOR:

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November 9, 2016
File No. 12.0076377.00

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Re: Phase II Environmental Site Investigation Report
Ocean Bay Retail
Block 15890, Lots 54, 55, 58, 62, 64, 66, and 69
Queens, New York
CEQR Number 16CHA003Q

Dear Ms. Alexopoulos:

This report presents the results of a limited Phase II Environmental Site Investigation (Phase II ESI) conducted by GZA GeoEnvironmental, Inc. (GZA) on behalf of Asian Americans For Equality (AAFE/Client) at a proposed Ocean Bay Retail site in Far Rockaway, Queens, New York(Site). Authorization to proceed on this project was granted in accordance with GZA's signed proposal dated October 7, 2016.


Should you have any questions, please do not hesitate to contact Bill Maniquez at 212.594.8140.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.



Reinbill Maniquez
Project Manager



Benjamin Alter, P.G.
Senior Vice President



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1.0 INTRODUCTION

GZA GeoEnvironmental of New York (GZA) was retained by Asian Americans for Equality, Inc. (AAFE/ the Client) to perform a Phase II Environmental Site Investigation (Phase II ESI) of several parcels in Far Rockaway, New York. The Ocean Bay Retail (Site) is comprised of the following addresses:

- 53-01 Beach Channel Drive (Lot 66)
- 53-05 Beach Channel Drive (Lot 64)
- 53-13 Beach Channel Drive (Lot 62)
- 53-15 Beach Channel Drive (Lot 58)
- 366 Beach 54th Street (Lot 55)
- 360 Beach 54th Street (Lot 54)
- No address - Vacant Lot at Beach 53rd Street (Lot 69)

The Phase II ESI was performed on August 29 and 30, 2016 in accordance with our Phase II Site Investigation Work Plan (SIWP) and Health and Safety Plan (HASP) dated June 17, 2016. The New York City Department of Environmental Protection (DEP) Bureau of Sustainability approved the SIWP and HASP in a letter dated July 20, 2016. The Limited Phase II ESI was performed within the context of an application by the New York City Housing Authority (NYCHA) to the U.S. Department of Housing and Urban Development (HUD) for the disposition of the NYCHA-owned property under the City Environmental Quality Review (CEQR) Number 16CHA003Q. Limitations to this Phase II ESI report are presented in **Appendix A**. The DEP letter is provided in **Appendix B**.

1.1 OBJECTIVE

The objective of the Phase II ESI was to evaluate the subsurface condition by the collection of soil, groundwater, and soil vapor samples for laboratory analyses.

1.2 SCOPE OF SERVICES

GZA's Phase II ESI scope of services included the following activities:

- Completion of a geophysical survey of accessible areas of the Site to clear boring locations for subsurface utilities;
- Advancement of eight soil borings;
- Collection and analysis of eight soil samples;
- Installation and development of two new monitoring wells;
- Collection and analysis of three groundwater samples, one from a pre-existing monitoring well;
- Installation and sampling of three soil vapor probes;
- Analysis of three soil vapor samples;
- Preparation of this Limited Phase II ESI Report (Report).



2.0 PROJECT BACKGROUND

This section provides information regarding the past uses, ownership, and previous investigations performed of the Site. The following information was obtained from New York City databases (i.e. NYC OASIS, NYC SPEED, NYC Zoning etc.), from previous investigations, and from Environmental Data Resources Inc. (EDR), a database search contractor.

2.1 SITE LOCATION AND DESCRIPTION

The Site is located on the south side of Beach Channel Drive between Beach 53rd and Beach 54th Streets in the Edgemere neighborhood of Far Rockaway, New York (**see Figure 1**). Ocean Bay Apartments, (a NYCHA housing complex) is located to the north of the Site, across Beach Channel Drive; the former Peninsula General Hospital is located to the east of the Site, across Beach 53rd Street; the Lawrence Nursing Home borders the Site to the south; and Arverne Apartments (a NYCHA housing complex), is located to the west of the Site, across Beach 54th Street.

2.2 SITE AND AREA USE

The Site is legally identified as Block 15890, Lots 54, 55, 58, 62, 64, 66, and 69 in the Borough of Queens, New York. The Site has a total approximate area of 0.85 acres and is comprised of the following properties:

Block	Lot	Lot Dimension (feet)	Lot Area (square feet)	Year of Construction	Most Recent Use
15890	54	30' x 100'	3,000	1990	Laundromat / Dry Cleaner
	55	30' x 100'	3,000	1990	Bodega/ Retail Store
	58	80' x 105.32'	8,375	~ 1950	Liquor Store/Bodega/Retail Store
	62	40.01' x 105.95'	4,225		Vacant
	64	40.01' x 106.58'	4,252	1990	Chinese Restaurant / Liquor Store
	66	40.01' x 107.22'	4,277	1990	Check Cashing Bodega/ Retail Store
	69	100' x 100'	10,000		Vacant

The Site has had several uses as indicated in the table above. In October 2012, Hurricane Sandy severely damaged the properties, resulting in their abandonment. During GZA’s Site reconnaissance on October 6, 2015, the buildings were unoccupied and in severe disrepair.

According to the New York City Planning Commission, the Site is located in an area zoned mainly for multi-story residential properties (R5) with allowable commercial overlay (C2-4). The Site Plan is shown on **Figure 2**.

According to the preliminary flood insurance rate maps (FIRM) released by FEMA in January 2015, the Site is located within Zone AE, which is a Special Flood Hazard Area as established by the Federal Emergency Management Agency (FEMA) flood maps. This designation means that the site is subject to inundation by the 1-percent-annual-chance flood event (100-year flood event) as determined by detailed analysis methods. Based on FEMA Map number is 3604970381G, the base flood elevation (BFE) at the site is El. 10.0 referenced to NAVD88. The design flood elevation (DFE) shall be determined in accordance to Local Law No.100 of 2013 (Council Int. No. 1096-A of 2013).



2.3 PREVIOUS INVESTIGATIONS

GZA reviewed the following reports to prepare the work plan for this Phase II ESI.

Phase I Environmental Site Assessment, January 2012

AECOM performed a Phase I Environmental Site Assessment (ESA) at the Site in January 2012. It identified three RECs, as defined under ASTM E1527-13, in connection with the property:

- Billboards on lots 54 and 55 indicate that a laundromat and a dry cleaner occupied the Site. The Department of Consumer Affairs indicated that they did not issue any permits for these two enterprises. The Dry Cleaning Association had no record of a dry cleaner at the Site in its database. The New York City Department of Finance database provided two work permits for the installation of a drycleaners on the Site.
- The Peninsula Hospital Center, which adjoins the Site to the east, has a history of leaks and overfills. Although the EDR report mentions corrective action was taken to resolve the issue, there was no mention of groundwater and soil impacts to the surrounding area.
- The 1933 Sanborn Map shows a filling station with five gasoline underground storage tanks (USTs) along Beach Channel Drive on Lot 58. No information was available on the decommissioning / removal of the USTs.

Summary Report of Subsurface Investigation, December 4, 2015

In November 2015, Ecosystems Strategies, Inc. (ESI), under contract with NYCHA, investigated the former Site gasoline filling station associated with an active Spill case (Spill #03-06202). Four boreholes were installed to depths ranging from 15' to 25' below ground surface (bgs). Soil staining and gasoline odors were noted throughout the saturated portion of the soils. Two soil samples were collected from each boring, one from 4'-6' bgs and one from the bottom of each boring, except for boring MW-01, where the deeper soil sample was collected from 8'-10' bgs. The soil samples were analyzed for target compound list volatile organic compounds (TCL VOCs) and for TCL semi-volatile organic compounds (TCL SVOCs).

The soil analytical results were compared to the NYSDEC Commissioner's Policy-51 (CP-51) Soil Cleanup Guidance for Gasoline Contaminated and Fuel Oil Contaminated Soils. The following exceedances were noted in the soil samples:

- The soil sample collected from 4'-6' bgs in MW-02 contained xylenes at a concentration above its Soil Cleanup Objective (SCO) for Gasoline Contaminated Soils.
- The soil sample collected from 4'-6' bgs in MW-03 contained seven targeted VOCs at concentrations above their SCOs for Gasoline Contaminated Soils.

The four boreholes were converted into permanent monitoring wells and were surveyed for their relative elevation. Screens were installed across the water table. ESI sampled the wells one week later. The groundwater samples were sent to a laboratory and analyzed for the compounds listed in CP-51 for VOCs and SVOCs. No exceedances of any targeted compound were detected in MW-01, which was installed upgradient of the former filling station equipment. MW-02, installed in the center of the former filling station, contained exceedances of benzene, toluene, ethylbenzene, and xylenes (BTEX), and 1,2,4-trimethylbenzene. Down-gradient well MW-03 contained exceedances of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene, n-butylbenzene, n-propylbenzene, p-isopropyltoluene, and sec-butylbenzene. Down-gradient well MW-04 contained exceedances of ethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene, n-butylbenzene, and n-propylbenzene. All of these compounds are related to gasoline. No exceedances of any targeted SVOCs were detected in any of the groundwater samples.



2.4 SITE HISTORY

Except for Lot 58, the Site was undeveloped or unoccupied prior to 1983. A filling station from 1933 to 1951 and a modern health center from 1981 to 1988 occupied Lot 58. A dental office replaced the health center from 1990 to 1992. From 1993 to 2012, various small commercial establishments occupied the property.

From 1985 until 1988, a used auto lot occupied Lots 62, 64, and 68. The current building structures were built c. 1990. Small commercial establishments occupied these buildings until 2012.

From 1985 until 1988, lots 54 and 55 were used as parking spaces associated with the nursing home south of the Site. In 1990, the current building structure was built, and various small commercial establishments operated at the building until 2012.

2.5 HISTORICAL USE AND DATABASE SEARCH REVIEW

GZA reviewed historical fire insurance maps provided by EDR. The table below contains GZA’s description of the Site and vicinity properties as shown on the historical fire insurance maps.

Year	Target Properties						
	Lot 54	Lot 55	Lot 58	Lot 62	Lot 64	Lot 66	Lot 69
1933	Vacant	Vacant	Filling Station	Vacant	Vacant	Vacant	Vacant
1951	Vacant	Vacant		Vacant	Vacant	Vacant	Vacant
1981-1983	Vacant	Vacant	Health Center	Vacant	Vacant	Vacant	Vacant
1985-1988	Parking Space			Used Auto Lot			Vacant
1990-1992	Commercial Establishments		Dental Office	Vacant	Commercial Establishments		Vacant
1993-2006			Commercial Establishments	Vacant			Vacant

GZA reviewed the results of EDR’s database search for the target property and the adjoining properties and obtained the following information:

- Channel Breeze Cleaners, which previously occupied the Site at 366 Beach 54th Street (Lots 54 and 55), was designated as a RCRA NonGen (Handler) facility of spent halogenated solvents (i.e. tetrachloroethylene (PCE), methylene chloride, trichloroethylene (TCE), 1,1,1-trichloroethane, chlorobenzene etc.). RCRA NonGen facilities do not generate hazardous waste, but use regulated materials in quantities below EPA reporting thresholds.
- The Lawrence Nursing Care Facility, which adjoins the property to the south, has a 5,000 gallon # 2 fuel oil UST and an open spill case recorded in December 6, 2013, due to a loss of unknown amount of oil from the system.

2.6 PROPOSED CONSTRUCTION

AAFE plans to construct a two-story commercial retail and office space complex on the Site. The first floor will primarily consist of a supermarket as well as accessory administrative space that will be utilized by a local non-profit organization. The second level will serve as storage/inventory space for the supermarket. Prior to construction, the Site grade will be raised so that the buildings will be above the flood plain. There will be no excavations more than two feet below the current Site grade during construction. The proposed development would serve local residents and visitors to the Rockaway beachfront area and help rejuvenate the neighborhood that is still recovering from the effects of Hurricane Sandy.



3.0 ENVIRONMENTAL SETTING

The following subsections provide information regarding the general physiographic, hydrologic, and soil conditions in the area of the Site.

3.1 REGIONAL PHYSIOGRAPHY

The United States Geological Survey (USGS) 7.5 Minute Series Topographic Map for the Far Rockaway, New York Quadrangle dated 2013 indicates that the Site is at an elevation of 6 feet above mean sea level (MSL) relative to the National Geodetic Vertical Datum. The Site is located in the generally flat Rockaway Peninsula that is surrounded by several bodies of water. Little Bay is approximately 0.27 miles to the northwest of the Site while Norton Basin is approximately 0.25 northeast of the Site. The Atlantic Ocean is located approximately 0.40 miles south of the Site.

3.2 SOIL AND ROCK CONDITIONS

Bedrock in the Site area is located more than 1,100 feet below MSL. According to the *USGS Water Resources Investigations Report 77-34 (Soren, 1978)*, the regional geology is comprised of sequences of Upper Pleistocene unconsolidated sediments (i.e. unsorted sand, gravel, cobbles and boulders within a clayey silt matrix) underlain by the Raritan Formation of Cretaceous age deposits of continental origin (i.e. stratified light to dark grey and red beds and lenses of clay, silt and sand with some lignite and pyrite). Precambrian metamorphic bedrock underlying the region is comprised of folded and faulted gneisses and schists.

Between January 5 and June 17, 2016, GZA performed a geotechnical exploration of the Site, the details of which were summarized in the Geotechnical Engineering Report dated July 13, 2016 (revised on October 12, 2016). Eleven test borings were drilled by Craig Geotechnical Drilling Co, Inc. of May's Landing, New Jersey, under subcontract to GZA. The following subsurface conditions were encountered at the Site:

- **FILL:** Fill, consisting of light brown to brown, fine to medium SAND, with up to 50% gravel and up to 35% fines, to a bottom depth ranging between approximately 2' and 6' bgs. Occasional miscellaneous debris such as brick fragments and crushed stone was encountered within the Fill stratum.
- **UPPER LOOSE SAND:** An Upper Loose Sand or Silty Sand stratum was encountered below the Fill. This stratum ranged in thickness from approximately 2' to 11' bgs, and extended to depths ranging between 6' and 18' bgs (that is, the bottom of the stratum). This stratum was described as gray, fine to medium SAND with up to 35% fines and 5% gravel.
- **ORGANICS** – an Organic layer was encountered below the Upper Loose Sand Stratum in some areas and below the Fill stratum in other areas. The Organic stratum ranged in thickness between approximately 2.5' and 18' bgs, and was observed to extend to depths ranging between 12' and 30' bgs. This stratum was variable in composition and was described as gray, fibrous PEAT with up to 35% Organic Silt and/or up to 35% Sand; Organic SILT with up to 50% Sand; or fine SAND with up to 50% fibrous Peat and/or Organic Clay & Silt, Clay, or Silt.
- **LOWER LOOSE SAND:** A Lower Loose Sand stratum was encountered below the Organics stratum. This stratum ranged in thickness from approximately 3' to 19' bgs, and extended to depths ranging between 29' and 38' bgs. This stratum was described as gray, fine to medium SAND with up to 50% fines, and up to 10% seashell fragments or SILT with up to 50% Sand.
- **MEDIUM DENSE SAND** – Below the Lower Loose Sand stratum and below the Organics stratum, a Medium Dense Sand stratum was encountered. This stratum extended from depths ranging between 28' and 38' bgs to the termination depths of the test borings at depths ranging between 40' and 77' bgs.



3.3 GROUNDWATER CONDITIONS

GZA's geotechnical exploration encountered groundwater at approximately 4' bgs. GZA's Phase II ESI encountered groundwater at depths ranging from 4.3' to 5.3' bgs.

4.0 SITE INVESTIGATION ACTIVITIES

The location of the completed soil borings, monitoring wells and soil-vapor probe installations are shown on **Figure 2**. Representative photographs of the field investigation activities are included in **Appendix C**.

4.1 GEOPHYSICAL INVESTIGATION

Nova Geophysical Engineering (Nova), under contract with GZA, performed a geophysical engineering survey on October 6, 2015. The survey was limited to the accessible portions of the Site (i.e. the exterior portions of the property, sidewalk, and portions of the vacant lots). The Site buildings were in severe disrepair and were inaccessible for the drilling rig. Access to some portions of the vacant lots was also limited due to overgrown trees and shrubs.

Nova utilized a Noggin 250 megahertz ground penetrating radar (GPR) shielded antenna and Dynatel™ Multi-Frequency Detector. The survey identified scattered anomalies throughout the project Site. Based on their rates and proximity, these anomalies were inconsistent with USTs. The GPR survey identified large anomalies, whose locations were consistent with the location of a former filling station and its appurtenances. It also located several utilities (sewer, water, electric and gas) and were marked out at the Site. A 275-gallon aboveground storage tank was observed at the vacant lot south of the former filling station. The Geophysical Survey Report including a figure depicting structures is presented in **Appendix D**.

4.2 SUBSURFACE INVESTIGATION

This section describes the field methodologies employed and the field findings. Boring logs are provided in **Appendix E**. The location of the soil borings are shown in **Figure 2**.

4.2.1 Soil Boring Installation and Sampling

GZA subcontracted Trinity Environmental Corp. of Deer Park, New York (Trinity) to advance eight soil borings on August 29 and 30, 2016. The borings are identified as SB-1 through SB-8. Trinity advanced the soil borings via direct push techniques using a Geoprobe® 7720 equipped with a 2-inch inside diameter MacroCore® soil sampling unit with an acetate liner sleeve. The soil core was collected continuously at 5-foot intervals beginning from surface grade to a depth of 15 feet bgs or refusal, whichever was shallower.

GZA personnel screened the soil cores for the presence of total organic vapors using a PID equipped with a 10.6 eV lamp, visually observed for staining, and classified recovered soil using the modified Burmister soil classification system. Soil samples for VOC analysis were collected using a TerraCore™ sampler and were not composited. Representative portions of the samples collected were placed in laboratory-supplied glass jars with a screw top lid. The bottles were placed in a cooler and transported to Alpha Analytical Laboratory using chain-of-custody procedures for analysis.

4.2.2 Monitoring Well Installation and Groundwater Sampling

One permanent monitoring well was installed just west of the former dry cleaner (GZA-1). In addition, soil boring SB-3, located east and upgradient of the former dry cleaners, was converted into a permanent monitoring well (GZA-2).



Two-inch diameter PVC monitoring wells will be installed ten feet into the water table (approximately down to 15 feet bgs). Each well consisted of 10 feet of 0.02-inch slotted PVC screen with the screened interval extending across the water table to detect petroleum sheens or light non-aqueous phase liquids. Filter pack material was placed in the annular space around the well screen and extend 1 foot above the well screen. A 2-foot bentonite plug was placed above the filter pack. The remaining annular space will filled with bentonite/grout. The wells were completed with a flush-mount manhole and locking cap.

Trinity developed the monitoring wells with a submersible pump until the water reached the turbidity guidance value of 50 Nephelometric Turbidity Units (NTU), or the water was visibly clear. Prior to purging and sampling, the newly installed wells (along with the existing monitoring wells) were gauged. The gauging data was used to generate groundwater contour maps and establish the groundwater flow direction for the Site. GZA performed a survey of the locations and elevations of the monitoring wells. The monitoring well locations and calculated groundwater flow direction are depicted on **Figure 2**. Groundwater was calculated to flow to the west at the Site.

After developing the monitoring wells, GZA collected groundwater samples from the two new monitoring wells (GZA-1 and GZA-2) and from one existing monitoring well (MW-2). The wells were purged using low-flow sampling through dedicated Teflon™ tubing in accordance with *EPA Ground Water Issue Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, dated April 1996*. GZA field screened the water quality at each well. Volume and well sampling observations were recorded on logs provided in **Appendix F**.

4.2.3 Soil Vapor Probe Installation

Trinity installed three soil vapor probes SV-1, SV-2, and SV-3 using a Geoprobe® equipped with a 2-inch diameter hammer rod, continuously advanced into the subsurface and set at a depth approximately 8 feet bgs. The soil vapor probes were distributed to locations near areas of concern (i.e. the former filling station, near the former dry cleaner, etc.). Polyethylene tubing (1/4-inch) retrofitted with moisture filters were placed in each borehole and backfilled with sand. Bentonite was placed at the top of each soil vapor point to create a seal. Prior to sampling, a helium leak-detection test was performed at each soil vapor sampling location, and no leaks were observed. The soil vapor samples were collected via 2.7-liter summa canisters. Methodologies used for soil vapor assessment conformed to the *New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion, October 2006*. Soil vapor sampling locations (SV-1 and SV-2) are shown on **Figure 2**. The soil vapor sampling logs are presented on **Appendix G**.

The table below summarizes the analyses conducted on the soil, groundwater, and soil vapor samples.

Media Analyzed	Description
Soils	VOCs by EPA Method 8260C SVOCs by EPA Method 8270D Target Analytical List (TAL) Metals by EPA Method 6010C Pesticides by EPA Method 8081B Polychlorinated Biphenyls (PCB) by EPA Method 8082A
Groundwater	VOCs by EPA Method 8260C SVOCs by EPA Method 8270D Target Analytical List (TAL) Metals by EPA Method 6010C Pesticides by EPA Method 8081B Polychlorinated Biphenyls (PCB) by EPA Method 8082A
Soil Vapor	VOCs by EPA TO-15 Method (Soil vapor)



5.0 ANALYTICAL RESULTS

The analytical results of soil, groundwater and soil vapor samples collected during the Phase II ESI activities are discussed below and summarized in **Tables 1 through 11**. The laboratory reports are provided in **Appendix H**.

5.1 SOIL SAMPLE ANALYTICAL RESULTS

The soil sample analytical results were compared to the New York State Department of Environmental Conservation (NYSDEC) Part 375 “Unrestricted Use” (Track 1) and “Restricted Commercial Use” (Track 2) SCOs. The soil analytical results are presented in **Tables 1 through 5**. The results are as follows:

- VOCs were detected in one soil sample. There were exceedances of Track 1 SCOs for 2-Butanone and Acetone in sample SB-1(5.5-6’). These concentrations were below their Track 2 SCOs.
- SVOCs exceeded their Track 1 SCOs for benzo(b)flouranthene and indeno (1,2,3-cd)pyrene and benzo(b)flouranthene in sample SB-2(0’-2’) and benzo(b)flouranthene in SB-4(0’-2’). These concentrations were below their Track 2 SCOs.
- Copper, lead, mercury and zinc exceeded their Track 1 SCOs in SB-4(0-2’); lead and zinc exceeded their Track 1 SCOs in SB-2(0-2’); and lead exceeded its Track 1 SCO in SB-6(0-2’). The concentrations were below their Track 2 SCOs.
- No PCB or pesticide detections exceeded their Track 1 or Track 2 SCOs.

5.2 GROUNDWATER ANALYTICAL RESULTS

The groundwater sample analytical results were compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (AWQS). The groundwater analytical results are summarized in **Tables 6 through 10**. The laboratory reports are provided in **Appendix H**. The results are as follows:

- Two chlorinated VOCs (Cis-1,2dichloroethene and vinyl chloride) were detected above their TOGS 1.1.1 AWQS in the sample collected from GZA-1. Four petroleum-related VOCs (1, 2, 4-trimethylbenzene, ethylbenzene, o-xylene, and p/m-xylene) were detected above TOGS 1.1.1 AWQS in the sample collected from MW-2. There were no exceedances of any targeted compounds in the sample collected from GZA-2.
- Benzo(b)flouranthene and chrysene exceeded their TOGS 1.1.1 AWQS in GZA-1 and acenaphthene exceeded its TOGS 1.1.1 AWQS in MW-2.
- Sample GZA-1 contained exceedances of several metals, namely arsenic, chromium, iron, lead, manganese, nickel, sodium and thallium. Sample GZA-2 contained exceedances of iron, magnesium and sodium. Sample MW-2 contained an exceedance of sodium.
- Sample GZA -1 contained one PCB (Aroclor 1260) at a concentration exceeding its TOGS 1.1.1 AWQS.
- All targeted pesticides were below detection limits in all three groundwater samples.

5.3 SOIL VAPOR ANALYTICAL RESULTS

Multiple VOCs were detected in the two soil vapor samples collected at the Site. Soil vapor sample SV-1 contained TCE and PCE at concentrations exceeding their respective NYSDOH Air Guideline Values (AGVs). Soil vapor sample SV-3 contained PCE at a concentration exceeding its AGV. **Table 11** summarizes the analytical results.



6.0 FINDINGS

GZA conducted a Phase II Environmental Site Investigation for the Site located at Beach 53rd and Beach 54th Street, Ocean Bay Retail Development, Far Rockaway, New York. The subsurface investigation consisted of soil, groundwater and soil vapor sampling.

The significant findings of the Phase II ESI are summarized as follows:

- Groundwater flows to the west at the Site.
- The soil analytical results show exceedances of Track 1 SCOs for two VOCs, two SVOCs and several metals. The two VOCs detected above Track 1 SCOs are typical laboratory equipment cleaning solvents. The SVOCs and metals that exceeded Track 1 SCOs are typical constituents of historic Urban Fill observed in New York City. None of the compounds exceeded Track 2 SCOs.
- The groundwater sample collected from GZA-1, located down-gradient of the former dry cleaner, contained exceedances of two chlorinated VOCs (Cis-1,2-dichloroethene and vinyl chloride). These compounds are breakdown products of PCE, a common dry cleaning fluid. It also contained an exceedance of PCBs, two targeted SVOCs, and several targeted metals, all of which may be due to turbidity in the groundwater sample or natural water chemistry. MW-2 contained exceedances of 1,2,4-trimethylbenzene, ethylbenzene, o-xylene, and p/m-xylene, all associated with gasoline. The MW-2 results were consistent with previous investigation results performed by others.
- Exceedances of TCE and PCE were detected in soil vapor sample SV-1 sample. The concentration of TCE was particularly high in this sample, and doesn't correlate to the groundwater results from the nearby MW-2. There was an exceedance of PCE in soil vapor sample SV-3, collected east of the dry cleaner. This exceedance may be related to former dry cleaning operations on Lot 55.



Tables

Table 1 - Volatile Organic Compounds in Soil
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	Part 375 NY Unrestricted Use Criteria	Part 375 Restricted Commercial Use Criteria	SB-1 (1.5'-2')		SB-1 (5.5'-6')		SB-2 (1.5'-2')		SB-3 (1.5'-2')		SB-4 (1.5'-2')		SB-5 (1.5'-2')		SB-6 (1.5'-2')		SB-7 (1.5'-2')		SB-8 (1.5'-2')		
			8/30/2016		30-AUG-16		30-AUG-16		29-AUG-16		30-AUG-16		8/30/2016		30-AUG-16		8/29/2016		8/29/2016		
			L1627168-01		L1627168-03		L1627168-05		L1627031-01		L1627168-07		L1627168-09		L1627168-07		L1627031-05		L1627031-07		
SAMPLING DATE	LAB SAMPLE ID	SAMPLE TYPE	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
Volatile Organics by 8260/5035 (mg/kg)																					
1,1,1,2-Tetrachloroethane			0.00039	U	0.023	U	0.00051	U	0.00035	U	0.00037	U	0.00044	U	0.00035	U	0.0004	U	0.00035	U	
1,1,1-Trichloroethane	0.68	500	0.00014	U	0.0081	U	0.00018	U	0.00012	U	0.00013	U	0.00015	U	0.00012	U	0.00014	U	0.00012	U	
1,1,2,2-Tetrachloroethane			0.00012	U	0.0074	U	0.00016	U	0.00011	U	0.00012	U	0.00014	U	0.00011	U	0.00013	U	0.00011	U	
1,1,2-Trichloroethane			0.00037	U	0.022	U	0.00049	U	0.00034	U	0.00036	U	0.00042	U	0.00033	U	0.00038	U	0.00034	U	
1,1-Dichloroethane	0.27	240	0.0001	U	0.0063	U	0.00014	U	0.0001	U	0.0001	U	0.00012	U	0.00009	U	0.00011	U	0.0001	U	
1,1-Dichloroethane	0.33	500	0.00032	U	0.019	U	0.00042	U	0.00029	U	0.00031	U	0.00036	U	0.00029	U	0.00033	U	0.00029	U	
1,1-Dichloropropene			0.00017	U	0.01	U	0.00023	U	0.00016	U	0.00016	U	0.00019	U	0.00016	U	0.00018	U	0.00016	U	
1,2,3-Trichlorobenzene			0.00018	U	0.011	U	0.00024	U	0.00016	U	0.00017	U	0.0002	U	0.00016	U	0.00018	U	0.00016	U	
1,2,3-Trichloropropane			0.0002	U	0.012	U	0.00026	U	0.00018	U	0.00019	U	0.00022	U	0.00018	U	0.0002	U	0.00018	U	
1,2,4,5-Tetramethylbenzene			0.00017	J	0.0096	U	0.00021	U	0.00014	U	0.00015	U	0.00018	U	0.00014	U	0.00016	U	0.00014	U	
1,2,4-Trichlorobenzene			0.00022	U	0.013	U	0.00029	U	0.0002	U	0.00021	U	0.00025	U	0.0002	U	0.00023	U	0.0002	U	
1,2,4-Trimethylbenzene	3.6	190	0.0016	J	0.01	U	0.00023	U	0.00016	U	0.00016	U	0.00019	U	0.00016	U	0.00018	U	0.00016	U	
1,2-Dibromo-3-chloropropane			0.00048	U	0.029	U	0.00064	U	0.00044	U	0.00046	U	0.00054	U	0.00044	U	0.0005	U	0.00044	U	
1,2-Dibromoethane			0.00021	U	0.013	U	0.00028	U	0.00019	U	0.0002	U	0.00024	U	0.00019	U	0.00022	U	0.00019	U	
1,2-Dichlorobenzene	1.1	500	0.00019	U	0.011	U	0.00025	U	0.00017	U	0.00018	U	0.00021	U	0.00017	U	0.00019	U	0.00017	U	
1,2-Dichloroethane	0.02	30	0.00014	U	0.0083	U	0.00018	U	0.00013	U	0.00013	U	0.00016	U	0.00012	U	0.00014	U	0.00012	U	
1,2-Dichloroethane, Total			0.00017	U	0.0088	U	0.00023	U	0.00016	U	0.00017	U	0.0002	U	0.00016	U	0.00018	U	0.00016	U	
1,2-Dichloropropane			0.00028	U	0.017	U	0.00037	U	0.00025	U	0.00027	U	0.00031	U	0.00025	U	0.00029	U	0.00025	U	
1,3,5-Trimethylbenzene	8.4	190	0.0006	J	0.01	U	0.00023	U	0.00016	U	0.00017	U	0.0002	U	0.00016	U	0.00018	U	0.00016	U	
1,3-Dichlorobenzene	2.4	280	0.00016	U	0.0099	U	0.00022	U	0.00015	U	0.00016	U	0.00018	U	0.00015	U	0.00017	U	0.00015	U	
1,3-Dichloropropane			0.00018	U	0.011	U	0.00023	U	0.00016	U	0.00017	U	0.0002	U	0.00016	U	0.00018	U	0.00016	U	
1,3-Dichloropropane, Total			0.00014	U	0.0072	U	0.00019	U	0.00013	U	0.00014	U	0.00016	U	0.00013	U	0.00015	U	0.00013	U	
1,4-Dichlorobenzene	1.8	130	0.00017	U	0.01	U	0.00022	U	0.00015	U	0.00016	U	0.00019	U	0.00015	U	0.00017	U	0.00015	U	
1,4-Dioxane	0.1	130	0.018	J	1	U	0.023	J	0.016	U	0.017	U	0.017	U	0.016	U	0.018	U	0.016	U	
2,2-Dichloropropane			0.00028	U	0.017	U	0.00036	U	0.00025	U	0.00026	U	0.00031	U	0.00025	U	0.00028	U	0.00025	U	
2-Butanone	0.12	500	0.0012	J	0.13	J	0.00044	U	0.0034	J	0.00032	U	0.00037	U	0.00098	J	0.0016	J	0.0003	U	
2-Hexanone			0.00081	U	0.049	U	0.0011	U	0.00074	U	0.00078	U	0.00091	U	0.00073	U	0.00084	U	0.00074	U	
4-Methyl-2-pentanone			0.0003	U	0.018	U	0.00039	U	0.00027	U	0.00029	U	0.00033	U	0.00027	U	0.00031	U	0.00027	U	
Acetone	0.05	500	0.014	J	0.34	J	0.014	J	0.016	U	0.012	U	0.029	J	0.0071	J	0.014	U	0.011	U	
Acrylonitrile			0.00063	U	0.038	U	0.00083	U	0.00057	U	0.0006	U	0.0007	U	0.00056	U	0.00064	U	0.00057	U	
Benzene	0.06	44	0.0008	J	0.0087	U	0.00019	U	0.00017	J	0.00083	J	0.00016	U	0.00013	U	0.00015	U	0.00013	U	
Bromobenzene			0.00025	U	0.015	U	0.00033	U	0.00023	U	0.00024	U	0.00028	U	0.00023	U	0.00026	U	0.00023	U	
Bromochloromethane			0.00034	U	0.02	U	0.00044	U	0.00031	U	0.00032	U	0.00038	U	0.0003	U	0.00035	U	0.0003	U	
Bromodichloromethane			0.00021	U	0.013	U	0.00028	U	0.00019	U	0.0002	U	0.00024	U	0.00019	U	0.00022	U	0.00019	U	
Bromoform			0.00029	U	0.017	U	0.00038	U	0.00026	U	0.00028	U	0.00032	U	0.00026	U	0.0003	U	0.00026	U	
Bromomethane			0.00041	U	0.056	J	0.00054	U	0.00038	U	0.0004	U	0.00046	U	0.00037	U	0.00042	U	0.00037	U	
Carbon disulfide			0.0013	U	0.081	U	0.0018	U	0.0033	J	0.0013	U	0.0015	U	0.0031	J	0.0014	U	0.0012	U	
Carbon tetrachloride	0.76	22	0.00026	U	0.015	U	0.00034	U	0.00023	U	0.00025	U	0.00029	U	0.00023	U	0.00026	U	0.00023	U	
Chlorobenzene	1.1	500	0.00042	U	0.026	U	0.00056	U	0.00039	U	0.00041	U	0.00048	U	0.00038	U	0.00044	U	0.00038	U	
Chloroethane			0.00038	U	0.023	U	0.00051	U	0.00035	U	0.00037	U	0.00043	U	0.00035	U	0.0004	U	0.00035	U	
Chloroform	0.37	350	0.00045	U	0.027	U	0.00059	U	0.00041	U	0.00043	U	0.00051	U	0.00041	U	0.00046	U	0.00041	U	
Chloromethane			0.00046	J	0.15	J	0.00047	J	0.00033	U	0.00034	U	0.0004	U	0.00032	U	0.00037	U	0.00032	U	
cis-1,2-Dichloroethane	0.25	500	0.00017	U	0.01	U	0.00023	U	0.00016	U	0.00017	U	0.0002	U	0.00016	U	0.00018	U	0.00016	U	
cis-1,3-Dichloropropene			0.00014	U	0.0086	U	0.00019	U	0.00013	U	0.00014	U	0.00016	U	0.00013	U	0.00015	U	0.00013	U	
Dibromochloromethane			0.00019	U	0.011	U	0.00025	U	0.00017	U	0.00018	U	0.00021	U	0.00017	U	0.00019	U	0.00017	U	
Dibromomethane			0.0002	U	0.012	U	0.00026	U	0.00018	U	0.00019	U	0.00022	U	0.00018	U	0.0002	U	0.00018	U	
Dichlorodifluoromethane			0.00023	U	0.014	U	0.00031	U	0.00021	U	0.00022	U	0.00026	U	0.00021	U	0.00024	U	0.00021	U	
Ethyl ether			0.00032	U	0.019	U	0.00042	U	0.00029	U	0.0003	U	0.00036	U	0.00029	U	0.00033	U	0.00029	U	
Ethylbenzene	1	390	0.0013	U	0.0094	U	0.0002	U	0.00014	U	0.00016	U	0.00017	U	0.00014	U	0.00016	U	0.00014	U	
Hexachlorobutadiene			0.00028	U	0.017	U	0.00037	U	0.00025	U	0.00027	U	0.00031	U	0.00025	U	0.00029	U	0.00025	U	
Isopropylbenzene			0.00013	U	0.0076	U	0.00017	U	0.00012	U	0.00012	U	0.00014	U	0.00011	U	0.00013	U	0.00012	U	
Methyl tert butyl ether	0.93	500	0.0001	U	0.0062	U	0.00014	U	0.00009	U	0.0001	U	0.00012	U	0.00009	U	0.0001	U	0.00009	U	
Methylene chloride	0.05	500	0.0013	U	0.081	U	0.0018	U	0.0012	U	0.0013	U	0.0015	U	0.0012	U	0.0014	U	0.0012	U	
n-Butylbenzene	12	500	0.00014	U	0.0084	U	0.00018	U	0.00013	U	0.00013	U	0.00016	U	0.00013	U	0.00014	U	0.00013	U	
n-Propylbenzene	3.9	500	0																		

Table 2 - Semi-Volatile Organic Compounds in Soil
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	Part 375 NY Unrestricted Use Criteria	Part 375 Restricted Commercial Use Criteria	SB-1 (0'-2')		SB-1 (5'-7')		SB-2 (0'-2')		SB-3 (0'-2')		SB-4 (0'-2')		SB-5 (0'-2')		SB-6 (0'-2')		SB-7 (0'-2')		SB-8 (0'-2')			
			8/30/2016	L1627168-01	8/30/2016	L1627168-03	8/30/2016	L1627168-05	8/29/2016	L1627031-01	8/30/2016	L1627168-07	8/30/2016	L1627168-09	8/29/2016	L1627168-07	8/29/2016	L1627031-05	8/29/2016	L1627031-07		
SAMPLING DATE			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil			
LAB SAMPLE ID			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
SAMPLE TYPE			Soil																			
Volatile Organics by GC/MS (mg/kg)																						
1,2,4,5-Tetrachlorobenzene			0.018	U	0.02	U	0.092	U	0.022	U	0.018	U	0.018	U	0.022	U	0.019	U	0.018	U		
1,2,4-Trichlorobenzene			0.02	U	0.022	U	0.1	U	0.024	U	0.02	U	0.02	U	0.024	U	0.021	U	0.019	U		
1,2-Dichlorobenzene	1.1	500	0.031	U	0.035	U	0.16	U	0.038	U	0.031	U	0.031	U	0.038	U	0.033	U	0.03	U		
1,3-Dichlorobenzene	2.4	280	0.03	U	0.034	U	0.15	U	0.036	U	0.029	U	0.03	U	0.036	U	0.032	U	0.029	U		
1,4-Dichlorobenzene	1.8	130	0.03	U	0.034	U	0.15	U	0.037	U	0.03	U	0.03	U	0.037	U	0.032	U	0.03	U		
2,4,5-Trichlorophenol			0.033	U	0.037	U	0.17	U	0.04	U	0.033	U	0.033	U	0.04	U	0.035	U	0.032	U		
2,4,6-Trichlorophenol			0.032	U	0.037	U	0.17	U	0.04	U	0.032	U	0.033	U	0.04	U	0.035	U	0.032	U		
2,4-Dichlorophenol			0.028	U	0.031	U	0.14	U	0.034	U	0.028	U	0.028	U	0.034	U	0.03	U	0.027	U		
2,4-Dimethylphenol			0.057	U	0.064	U	0.29	U	0.069	U	0.056	U	0.058	U	0.07	U	0.061	U	0.056	U		
2,4-Dinitrophenol			0.08	U	0.091	U	0.41	U	0.098	U	0.08	U	0.081	U	0.098	U	0.086	U	0.079	U		
2,4-Dinitrotoluene			0.034	U	0.039	U	0.18	U	0.042	U	0.034	U	0.035	U	0.042	U	0.037	U	0.034	U		
2,6-Dinitrotoluene			0.029	U	0.033	U	0.15	U	0.036	U	0.029	U	0.03	U	0.036	U	0.032	U	0.029	U		
2-Chloronaphthalene			0.017	U	0.019	U	0.088	U	0.021	U	0.017	U	0.017	U	0.021	U	0.018	U	0.017	U		
2-Chlorophenol			0.02	U	0.023	U	0.1	U	0.025	U	0.02	U	0.021	U	0.025	U	0.022	U	0.02	U		
2-Methylnaphthalene			0.021	U	0.024	U	0.75	J	0.025	U	0.19	J	0.038	J	0.026	U	0.022	U	0.02	U		
2-Methylphenol	0.33	500	0.026	U	0.03	U	0.14	U	0.032	U	0.026	U	0.027	U	0.033	U	0.029	U	0.026	U		
2-Nitroaniline			0.033	U	0.038	U	0.17	U	0.04	U	0.033	U	0.034	U	0.041	U	0.036	U	0.033	U		
2-Nitrophenol			0.064	U	0.073	U	0.33	U	0.079	U	0.064	U	0.066	U	0.079	U	0.069	U	0.064	U		
3,3'-Dichlorobenzidine			0.046	U	0.052	U	0.23	U	0.056	U	0.046	U	0.046	U	0.056	U	0.049	U	0.045	U		
3-Methylphenol/4-Methylphenol	0.33	500	0.027	U	0.03	U	0.14	U	0.033	U	0.027	U	0.027	U	0.033	U	0.029	U	0.027	U		
3-Nitroaniline			0.032	U	0.037	U	0.17	U	0.04	U	0.032	U	0.033	U	0.04	U	0.035	U	0.032	U		
4,6-Dinitro-o-cresol			0.082	U	0.094	U	0.42	U	0.1	U	0.082	U	0.084	U	0.1	U	0.089	U	0.082	U		
4-Bromophenyl phenyl ether			0.026	U	0.03	U	0.13	U	0.032	U	0.026	U	0.026	U	0.032	U	0.028	U	0.026	U		
4-Chloroaniline			0.031	U	0.035	U	0.16	U	0.038	U	0.031	U	0.032	U	0.038	U	0.034	U	0.031	U		
4-Chlorophenyl phenyl ether			0.018	U	0.021	U	0.094	U	0.022	U	0.018	U	0.019	U	0.023	U	0.02	U	0.018	U		
4-Nitroaniline			0.071	U	0.081	U	0.36	U	0.087	U	0.071	U	0.072	U	0.087	U	0.076	U	0.07	U		
4-Nitrophenol			0.07	U	0.08	U	0.36	U	0.086	U	0.07	U	0.071	U	0.086	U	0.075	U	0.069	U		
Acenaphthene	20	500	0.018	U	0.02	U	0.091	U	0.086	J	0.034	J	0.018	U	0.091	J	0.019	U	0.018	U		
Acenaphthylene	100	500	0.026	U	0.03	U	0.16	J	0.032	U	0.74		0.29		0.033	U	0.028	U	0.026	U		
Acetophenone			0.021	U	0.024	U	0.11	U	0.026	U	0.021	U	0.022	U	0.026	U	0.023	U	0.021	U		
Anthracene	100	500	0.033	U	0.038	U	0.18	J	0.041	U	0.34		0.058	J	0.041	U	0.036	U	0.033	U		
Benzo(a)anthracene	1	5.6	0.019	U	0.022	U	0.51	J	0.024	U	0.64		0.11		0.024	U	0.021	U	0.042	J		
Benzo(a)pyrene	1	1	0.042	U	0.048	U	0.79		0.051	U	0.66		0.13	J	0.052	U	0.045	U	0.042	J		
Benzo(b)fluoranthene	1	5.6	0.029	U	0.033	U	1		0.035	U	0.88		0.17		0.036	U	0.031	U	0.049	J		
Benzo(ghi)perylene	100	500	0.02	U	0.023	U	0.52	J	0.025	U	0.64		0.16		0.025	U	0.022	U	0.025	J		
Benzo(k)fluoranthene	0.8	56	0.027	U	0.031	U	0.35	J	0.034	U	0.27		0.045	J	0.034	U	0.03	U	0.027	U		
Benzoic Acid			0.17	U	0.2	U	0.89	U	0.21	U	0.17	U	0.18	U	0.21	U	0.19	U	0.17	U		
Benzyl Alcohol			0.052	U	0.06	U	0.27	U	0.064	U	0.052	U	0.053	U	0.065	U	0.056	U	0.052	U		
Biphenyl			0.04	U	0.045	U	0.2	U	0.049	U	0.045	J	0.04	U	0.049	U	0.043	U	0.039	U		
Bis(2-chloroethoxy)methane			0.017	U	0.02	U	0.088	U	0.021	U	0.017	U	0.017	U	0.021	U	0.018	U	0.017	U		
Bis(2-chloroethyl)ether			0.023	U	0.026	U	0.12	U	0.028	U	0.023	U	0.024	U	0.029	U	0.025	U	0.023	U		
Bis(2-chloroisopropyl)ether			0.029	U	0.033	U	0.15	U	0.036	U	0.029	U	0.03	U	0.036	U	0.032	U	0.029	U		
Bis(2-ethylhexyl)phthalate			0.066	J	0.067	U	0.3	U	0.073	U	0.11	J	0.06	U	0.073	U	0.064	U	0.059	U		
Butyl benzyl phthalate			0.043	U	0.049	U	0.22	U	0.053	U	0.49		0.044	U	0.053	U	0.046	U	0.043	U		
Carbazole			0.017	U	0.019	U	0.086	U	0.02	U	0.058	J	0.017	U	0.02	U	0.018	U	0.016	U		
Chrysene	1	56	0.018	U	0.02	U	0.61	U	0.022	U	0.74		0.13		0.022	U	0.019	U	0.043	J		
Di-n-butylphthalate			0.032	U	0.037	U	0.17	U	0.04	U	0.032	U	0.033	U	0.04	U	0.035	U	0.032	U		
Di-n-octylphthalate			0.058	U	0.066	U	0.3	U	0.071	U	0.058	U	0.059	U	0.072	U	0.063	U	0.058	U		
Dibenzo(a,h)anthracene	0.33	0.56	0.02	U	0.022	U	0.1	J	0.024	U	0.14		0.032	J	0.024	U	0.021	U	0.02	U		
Dibenzofuran	7	350	0.016	U	0.018	U	0.084	U	0.02	U	0.052	J	0.016	U	0.02	U	0.017	U	0.016	U		
Diethyl phthalate			0.016	U	0.018	U	0.082	U	0.019	U	0.016	U	0.016	U	0.02	U	0.017	U	0.016	U		
Dimethyl phthalate			0.036	U	0.041	U	0.18	U	0.044	U	0.036	U	0.037	U	0.044	U	0.039	U	0.036	U		
Fluoranthene	100	500	0.02	U	0.022	U	0.95		0.024	U	0.94		0.098	J	0.024	U	0.031	J	0.08	J		
Fluorene	30	500	0.017	U	0.019	U	0.097	J	0.02	U	0.12	J	0.029	J	0.02	U	0.018	U	0.016	U		
Hexachlorobenzene	0.33	6	0.019	U	0.022	U	0.099	U	0.024	U	0.019	U	0.02	U	0.024	U	0.021	U	0.019	U		
Hexachlorobutadiene			0.025	U	0.028	U	0.13	U	0.031	U	0.025	U	0.026	U	0.031	U	0.027	U	0.025	U		
Hexachlorocyclopentadiene			0.16	U	0.18	U	0.8	U	0.19	U	0.15	U	0.16	U	0.19	U	0.17	U	0.15	U		
Hexachloroethane			0.028	U	0.032	U	0.14	U	0.034	U	0.028	U	0.028	U	0.034	U	0.03	U	0.028	U		
Indeno(1,2,3-cd)pyrene	0.5	5.6	0.024	U	0.027	U	0.52	J	0.029	U	0.58		0.13	J	0.029	U	0.026	U	0.028	J		
Isophorone			0.022	U	0.025	U	0.11	U	0.027	U	0.022	U	0.023	U	0.027	U	0.024	U	0.022			

Table 3 - Metals in Soil
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	Part 375 NY Unrestricted Use Criteria	Part 375 Restricted Commercial Use Criteria	SB-1 (0'-2')		SB-2 (0'-2')		SB-3 (0'-2')		SB-4 (0'-2')		SB-5 (0'-2')		SB-6 (0'-2')		SB-7 (0'-2')		SB-8 (0'-2')	
SAMPLING DATE			8/30/2016	8/30/2016	8/29/2016	8/30/2016	8/30/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016	
LAB SAMPLE ID			L1627168-01	L1627168-05	L1627031-01	L1627168-07	L1627168-09	L1627168-07	L1627031-05	L1627031-07								
SAMPLE TYPE			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil								
	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Metals	(mg/kg)																	
Aluminum, Total			2000		2200		7200		3000		1000		3000		1500		850	
Antimony, Total			0.65	U	0.65	U	0.8	U	0.64	U	0.64	U	0.8	U	0.7	U	0.64	U
Arsenic, Total	13	16	2.1		2.7		10		4.9		0.79	J	2.6		1.2		0.28	J
Barium, Total	350	400	19		56		25		52		6.3		35		16		5.2	
Beryllium, Total	7.2	590	0.09	U	0.2	J	0.35	J	0.5		0.09	U	0.11	U	0.1	U	0.09	U
Cadmium, Total	2.5	9.3	0.06	U	0.96		0.07	U	0.46	J	0.06	U	0.09	J	0.06	U	0.06	U
Calcium, Total			9900		890		1200		4600		250		7600		430		160	
Chromium, Total			6.8		9		22		16		3.8		11		5.8		2.8	
Cobalt, Total			0.96	J	2.2		5.8		4.1		0.74	J	1.8	J	0.95	J	0.45	J
Copper, Total	50	270	5.9		26		28		62		3.7		15		3.4		1.2	
Iron, Total			4400		6200		21000		12000		2800		6300		3600		1500	
Lead, Total	63	1000	16		220		24		110		2.8	J	75		8.1		1.3	J
Magnesium, Total			4400		900		2600		1800		420		2300		660		360	
Manganese, Total	1600	10000	31		51		210		83		15		64		20		9.8	
Mercury, Total	0.18	2.8	0.03	J	0.12		0.1		0.22		0.09		0.08		0.02	U	0.01	U
Nickel, Total	30	310	2.8		9.7		15		12		2.6		5.4		2.9		1.5	J
Potassium, Total			440		330		1500		520		340		390		520		300	
Selenium, Total	3.9	1500	0.22	U	0.22	U	0.27	U	0.21	U	0.22	U	0.27	U	0.24	U	0.22	U
Silver, Total	2	1500	0.16	U	0.16	U	0.2	U	0.16	U	0.16	U	0.2	U	0.17	U	0.16	U
Sodium, Total			48	J	66	J	780		76	J	45	J	220		42	J	22	J
Thallium, Total			0.26	U	0.26	U	0.32	U	0.25	U	0.26	U	0.32	U	0.28	U	0.26	U
Vanadium, Total			9		12		30		14		4.9		11		9		3.2	
Zinc, Total	109	10000	11		170		49		340		8.5		75		9		7.5	

TABLE NOTES:

Q	Qualifiers
	Non-detect but exceeds NY Part 375 Unrestricted Use Criteria
2.5	Exceeds Part 375 Unrestricted Use Criteria
J	Estimated Value. The target analyte concentration is below the reporting limit (RL), but above the method detection limit
B	Analyte was present in laboratory blank.
D	Sample was diluted in order to obtain a value within the calibration range.
U	Not detected at the reported detection limit for th
--	No Standard or Guidance Value.
µg/L	Micrograms per liter.

Table 4 - PCBs in Soil
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	Part 375 NY Unrestricted Use Criteria	Part 375 Restricted Commercial Use Criteria	SB-1 (0'-2')		SB-2 (0'-2')		SB-3 (0'-2')		SB-4 (0'-2')		SB-5 (0'-2')		SB-6 (0'-2')		SB-7 (0'-2')		SB-8 (0'-2')	
SAMPLING DATE			8/30/2016	8/30/2016	8/29/2016	8/30/2016	8/30/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016							
LAB SAMPLE ID			L1627168-01	L1627168-05	L1627031-01	L1627168-07	L1627168-09	L1627168-07	L1627031-05	L1627031-07								
SAMPLE TYPE			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil								
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Polychlorinated Biphenyls (mg/kg)																		
Aroclor 1016	0.1	1	0.00272	U	0.0028	U	0.00326	U	0.00268	U	0.00273	U	0.00329	U	0.00294	U	0.00263	U
Aroclor 1221	0.1	1	0.00317	U	0.00327	U	0.00381	U	0.00313	U	0.00318	U	0.00384	U	0.00343	U	0.00307	U
Aroclor 1232	0.1	1	0.00403	U	0.00415	U	0.00484	U	0.00398	U	0.00405	U	0.00488	U	0.00436	U	0.00391	U
Aroclor 1242	0.1	1	0.00421	U	0.00434	U	0.00506	U	0.00415	U	0.00423	U	0.0051	U	0.00455	U	0.00408	U
Aroclor 1248	0.1	1	0.0029	U	0.00299	U	0.00349	U	0.00286	U	0.00291	U	0.00352	U	0.00314	U	0.00281	U
Aroclor 1254	0.1	1	0.00283	U	0.00291	U	0.0034	U	0.00279	U	0.00284	U	0.00342	U	0.00306	U	0.00274	U
Aroclor 1260	0.1	1	0.00262	U	0.0027	U	0.00315	U	0.0342	U	0.00263	U	0.00318	U	0.00284	U	0.00254	U
Aroclor 1262	0.1	1	0.00171	U	0.00176	U	0.00205	U	0.00168	U	0.00171	U	0.00207	U	0.00184	U	0.00165	U
Aroclor 1268	0.1	1	0.00499	U	0.00514	U	0.00599	U	0.00492	U	0.00501	U	0.00604	U	0.0054	U	0.00484	U
PCBs, Total			0.00171	U	0.00176	U	0.00205	U	0.0342	U	0.00171	U	0.00207	U	0.00184	U	0.00165	U

TABLE NOTES:

Q	Qualifiers
	Non-detect but exceeds NY Part 375 Unrestricted Use Criteria
2.5	Exceeds Part 375 Unrestricted Use Criteria
J	Estimated Value. The target analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL).
B	Analyte was present in laboratory blank.
D	Sample was diluted in order to obtain a value within the calibration range.
U	Not detected at the reported detection limit for the sample.
--	No Standard or Guidance Value.
µg/L	Micrograms per liter.

Table 5 - Pesticides in Soil
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	Part 375 NY Unrestricted Use Criteria	Part 375 Restricted Commercial Use Criteria	SB-1 (0'-2')		SB-2 (0'-2')		SB-3 (0'-2')		SB-4 (0'-2')		SB-5 (0'-2')		SB-6 (0'-2')		SB-7 (0'-2')		SB-8 (0'-2')	
SAMPLING DATE			8/30/2016	8/30/2016	8/29/2016	8/30/2016	8/30/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016							
LAB SAMPLE ID			L1627168-01	L1627168-05	L1627031-01	L1627168-07	L1627168-09	L1627168-07	L1627031-05	L1627031-07								
SAMPLE TYPE			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil								
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Pesticides (mg/kg)																		
4,4'-DDD	0.0033	92	0.00164	U	0.0017	U	0.00198	U	0.00159	U	0.00166	U	0.00207	U	0.00178	U	0.00162	U
4,4'-DDE	0.0033	62	0.00164	U	0.0017	U	0.00198	U	0.00159	U	0.00166	U	0.00207	U	0.00055	J	0.00162	U
4,4'-DDT	0.0033	47	0.00308	U	0.00319	U	0.00371	U	0.00298	U	0.0031	U	0.00388	U	0.00218	J	0.00189	J
Aldrin	0.005	0.68	0.00164	U	0.0017	U	0.00198	U	0.00159	U	0.00166	U	0.00207	U	0.00178	U	0.00162	U
Alpha-BHC	0.02	3.4	0.00068	U	0.000708	U	0.000825	U	0.00066	U	0.00069	U	0.00086	U	0.00074	U	0.00068	U
Beta-BHC	0.036	3	0.00164	U	0.0017	U	0.00198	U	0.00159	U	0.00166	U	0.00207	U	0.00178	U	0.00162	U
Chlordane		4.2	0.0133	U	0.0138	U	0.0161	U	0.0129	U	0.0134	U	0.0168	U	0.0145	U	0.0132	U
cis-Chlordane	0.094		0.00205	U	0.00212	U	0.00248	U	0.00199	U	0.00207	U	0.00258	U	0.00222	U	0.00203	U
Delta-BHC	0.04	500	0.00164	U	0.0017	U	0.00198	U	0.00159	U	0.00166	U	0.00207	U	0.00178	U	0.00162	U
Dieldrin	0.005	1.4	0.00102	U	0.00106	U	0.00124	U	0.00099	U	0.00103	U	0.00129	U	0.00111	U	0.00102	U
Endosulfan I	2.4	24	0.00164	U	0.0017	U	0.00198	U	0.00159	U	0.00166	U	0.00207	U	0.00178	U	0.00162	U
Endosulfan II	2.4	24	0.00164	U	0.00329	U	0.00198	U	0.00159	U	0.00166	U	0.00207	U	0.00178	U	0.00162	U
Endosulfan sulfate	2.4	24	0.00068	U	0.000708	U	0.000825	U	0.00066	U	0.00069	U	0.00086	U	0.00074	U	0.00068	U
Endrin	0.014	11	0.00068	U	0.000708	U	0.000825	U	0.00066	U	0.00069	U	0.00086	U	0.00074	U	0.00068	U
Endrin aldehyde			0.00205	U	0.00212	U	0.00248	U	0.00199	U	0.00207	U	0.00258	U	0.00222	U	0.00203	U
Endrin ketone			0.00164	U	0.0017	U	0.00198	U	0.00159	U	0.00166	U	0.00207	U	0.00178	U	0.00162	U
Heptachlor	0.042	15	0.00082	U	0.00085	U	0.00099	U	0.0008	U	0.00083	U	0.00103	U	0.00089	U	0.00081	U
Heptachlor epoxide		9.2	0.00308	U	0.00319	U	0.00371	U	0.00298	U	0.0031	U	0.00388	U	0.00334	U	0.00305	U
Lindane	0.1		0.00068	U	0.000708	U	0.000825	U	0.00066	U	0.00069	U	0.00086	U	0.00074	U	0.00068	U
Methoxychlor			0.00308	U	0.00319	U	0.00371	U	0.00298	U	0.0031	U	0.00388	U	0.00334	U	0.00305	U
Toxaphene			0.0308	U	0.0319	U	0.0371	U	0.0298	U	0.031	U	0.0388	U	0.0334	U	0.0305	U
trans-Chlordane			0.00205	U	0.00212	U	0.00248	U	0.00199	U	0.00207	U	0.00258	U	0.00222	U	0.00203	U

TABLE NOTES:

Q	Qualifiers
J	Estimated Value. The target analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL).
B	Analyte was present in laboratory blank.
D	Sample was diluted in order to obtain a value within the calibration range.
U	Not detected at the reported detection limit for the sample.
--	No Standard or Guidance Value.
µg/L	Micrograms per liter.

Table 6 - Volatile Organic Compounds in Groundwater
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	NYSDEC TOGS 1.1.1 AWQS	GZA-1		GZA-2		MW-2	
		8/30/2016		8/30/2016		8/30/2016	
		L1627168-11		L1627168-12		L1627168-13	
		Groundwater		Groundwater		Groundwater	
SAMPLING DATE		Result	Qual	Result	Qual	Result	Qual
Volatile Organics by 8: (µg/L)							
1,1,1,2-Tetrachloroethane	5	0.7	U	0.7	U	0.7	U
1,1,1-Trichloroethane	5	0.7	U	0.7	U	0.7	U
1,1,2,2-Tetrachloroethane	5	0.14	U	0.14	U	0.14	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	5	0.7	U	0.7	U	0.7	U
1,1-Dichloroethene	5	0.14	U	0.14	U	0.14	U
1,1-Dichloropropene	5	0.7	U	0.7	U	0.7	U
1,2,3-Trichlorobenzene	5	0.7	U	0.7	U	0.7	U
1,2,3-Trichloropropane	0.04	0.7	U	0.7	U	0.7	U
1,2,4,5-Tetramethylbenzene	5	0.65	U	0.65	U	0.84	J
1,2,4-Trichlorobenzene	5	0.7	U	0.7	U	0.7	U
1,2,4-Trimethylbenzene	5	0.7	U	0.7	U	12	
1,2-Dibromo-3-chloropropane	0.04	0.7	U	0.7	U	0.7	U
1,2-Dibromoethane	0.0006	0.65	U	0.65	U	0.65	U
1,2-Dichlorobenzene	3	0.7	U	0.7	U	0.7	U
1,2-Dichloroethane	0.6	0.13	U	0.13	U	0.13	U
1,2-Dichloroethene, Total	-	34		0.7	U	0.7	U
1,2-Dichloropropane	1	0.13	U	0.13	U	0.13	U
1,3,5-Trimethylbenzene	5	0.7	U	0.7	U	1.3	J
1,3-Dichlorobenzene	3	0.7	U	0.7	U	0.7	U
1,3-Dichloropropane	5	0.7	U	0.7	U	0.7	U
1,3-Dichloropropene, Total	-	0.14	U	0.14	U	0.14	U
1,4-Dichlorobenzene	3	0.7	U	0.7	U	0.7	U
1,4-Dioxane	-	41	U	41	U	41	U
2,2-Dichloropropane	5	0.7	U	0.7	U	0.7	U
2-Butanone	50	1.9	U	1.9	U	1.9	U
2-Hexanone	50	1	U	1	U	1	U
4-Methyl-2-pentanone	-	1	U	1	U	1	U
Acetone	50	3.8	J	1.5	U	1.5	U
Acrylonitrile	5	1.5	U	1.5	U	1.5	U
Benzene	1	0.6		0.16	U	0.98	
Bromobenzene	5	0.7	U	0.7	U	0.7	U
Bromochloromethane	5	0.7	U	0.7	U	0.7	U
Bromodichloromethane	50	0.19	U	0.19	U	0.19	U
Bromoform	50	0.65	U	0.65	U	0.65	U
Bromomethane	5	0.7	U	0.7	U	0.7	U
Carbon disulfide	60	1	U	1	U	1	U
Carbon tetrachloride	5	0.13	U	0.13	U	0.13	U
Chlorobenzene	5	0.7	U	0.7	U	0.7	U
Chloroethane	5	0.7	U	0.7	U	0.7	U
Chloroform	7	0.7	U	0.7	U	0.7	U
Chloromethane	-	0.7	U	0.7	U	0.7	U
cis-1,2-Dichloroethene	5	34		0.7	U	0.7	U
cis-1,3-Dichloropropene	0.4	0.14	U	0.14	U	0.14	U
Dibromochloromethane	50	0.15	U	0.15	U	0.15	U
Dibromomethane	5	1	U	1	U	1	U
Dichlorodifluoromethane	5	1	U	1	U	1	U
Ethyl ether	-	0.7	U	0.7	U	0.7	U
Ethylbenzene	5	0.7	U	0.7	U	12	
Hexachlorobutadiene	0.5	0.7	U	0.7	U	0.7	U
Isopropylbenzene	5	0.7	U	0.7	U	0.88	J
Methyl tert butyl ether	10	0.7	U	0.7	U	0.7	U
Methylene chloride	5	0.7	U	0.7	U	0.7	U
n-Butylbenzene	5	0.7	U	0.7	U	0.7	U
n-Propylbenzene	5	0.7	U	0.7	U	1.9	J
Naphthalene	10	0.96	J	0.7	U	2.1	J
o-Chlorotoluene	5	0.7	U	0.7	U	0.7	U
o-Xylene	5	0.7	U	0.7	U	13	
p-Chlorotoluene	5	0.7	U	0.7	U	0.7	U
p-Diethylbenzene	-	0.7	U	0.7	U	0.7	U
p-Ethyltoluene	-	0.7	U	0.7	U	5.6	
p-Isopropyltoluene	5	0.7	U	0.7	U	0.7	U
p/m-Xylene	5	0.7	U	0.7	U	29	
sec-Butylbenzene	5	0.7	U	0.7	U	0.7	U
Styrene	5	0.7	U	0.7	U	0.7	U
tert-Butylbenzene	5	0.7	U	0.7	U	0.7	U
Tetrachloroethene	5	0.18	U	0.18	U	0.18	U
Toluene	5	0.7	U	0.7	U	2.5	
trans-1,2-Dichloroethene	5	0.7	U	0.7	U	0.7	U
trans-1,3-Dichloropropene	0.4	0.16	U	0.16	U	0.16	U
trans-1,4-Dichloro-2-butene	5	0.7	U	0.7	U	0.7	U
Trichloroethene	5	0.18	U	0.18	U	0.18	U
Trichlorofluoromethane	5	0.7	U	0.7	U	0.7	U
Vinyl acetate	-	1	U	1	U	1	U
Vinyl chloride	2	2.5		0.07	U	0.07	U
Xylenes, Total	-	0.7	U	0.7	U	42	

TABLE NOTES:

NYSDEC TOGS 1.1.1 AWQS - New York State Department of Environmental Conservation Technical & Operational Guidance Series, Ambient Water Quality Standards, Guidance Values and Groundwater Effluent Limitations

Qual	Qualifiers
2.5	Exceeds NYSDEC TOGS 1.1.1 AWQS
J	Estimated Value. The target analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL).
B	Analyte was present in laboratory blank.
D	Sample was diluted in order to obtain a value within the calibration range.
U	Not detected at the reported detection limit for the sample.
--	No Standard or Guidance Value.
µg/L	Micrograms per liter.

Table 7 - Semi-Volatile Organic Compounds in Groundwater
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	NYSDEC TOGS 1.1.1 AWQS	GZA-1		GZA-2		MW-2	
SAMPLING DATE		8/30/2016		8/30/2016		8/30/2016	
LAB SAMPLE ID		L1627168-11		L1627168-12		L1627168-13	
SAMPLE TYPE		Groundwater		Groundwater		Groundwater	
		Result	Qual	Result	Qual	Result	Qual
Semi-Volatile Organics by GC/MS (µg/L)							
1,2,4,5-Tetrachlorobenzene	5	0.67	U	0.67	U	0.67	U
1,2,4-Trichlorobenzene	5	0.66	U	0.66	U	0.66	U
1,2-Dichlorobenzene	3	0.73	U	0.73	U	0.73	U
1,3-Dichlorobenzene	3	0.73	U	0.73	U	0.73	U
1,4-Dichlorobenzene	3	0.71	U	0.71	U	0.71	U
2,4,5-Trichlorophenol		0.72	U	0.72	U	0.72	U
2,4,6-Trichlorophenol		0.68	U	0.68	U	0.68	U
2,4-Dichlorophenol	1	0.77	U	0.77	U	0.77	U
2,4-Dimethylphenol	50	1.6	U	1.6	U	1.6	U
2,4-Dinitrophenol	10	5.5	U	5.5	U	5.5	U
2,4-Dinitrotoluene	5	0.84	U	0.84	U	0.84	U
2,6-Dinitrotoluene	5	1.1	U	1.1	U	1.1	U
2-Chlorophenol		0.63	U	0.63	U	0.63	U
2-Methylphenol		1	U	1	U	1	U
2-Nitroaniline	5	1.1	U	1.1	U	1.1	U
2-Nitrophenol		1.5	U	1.5	U	1.5	U
3,3'-Dichlorobenzidine	5	1.4	U	1.4	U	1.4	U
3-Methylphenol/4-Methylphenol		1.1	U	1.1	U	1.1	U
3-Nitroaniline	5	1.1	U	1.1	U	1.1	U
4,6-Dinitro-o-cresol		2.1	U	2.1	U	2.1	U
4-Bromophenyl phenyl ether		0.73	U	0.73	U	0.73	U
4-Chloroaniline	5	0.63	U	0.63	U	0.63	U
4-Chlorophenyl phenyl ether		0.62	U	0.62	U	0.62	U
4-Nitroaniline	5	1.3	U	1.3	U	1.3	U
4-Nitrophenol		1.8	U	1.8	U	1.8	U
Acetophenone		0.85	U	0.85	U	0.85	U
Benzoic Acid		13	U	13	U	13	U
Benzyl Alcohol		0.72	U	0.72	U	0.72	U
Biphenyl		0.76	U	0.76	U	0.76	U
Bis(2-chloroethoxy)methane	5	0.63	U	0.63	U	0.63	U
Bis(2-chloroethyl)ether	1	0.67	U	0.67	U	0.67	U
Bis(2-chloroisopropyl)ether	5	0.7	U	0.7	U	0.7	U
Bis(2-ethylhexyl)phthalate	5	0.91	U	0.91	U	0.91	U
Butyl benzyl phthalate	50	1.3	U	1.3	U	1.3	U
Carbazole		0.63	U	0.63	U	0.63	U
Di-n-butylphthalate	50	0.69	U	0.69	U	0.69	U
Di-n-octylphthalate	50	1.1	U	1.1	U	1.1	U
Dibenzofuran		0.66	U	0.66	U	0.66	U
Diethyl phthalate	50	0.63	U	0.63	U	0.63	U
Dimethyl phthalate	50	0.65	U	0.65	U	0.65	U
Hexachlorocyclopentadiene	5	7.8	U	7.8	U	7.8	U
Isophorone	50	0.6	U	0.6	U	0.6	U
n-Nitrosodi-n-propylamine		0.7	U	0.7	U	0.7	U
NDPA/DPA	50	0.64	U	0.64	U	0.64	U
Nitrobenzene	0.4	0.75	U	0.75	U	0.75	U
p-Chloro-m-cresol		0.62	U	0.62	U	0.62	U
Phenol	1	1.9	U	1.9	U	1.9	U
2-Chloronaphthalene	10	0.04	U	0.04	U	0.07	U
2-Methylnaphthalene		0.05	U	0.05	U	0.58	
Acenaphthene	20	3.2		10		20	
Acenaphthylene		0.04	U	0.05	J	0.12	J
Anthracene	50	0.06	J	0.08	J	0.19	J
Benzo(a)anthracene		0.09	J	0.02	U	0.03	U
Benzo(a)pyrene		0.08	J	0.04	U	0.08	U
Benzo(b)fluoranthene	0.002	0.1	J	0.02	U	0.03	U
Benzo(ghi)perylene		0.04	U	0.04	U	0.08	U
Benzo(k)fluoranthene	0.002	0.04	U	0.04	U	0.08	U
Chrysene	0.002	0.08	J	0.04	U	0.07	U
Dibenzo(a,h)anthracene		0.04	U	0.04	U	0.08	U
Fluoranthene	50	0.2		0.04	U	0.16	J
Fluorene	50	0.47		0.04	U	0.21	J
Hexachlorobenzene	0.04	0.03	U	0.03	U	0.06	U
Hexachlorobutadiene	0.5	0.04	U	0.04	U	0.07	U
Hexachloroethane	5	0.03	U	0.03	U	0.06	U
Indeno(1,2,3-cd)pyrene	0.002	0.04	U	0.04	U	0.08	U
Naphthalene	10	0.41		0.04	U	3	
Pentachlorophenol	1	0.22	U	0.22	U	0.42	U
Phenanthrene	50	0.21		0.02	U	0.28	J
Pyrene	50	0.18	J	0.04	U	0.08	U
TOTAL SVOCs							

TABLE NOTES:

NYSDEC TOGS 1.1.1 AWQS - New York State Department of Environmental Conservation Technical & Operational Guidance Series, Ambient Water Quality Standards, Guidance Values and Groundwater Effluent Limitations

	Value exceeds NYSDEC TOGS 1.1.1 AWQS.
	Below lab detection limit, but exceeds AWQS.
Qual	Qualifiers
J	Estimated Value. The target analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL).
B	Analyte was present in laboratory blank.
D	Sample was diluted in order to obtain a value within the calibration range.
U	Not detected at the reported detection limit for the sample.
--	No Standard or Guidance Value.
µg/L	Micrograms per liter



Table 8 - Metals in Groundwater
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	NYSDEC TOGS 1.1.1 AWQS	GZA-1		GZA-2		MW-2	
SAMPLING DATE		8/30/2016		8/30/2016		8/30/2016	
LAB SAMPLE ID		L1627168-11		L1627168-12		L1627168-13	
SAMPLE TYPE		Groundwater		Groundwater		Groundwater	
		Result	Qual	Result	Qual	Result	Qual
Total Metals (µg/L)							
Aluminum, Total		19700		102		54	
Antimony, Total	3	2.5	J	0.3	J	0.3	J
Arsenic, Total	25	25.8		0.8		0.4	J
Barium, Total	1000	353.5		61.8		5.5	
Beryllium, Total	3	1.7		0.2	U	0.2	U
Cadmium, Total	5	3.4		0.1	U	0.1	J
Calcium, Total		82500		74400		38200	
Chromium, Total	50	243.1		1.9		1.4	
Cobalt, Total		34.3		0.2		0.1	J
Copper, Total	200	155		1.1		0.3	U
Iron, Total	300	75100		402		89	
Lead, Total	25	1041		1.8		0.3	J
Magnesium, Total	35000	34000		42400		27300	
Manganese, Total	300	883.8		63.7		35	
Mercury, Total	0.7	0.39		0.06	U	0.06	U
Nickel, Total	100	110.2		0.2	J	0.7	
Potassium, Total		23200		28700		22400	
Selenium, Total	10	5		1	U	1	U
Silver, Total	50	0.4		0.1	U	0.1	U
Sodium, Total	20000	229000		492000		576000	
Thallium, Total	0.5	0.5		0.1	U	0.1	U
Vanadium, Total		94.9		3.2	J	4.3	J
Zinc, Total	2000	1258		7.4	J	2.6	U

TABLE NOTES:

NYSDEC TOGS 1.1.1 AWQS - New York State Department of Environmental Conservation Technical & Operational Guidance Series, Ambient Water Quality Standards, Guidance Values and Groundwater Effluent Limitations

Qual	Qualifiers
	Value exceeds NYSDEC TOGS 1.1.1 AWQS.
J	Estimated Value. The target analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL).
B	Analyte was present in laboratory blank.
D	Sample was diluted in order to obtain a value within the calibration range.
U	Not detected at the reported detection limit for the sample.
--	No Standard or Guidance Value.
µg/L	Micrograms per liter.

Table 9 - PCBs in Groundwater
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	NYSDEC TOGS 1.1.1 AWQS	GZA-1		GZA-2		MW-2	
SAMPLING DATE		8/30/2016		8/30/2016		8/30/2016	
LAB SAMPLE ID		L1627168-11		L1627168-12		L1627168-13	
SAMPLE TYPE		Groundwater		Groundwater		Groundwater	
		Result	Qual	Result	Qual	Result	Qual
Polychlorinated Biphenyls (µg/L)							
Aroclor 1016	0.09	0.055	U	0.055	U	0.055	U
Aroclor 1221	0.09	0.053	U	0.053	U	0.053	U
Aroclor 1232	0.09	0.031	U	0.031	U	0.031	U
Aroclor 1242	0.09	0.06	U	0.06	U	0.06	U
Aroclor 1248	0.09	0.051	U	0.051	U	0.051	U
Aroclor 1254	0.09	0.034	U	0.034	U	0.034	U
Aroclor 1260	0.09	0.728		0.032	U	0.032	U
Aroclor 1262	0.09	0.029	U	0.029	U	0.029	U
Aroclor 1268	0.09	0.038	U	0.038	U	0.038	U
PCBs, Total		0.728					

TABLE NOTES:

NYSDEC TOGS 1.1.1 AWQS - New York State Department of Environmental Conservation Technical & Operational Guidance Series, Ambient Water Quality Standards, Guidance Values and Groundwater Effluent Limitations

	Value exceeds NYSDEC TOGS 1.1.1 AWQS.
Qual	Qualifiers
J	Estimated Value. The target analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL).
B	Analyte was present in laboratory blank.
D	Sample was diluted in order to obtain a value within the calibration range.
U	Not detected at the reported detection limit for the sample.
--	No Standard or Guidance Value.
µg/L	Micrograms per liter.

Table 10 - Pesticides in Groundwater
Phase II Environmental Site Investigation
Beach 53rd and 54th Street Properties
Far Rockaway, New York

LOCATION	NYSDEC TOGS 1.1.1. Ambient Water Quality Standards	GZA-1		GZA-2		MW-2	
SAMPLING DATE		8/30/2016		8/30/2016		8/30/2016	
LAB SAMPLE ID		L1627168-11		L1627168-12		L1627168-13	
SAMPLE TYPE		Soil		Soil		Soil	
		Result	Qual	Result	Qual	Result	Qual
Pesticides (ug/L)							
4,4'-DDD	0.3	0.04	U	0.04	U	0.04	U
4,4'-DDE	0.2	0.04	U	0.04	U	0.04	U
4,4'-DDT	0.2	0.04	U	0.04	U	0.04	U
Aldrin	0	0.02	U	0.02	U	0.02	U
Alpha-BHC	0.01	0.02	U	0.02	U	0.02	U
Beta-BHC	0.04	0.02	U	0.02	U	0.02	U
Chlordane	0.05	0.2	U	0.2	U	0.2	U
cis-Chlordane		0.02	U	0.02	U	0.02	U
Delta-BHC	0.04	0.02	U	0.02	U	0.02	U
Dieldrin	0.004	0.04	U	0.04	U	0.04	U
Endosulfan I		0.02	U	0.02	U	0.02	U
Endosulfan II		0.04	U	0.04	U	0.04	U
Endosulfan sulfate		0.04	U	0.04	U	0.04	U
Endrin	0	0.04	U	0.04	U	0.04	U
Endrin aldehyde	5	0.04	U	0.04	U	0.04	U
Endrin ketone	5	0.04	U	0.04	U	0.04	U
Heptachlor	0.04	0.02	U	0.02	U	0.02	U
Heptachlor epoxide	0.03	0.02	U	0.02	U	0.02	U
Lindane	0.05	0.02	U	0.02	U	0.02	U
Methoxychlor	35	0.2	U	0.2	U	0.2	U
Toxaphene	0.06	0.2	U	0.2	U	0.2	U
trans-Chlordane		0.02	U	0.02	U	0.02	U

TABLE NOTES:

Qual	Qualifiers
J	Estimated Value. The target analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL).
B	Analyte was present in laboratory blank.
D	Sample was diluted in order to obtain a value within the calibration range.
U	Not detected at the reported detection limit fc
--	No Standard or Guidance Value.
µg/L	Micrograms per liter.

Table 11 - Soil Vapor Analytical Results
Phase II Environmental Investigation Report
Beach 53rd and 54th Street Properties
Far Rockaway, New York

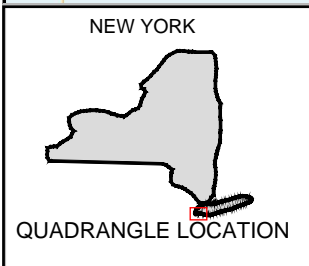
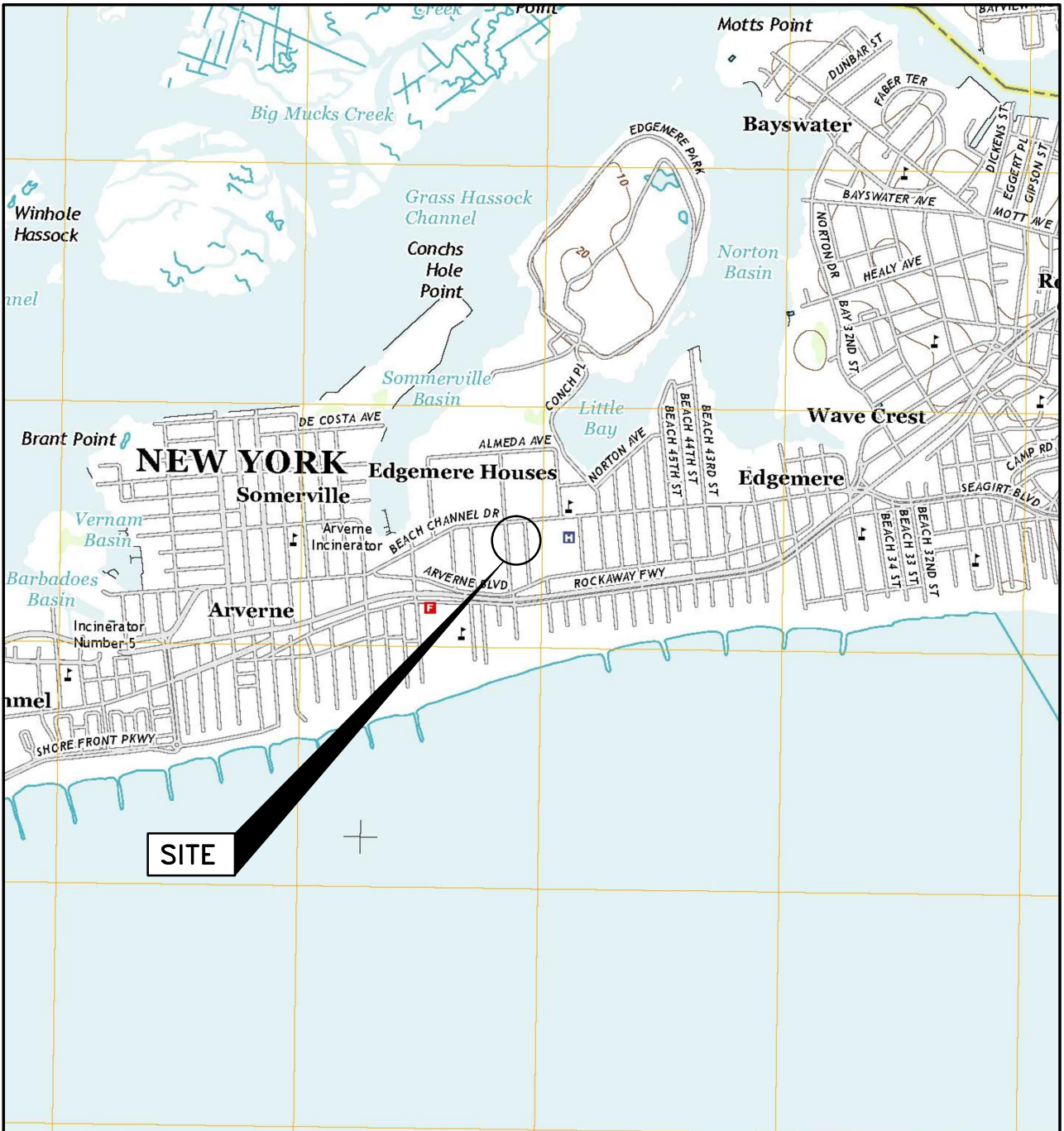
LOCATION	NYSDOH Air Guidance Values	SV-1		SV-2		SV-3	
		8/29/2016		8/29/2016		8/29/2016	
		L-1627024-01		L-1627024-02		L-1627024-03	
		Soil Vapor		Soil Vapor		Soil Vapor	
SAMPLING DATE		Result	Qual	Result	Qual	Result	Qual
LAB SAMPLE ID							
SAMPLE TYPE							
Volatile Organics in Air ($\mu\text{g}/\text{m}^3$) by TO-15							
Dichlorodifluoromethane	--	36.5	U	4.94	U	9.89	U
Chloromethane	--	15.3	U	2.07	U	4.13	U
Freon-114	--	51.7	U	6.99	U	14	U
Vinyl chloride	--	18.9	U	2.56	U	5.11	U
1,3-Butadiene	--	16.3	U	2.21	U	4.42	U
Bromomethane	--	28.7	U	3.88	U	7.77	U
Chloroethane	--	19.5	U	2.64	U	5.28	U
Ethanol	--	349	U	3920		124	
Vinyl bromide	--	32.3	U	4.37	U	8.74	U
Acetone	--	458		182		278	
Trichlorofluoromethane	--	41.5	U	5.62	U	11.2	U
Isopropanol	--	45.5	U	6.15	U	12.3	U
1,1-Dichloroethene	--	29.3	U	3.96	U	7.93	U
Tertiary butyl Alcohol	--	56.1	U	7.58	U	15.2	U
Methylene chloride	60	64.3	U	8.69	U	17.4	U
3-Chloropropene	--	23.1	U	3.13	U	6.26	U
Carbon disulfide	--	23	U	6.04		6.23	U
Freon-113	--	56.6	U	7.66	U	15.3	U
trans-1,2-Dichloroethene	--	29.3	U	3.96	U	7.93	U
1,1-Dichloroethane	--	29.9	U	4.05	U	8.09	U
Methyl tert butyl ether	--	26.6	U	3.61	U	7.21	U
2-Butanone	--	2270		938		1900	
cis-1,2-Dichloroethene	--	29.3	U	3.96	U	7.93	U
Ethyl Acetate	--	66.7	U	9.01	U	18	U
Chloroform	--	36.1	U	67.4		9.77	U
Tetrahydrofuran	--	54.6	U	7.37	U	14.7	U
1,2-Dichloroethane	--	29.9	U	4.05	U	8.09	U
n-Hexane	--	41.6		15.6		7.05	U
1,1,1-Trichloroethane	--	40.3	U	5.46	U	10.9	U
Benzene	--	23.6	U	7.44		6.39	U
Carbon tetrachloride	--	46.5	U	6.29	U	12.6	U
Cyclohexane	--	25.4	U	8.19		6.88	U
1,2-Dichloropropane	--	34.2	U	4.62	U	9.24	U
Bromodichloromethane	--	49.5	U	6.7	U	13.4	U
1,4-Dioxane	--	26.6	U	3.6	U	7.21	U
Trichloroethene	2	83.8		5.37	U	10.7	U
2,2,4-Trimethylpentane	--	34.5	U	4.67	U	9.34	U
Heptane	--	30.3	U	4.1	U	8.2	U
cis-1,3-Dichloropropene	--	33.5	U	4.54	U	9.08	U
4-Methyl-2-pentanone	--	75.8	U	10.2	U	20.5	U
trans-1,3-Dichloropropene	--	33.5	U	4.54	U	9.08	U
1,1,2-Trichloroethane	--	40.3	U	5.46	U	10.9	U
Toluene	--	27.8	U	11.8		7.61	
2-Hexanone	--	119		55.7		95.1	
Dibromochloromethane	--	63	U	8.52	U	17	U
1,2-Dibromoethane	--	56.8	U	7.69	U	15.4	U
Tetrachloroethene	30	10200		19.7		33.2	
Chlorobenzene	--	34	U	4.61	U	9.21	U
Ethylbenzene	--	32.1	U	4.34	U	8.69	U
p/m-Xylene	--	64.3	U	9.73		17.4	U
Bromoform	--	76.4	U	10.3	U	20.7	U
Styrene	--	31.5	U	4.26	U	8.52	U
1,1,2,2-Tetrachloroethane	--	50.7	U	6.87	U	13.7	U
o-Xylene	--	32.1	U	4.69		8.69	U
4-Ethyltoluene	--	36.3	U	4.92	U	9.83	U
1,3,5-Trimethylbenzene	--	36.3	U	4.92	U	9.83	U
1,2,4-Trimethylbenzene	--	36.3	U	6.69		9.83	U
Benzyl chloride	--	38.3	U	5.18	U	10.4	U
1,3-Dichlorobenzene	--	44.4	U	6.01	U	12	U
1,4-Dichlorobenzene	--	44.4	U	6.01	U	12	U
1,2-Dichlorobenzene	--	44.4	U	6.01	U	12	U
1,2,4-Trichlorobenzene	--	54.9	U	7.42	U	14.8	U
Hexachlorobutadiene	--	78.8	U	10.7	U	21.3	U

TABLE NOTES:

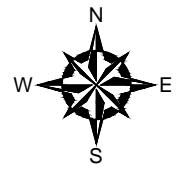
NYSDOH - New York State Department of Health
AGV - Air guideline values
$\mu\text{g}/\text{m}^3$ - micrograms per cubic meter
Exceeds NYSDOH Guidance Values
U - Not detected at the reported detection limit for the sample
-- - No Standards or Guideline Value
Qual - Qualifiers



Figures



SOURCE:
USGS TOPOGRAPHIC MAP: FAR ROCKAWAY, NY (2013)
CONTOUR INTERVAL 10 FT., NAVD-1988, ORIGINAL
SCALE 1:24,000 (1" = 2,000FT)



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BEACH 53RD AND 54TH STREETS PROPERTIES
 EDGEMERE, NY

PREPARED BY:
 GZA GeoEnvironmental, Inc.
 Engineers and Scientists
 www.gza.com

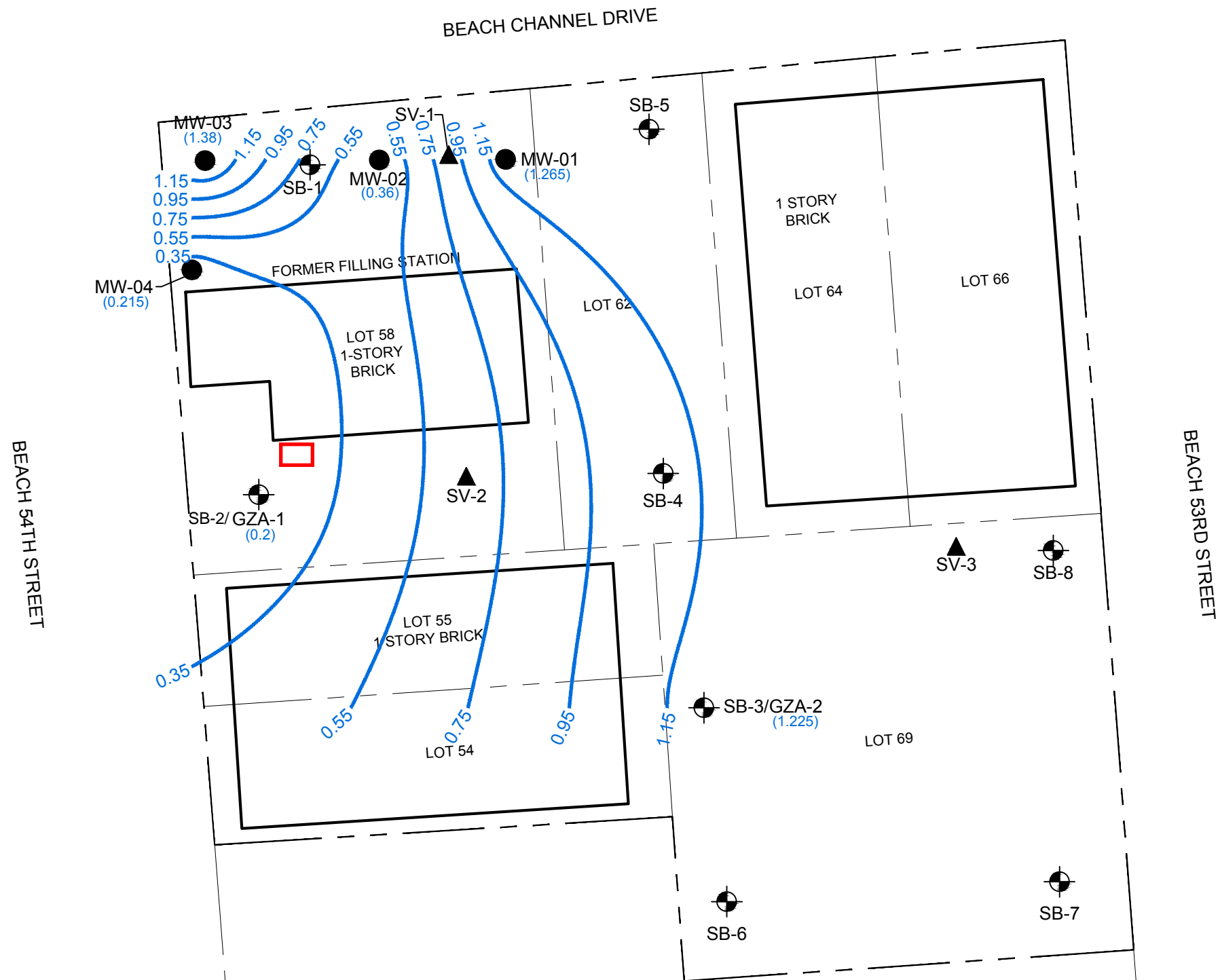
PREPARED FOR:
 AAFE, INC.
 2 ALLEN STREET, 7TH FLOOR
 NEW YORK, NY 10002

SITE LOCATION MAP

PROJ MGR: BA	REVIEWED BY: RM
DESIGNED BY: RM	DRAWN BY: RB
DATE: NOV 2016	PROJECT NO. 12.0076377.00

CHECKED BY: RM	FIGURE 1
SCALE: 1" = 2000'	
REVISION NO.	SHEET NO.

©2016 - GZA GeoEnvironmental, Inc. GZA-J:\76300's\12.0076377.20\Figures\CAD\76377.20.002.dwg [2] September 26, 2016 - 1:00pm edward.morris

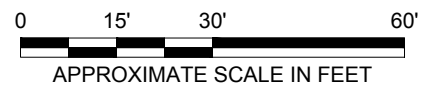


LEGEND:

- SITE PROPERTIES
- 0.75 — GROUNDWATER CONTOUR (FEET)
- (0.36) GROUNDWATER ELEVATION (FEET)
- ⊕ SOIL BORING LOCATION
- ▲ SOIL VAPOR POINT
- ECOSYSTEMS STRATEGIES MONITORING WELLS
- ABOVEGROUND STORAGE TANK

NOTE:

BASE MAP GENERATED FROM CITY OF NEW YORK DEPARTMENT OF FINANCE DIGITAL TAX MAP



NO.	ISSUE/DESCRIPTION	BY	DATE

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53-05 BEACH CHANNEL DRIVE
FAR ROCKAWAY, NEW YORK

**GROUNDWATER CONTOUR MAP
(SEPTEMBER 14, 2016)**

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: ASIAN AMERICANS FOR EQUALITY, INC.	
PROJ MGR: AR	REVIEWED BY: AR	CHECKED BY: CAW	FIGURE 2
DESIGNED BY: AR	DRAWN BY: RB/EM	SCALE: 1" = 30'	
DATE: SEPT. 2016	PROJECT NO. 12.0076377.20	REVISION NO.	SHEET NO.



Appendix A - Limitations



USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Proposal for Services and/or Report and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).
3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during its study. Additionally, GZA makes no warranty that any response action or recommended action will achieve all of its objectives or that the findings of this study will be upheld by a local, state or federal agency.
4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.
6. Water level readings have been made in test holes (as described in the Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The observed water table may be other than indicated in the Report.

COMPLIANCE WITH CODES AND REGULATIONS

7. We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations and compliance with codes and regulations by other parties is beyond our control.



SCREENING AND ANALYTICAL TESTING

8. GZA collected environmental samples at the locations identified in the Report. These samples were analyzed for the specific parameters identified in the report. Additional constituents, for which analyses were not conducted, may be present in soil, groundwater, surface water, sediment and/or air. Future Site activities and uses may result in a requirement for additional testing.
9. Our interpretation of field screening and laboratory data is presented in the Report. Unless otherwise noted, we relied upon the laboratory's QA/QC program to validate these data.
10. Variations in the types and concentrations of contaminants observed at a given location or time may occur due to release mechanisms, disposal practices, changes in flow paths, and/or the influence of various physical, chemical, biological or radiological processes. Subsequently observed concentrations may be other than indicated in the Report.

INTERPRETATION OF DATA

11. Our opinions are based on available information as described in the Report, and on our professional judgment. Additional observations made over time, and/or space, may not support the opinions provided in the Report.

ADDITIONAL INFORMATION

12. In the event that the Client or others authorized to use this report obtain additional information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

ADDITIONAL SERVICES

13. GZA recommends that we be retained to provide services during any future investigations, design, implementation activities, construction, and/or property development/ redevelopment at the Site. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

CONCEPTUAL SITE MODEL

14. Our opinions were developed, in part, based upon a comparison of site data to conditions anticipated within our Conceptual Site Model (CSM). The CSM is based on available information, and professional judgment. There are rarely sufficient data to develop a unique CSM. Therefore observations over time, and/or space, may vary from those depicted in the CSM provided in this report. In addition, the CSM should be evaluated and refined (as appropriate) whenever significant new information and/or data is obtained.



Appendix B - DEP Work Plan Approval



July 20, 2016

Mr. Jimit Shah
New York City Housing Authority
250 Broadway
New York, New York 10007

Vincent Sapienza, P.E.
Acting Commissioner

**Re: Ocean Bay Retail
Block 15890, Lots 54, 55, 58, 62, 64, 66, and 69
CEQR # 16CHA003Q
Queens, New York**

Angela Licata
*Deputy Commissioner of
Sustainability*

Dear Mr. Shah:

59-17 Junction Blvd.
Flushing, NY 11373

Tel. (718) 595-4398
Fax (718) 595-4479
alicata@dep.nyc.gov

The New York City Department of Environmental Protection, Bureau of Sustainability (DEP) has reviewed the June 2016 Phase II Environmental Site Assessment Work Plan (Phase II Work Plan) and Health and Safety Plan (HASP) prepared by GZA GeoEnvironmental, Inc. (GZA) on behalf of Asian Americans for Equality, Inc. (applicant) for the above referenced project. It is our understanding that proposal involves an application by the New York City Housing Authority (NYCHA) to the U.S. Department of Housing and Urban Development for the disposition of NYCHA-owned property on the south side of Beach Channel Drive between Beach 53rd Street and Beach 54th Street in the Far Rockaway neighborhood of Queens Community District 14, pursuant to Section 18 of the U.S. Housing Act of 1937. It should be noted that NYCHA proposes the disposition of an approximately 37,000 square-foot parcel of land to the applicant for the development of a two-story commercial retail and office space complex. The first floor will primarily consist of a supermarket, as well as accessory administrative space that will be utilized by a local non-profit organization. The second level will serve as storage/inventory space for the supermarket. Currently, the project site is comprised of several unoccupied and condemned buildings. Prior to construction, the site grade will be raised in order that the building will be above the flood plain. There will be no excavations more than two feet below the current site grade during construction.

The June 2016 Work Plan proposes to conduct soil, groundwater, and soil vapor sampling. Eight (8) soil borings (SB-1 through SB-8) will be advanced to 12 feet below grade surface (bgs). At least one discrete soil sample will be collected from each boring. Soil samples will be collected from 0 to 2 feet bgs. Because no excavation is planned below 2 feet bgs, no additional soil samples will be collected, unless there are field indicators of contamination in the deeper soils. Three groundwater samples (GZA-1, GZA-2, and MW-02) will be collected. Soil and groundwater samples will be collected and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) by United States Environmental Protection Agency (EPA) Method 8260, TCL semi-volatile organic compounds by EPA Method 8270, polychlorinated biphenyls

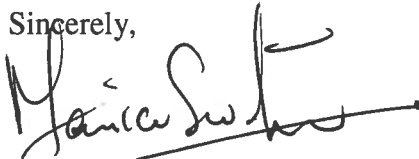
by EPA Method 8082, pesticides by EPA Method 8081, and Target Analyte List metals plus mercury (filtered and unfiltered for groundwater samples). Three soil vapor samples (SV-1 through SV-3) will be collected and analyzed for VOCs by EPA Method TO-15.

Based upon our review of the submitted documentation, we have the following comments and recommendations to NYCHA:

- It should be noted that there is an active spill (Spill No. 03-06202) on the subject property. This spill should be remediated and closed in accordance with New York State Department of Environmental Conservation (NYSDEC) requirements.
- DEP finds the June 2016 Phase II Work Plan and HASP for the proposed project acceptable. Upon completion of the investigation activities, the consultant should submit a detailed Phase II report to DEP for review and approval. The report should include, at a minimum, an executive summary, narrative of the field activities, laboratory data and conclusions, comparison of soil, groundwater, and soil vapor analytical results (i.e., NYSDEC 6NYCRR Part 375, NYSDEC Water Quality Regulations, and the New York State Department of Health's October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York), updated site plans depicting sample locations, boring logs, and remedial recommendations, if warranted.

Future correspondence and submittals related to this project should include the following CEQR number **16CHA003Q**. If you have any questions, you may contact Wei Yu at (718) 595-4358.

Sincerely,



Maurice S. Winter
Deputy Director, Site Assessment

c: E. Mahoney
M. Winter
W. Yu
T. Estes
M. Wimbish
A. Werner – HPD
N. Francis – HPD
File



Appendix C - Site Photographs



Appendix D - Geophysical Survey Report



Appendix E - Soil Boring Logs



Appendix F - Well Purge Logs



Appendix G - Soil Vapor Sampling Logs



Appendix H - Laboratory Reports



GZA GeoEnvironmental, Inc.