

**FORMER MOTOR FREIGHT GARAGE**  
**834 LEXINGTON AVENUE**  
**BROOKLYN, NEW YORK**  
**Block 1628 Lot 30**

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**REMEDIAL INVESTIGATION**  
**WORK PLAN**

November 2014

*Prepared for:*  
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183 Wilson Avenue Suite 133  
Brooklyn, NY 11211

*Prepared By:*

**EBC**

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Attachment A    Previous Reports – Digital File  
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## CERTIFICATION

I, Charles B. Sosik, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Remedial Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Charles Sosik

Name

11/28/14

Date

## 1.0 INTRODUCTION

This Remedial Investigation Work Plan (RIWP) was prepared on behalf of Lexington Flats LLC for the property known as the Former Motor Freight Garage, located at 832-836 Lexington Avenue, Brooklyn, New York. An application for acceptance into the New York State Brownfield Cleanup Program (BCP) is being submitted with this RIWP.

The Site has confirmed contamination in soil which is related to historic on-site operations and fuel storage in underground tanks.

The purpose of this Remedial Investigation Work Plan is to collect data of sufficient quality and quantity to characterize the nature and extent of residual contamination associated with the UST(s) / historic operations at the Site and to complete a qualitative exposure assessment for future occupants of the proposed building and the surrounding community and to evaluate alternatives to remediate the contamination.

The overall objectives of the project are to prepare the Site for residential use and to remediate known and unknown environmental conditions at the site to the satisfaction of the DEC and the New York State Department of Health (NYSDOH).

### 1.1 Site Location and Description

The street address for the Site is 832-836 Lexington Avenue, Brooklyn, NY (**Figure 1**). The Site is located in the Bedford Stuyvesant section of Kings County and is comprised of a single tax parcel (**Figure 2**) covering 10,000 square feet (0.229 acres). The lot is located on the south side of Lexington Avenue between Patchen Avenue and Broadway. Lot 30 has 100 feet of street frontage on Lexington Avenue and is approximately 100 feet deep. The lot is currently developed with a one-story commercial building which occupies the entire lot. According to the NYC Department of Buildings, the current building was constructed in 1920.

The property has an elevation of approximately 56 feet above the National Geodetic Vertical Datum (NGVD). Based upon regional groundwater contour maps, and measurements made at the Site, the depth to groundwater beneath the site is approximately 45 feet below existing grade and flows northwest toward the East River.

The area surrounding the property is highly urbanized and predominantly consists of multi-family residential buildings with mixed-use buildings (residential w/ first floor retail) along main artery corridors such as Broadway located just 500 feet to the northeast. Commercial / industrial properties, equipment yards and warehouses are interspersed with the residential properties as are institutions such as parks, schools, churches and playgrounds within a quarter mile of the Site in all directions.

### 1.2 Redevelopment Plans

The redevelopment project consists of the demolition of the existing garage building and construction of a new 6-story residential building which will cover 60 percent of the Site leaving a 40 ft x 100 ft open air parking area at the rear of the property. Plans include a cellar

level beneath the building footprint requiring excavation of the front 60 x 100 ft portion of the Site to a depth of 6 ft below grade. The building will feature 46 residential apartments and related amenities.

### 1.3 Site History

Prior to the construction of the existing improvements, the Site was occupied by single family residential homes till 1908. The existing building was built circa 1920 for use as a garage. By 1932 the property was combined with adjacent lot 34 to the east at 844 Lexington Avenue. It remained in this configuration and use through 1951. By 1965 the Site was identified as a motor freight station and continued to be identified as such through 1987. From 1988 through 2007 the property is identified as a garage.

### 1.4 Summary of Previous Investigations

Environmental investigations performed at the Site include the following:

- Phase I Environmental Screening, 834 Lexington Avenue, Brooklyn, NY. Environmental Business Consultants, October 2014.
- Phase II Investigation - Data Summary, 834 Lexington Avenue, Brooklyn, NY. Environmental Business Consultants, October 2014.

A digital copy of the reports is provided in **Attachment A**.

#### 1.4.1 October 2014 – Phase I Environmental Screening

EBC was able to establish a history for the property dating back to 1887. According to a review of NYC records and historic Sanborn maps the Site was occupied by single family residential homes till 1908. By 1932 the property was combined with adjacent lot 34 to the east at 844 Lexington Avenue, and used as a garage with 1 underground gasoline storage tank shown on each Lot. It remained in this configuration and use on the 1951 map. By 1965 the subject property is shown as a motor freight station and continued to be identified as such through 1987. From 1988 through 2007 the property is identified as a garage. According to the New York City Register, the property was owned by Ciliano Garage, Inc. from 1986 through 2014.

At the time of the Phase I inspection the one-story brick building was being used for storage. A suspect gasoline tank vent line was noted along the inside north wall of the building in the area in which the UST is shown on the sanborn maps. A drainage structure full of sediment was noted beneath a steel plate in the northeast area of the building. Three hydraulic lifts were noted in the southeast corner of the building.

Based upon reconnaissance of the Site and surrounding properties, interviews and review of historical records and regulatory agency databases, EBC noted the following recognized environmental conditions for the Site.

- The use of the Site as a garage from sometime between 1908 and 1932 to sometime between 1951 and 1965 and again from 1988 to sometime between 2007 and 2014.

- Use of the property as a motor freight garage from sometime between 1951 and 1965 to 1987.
- The historic presence of underground storage tanks for gasoline as shown in Sanborn maps from 1932 and 1951.

#### 1.4.2 November 2014 - Phase II Subsurface Investigation Summary, (EBC)

The field work portion of the Phase II was performed on November 13, 2014 and included the installation of 5 soil borings (B1-B5) and 2 groundwater wells (MW1, MW2). Most of the borings were hitting a shallow obstruction at 5 feet and due to the minimal accessibility with in the building, could not be effectively relocated. None of the borings could be located in the vicinity of the suspect underground gasoline tank. A sediment sample was retained from a catch basin located in the floor which contained approximately three feet of sediment. A boring (B1) was also located in the general vicinity of this structure with a sample retained at 10 feet below grade. The sediment sample and the soil sample from B1 were analyzed for VOCs by USEPA 8260 and SVOCs by USEPA 8270 (CP51 list only). In addition samples of the fill materials were retained from three borings (B1, B4, B5) and analyzed for SVOCs and TAL metals.

Two 1-inch diameter pvc monitoring wells were installed to a depth of 50 feet below surface, approximately 5 feet below the water table at 45 feet below grade. Samples from the monitoring wells were submitted for analysis of VOCs by USEPA 8260.

Soil at the site is described as historic fill materials to a depth ranging from 2 to 5 feet below the surface followed by native brown coarse to fine sand and gravel.

Results indicated petroleum VOCs in sediment and soil to concentrations as high as 73,350 ug/kg in soil and 115,879 ug/kg in the sediment sample. SVOCs were reported above unrestricted SCOs in some of the fill samples and in the boring and sediment samples. Total SVOCs were highest in the sediment sample with a concentration of 87,000 ug/kg. Lead and mercury were reported in some of the fill material samples above unrestricted SCOs. VOCs were reported in groundwater at both sampling locations above standards and ranged from 3,329 ug/L to 23,717 ug/L.

### 1.5 Site Geology / Hydrogeology

The geologic setting of Long Island is well documented and consists of crystalline bedrock overlain by layers of unconsolidated deposits. According to geologic maps of the area created by the United States Geologic Survey (USGS), the bedrock in this area of Brooklyn is an igneous intrusive classified as the Ravenswood grano-diorite of middle Ordovician to middle Cambrian age. Unconsolidated sediments overlie the bedrock and consist of Pleistocene aged sand, gravel and silty clays, deposited by glacial-fluvial activity. Non-native fill materials consisting of dredge spoils, rubble and / or other materials have historically been used to reinforce and extend shoreline areas and to raise and improve the drainage of low lying areas.

Subsurface soils at the Site consist of historic fill materials to a depth of approximately 5 feet below grade. Silty sand and gravel is present immediately below this layer to a depth of 10 feet. According to the USGS topographic map for the area (Brooklyn Quadrangle), the elevation of the property is approximately 55 feet above mean sea level.

Groundwater occurs beneath the Site at a depth of approximately 45 feet below grade under water table conditions. Based on regional groundwater elevation maps, groundwater flows to the northwest toward the East River.

According to the USGS topographic map for the area (Brooklyn Quadrangle), the elevation of the property is 55 feet above the National Geodetic Vertical Datum (NGVD). The area topography gradually slopes to the northeast.

The depth to bedrock in this area of Brooklyn is greater than 100 ft below grade.

## 1.6 Site Conceptual Model

VOC contamination at the Site consists of petroleum related contaminants in 3 feet of sediment in a drainage structure and in soil to a minimum depth of 10 feet in a boring adjacent to the structure. There is also a vent line and a suspect tank in the north central area of the property between the two bay doors. It is likely that the contamination found is related to gasoline released from surface release to the drainage structure and possibly also from the UST system.

Under a drainage structure or UST release scenario gasoline either migrated through the soil column to the water table or was transported to the water table as dissolved compounds from water vertically passing through the contaminated soil zone. The transport water may have been provided by the drainage structure.

Source areas of the Site requiring further investigation include the UST area and related lines in the north central portion of the Site, the drainage structure in the north east corner of the Site and the hydraulic lifts located in the southeast corner of the Site.

## 2.0 SAMPLING AND ANALYSIS PLAN

The purpose of this work plan will be to determine the nature and extent of the on-site contamination and identify all sources of contamination (horizontal/vertical) that may be present at the Site. The investigation must produce data of sufficient quality and quantity to allow NYSDEC and NYSDOH to complete a Significant Threat Determination as per Part 375-2.7 and enable the performance of a qualitative human health exposure assessment as per DER-10, 3.3(c) 4.

The subsurface investigation will consist of the following elements:

- Installation of 9 soil borings across the Site to delineate the extent of soil impact and to obtain additional information on soil quality with respect to Soil Cleanup Objective (SCOs);
- Installation of 5 monitoring wells and the collection of groundwater samples from 2 existing monitoring wells to assess groundwater impacts; and
- Installation of 8 soil gas implants to assess vapor phase VOCs.

### 2.1 Soil Sampling

#### 2.1.1 Soil Borings

Ten soil borings (14B1 through 14B9) will be advanced across the Site. At all soil boring locations, soil samples will be collected continuously in 5-foot intervals using a Geoprobe™ dual-tube sampling system. The Geoprobe™ uses a direct push hydraulic percussion system to drive and retrieve core samplers. A track-mounted Geoprobe™ model 6620DT or equivalent will be utilized.

Soil samples will be retrieved using a 1.5-inch diameter, 5-foot long macro-core sampler with disposable acetate liners and the dual-tube method to preserve sample integrity. At each soil boring location, sampling will continue to the extent of contamination. If no contamination is encountered then the borings will be advanced to a depth of 15 ft. Based upon regional groundwater contour maps, and measurements made previously onsite, the depth to groundwater beneath the Site is approximately 45 feet below existing grade.

Collected soil samples will be characterized by an experienced environmental professional and field screened for the presence of volatile organic compounds (VOCs) using a photo-ionization detector (PID). All observations will be recorded in a bound project dedicated field book which will be used to prepare a boring log for each soil boring location. Recorded observations will include sample depth, sample recovery, soil type evidence of water (if encountered), PID reading and physical evidence of contamination (odor, staining, sheen, etc.).

A minimum of one sample will be retained for laboratory analysis from borings SB1 through SB6, located within the planned basement level, including one sample from the 13-15 ft interval. A minimum of two samples will be retained from borings SB7 through SB9 for laboratory analysis including the 3-5 ft interval, or just below the historic fill layer, and the 13-15 ft interval

samples. Retained samples will be analyzed for VOCs, SVOCs, metals, pesticides and PCBs for comparison to NYSDEC Part 375.6 Unrestricted Use SCOs.

If contaminated soils are encountered, additional soil samples will be retained for analysis of VOCs and SVOCs from the interval and section of the core with the highest PID reading if it is not the same interval as one of the planned samples.

A sample matrix showing the number, type and analysis of samples collected during the Remedial Investigation is provided as **Table 1**. The proposed location of the soil borings is shown on **Figure 4**.

## 2.2 Groundwater Sampling

Five temporary monitoring wells (14MW3 - 14MW7) will be installed to supplement the two existing on-Site monitoring wells which will be used to determine the direction and gradient for groundwater flow at the Site and to further evaluate groundwater quality. Each of the new monitoring wells will be installed to a depth of approximately 8 feet below the water table using a track-mounted Geoprobe™ model 6620DT.

The monitoring wells will be constructed of 1-inch diameter pvc casing and 0.010 inch slotted pvc well screen. The wells will have 15 feet of screen from approximately 38 to 53 feet below grade. A No. 00 Morie or equivalent filter sand will be placed in the borehole to within 2 feet above the top of the screen. A 1-foot hydrated bentonite seal will be placed on top of the filter sand and the remainder of the borehole will be backfilled to grade.

Groundwater samples will be collected from the existing monitoring wells (MW1-MW2) as well as the five newly installed monitoring wells (14MW3-14MW7). Sample procurement will be achieved through the use of dedicated polyethylene tubing, a stainless steel check valve and a peristaltic pump with disposable peristaltic pump tubing. The location of the existing monitoring well and the proposed location of the new monitoring wells are shown on **Figure 5**.

All groundwater sampling activities will be recorded in the project dedicated field book. This will include a description of:

- Date and time of sample collection
- Sample location
- Purging time, duration and volume;
- Sample appearance
- Analytical methodology:

Groundwater samples will be collected using a check valve and dedicated polyethylene tubing in accordance with standard low-flow sampling procedures as follows:

- Record pump make & model on sampling form.
- Wear appropriate health and safety equipment as outlined in the Health and Safety Plan
- Inspect each well for any damage or evidence of tampering and note condition in field logbook.

- Remove the well cap
- Lay out plastic sheeting and place the monitoring, purging and sampling equipment on the sheeting.
- To avoid cross-contamination, do not let any downhole equipment touch the ground.
- Measure well headspace with a PID or FID and record the reading in the field logbook.
- A synoptic water level measurement round should be performed (in the shortest possible time) before any purging and sampling activities begin. Measure and record the depth to water using a water level meter or interface probe to the nearest 0.01 ft. Record the measurement in the field logbook. Do not measure the depth to the bottom of the well at this time (to avoid disturbing any sediment that may have accumulated). Obtain depth to bottom information from installation information in the field logbook or soil boring logs.
- Collect samples in order from wells with lowest contaminant concentration to highest concentration.
- Connect the polyethylene tubing to the peristaltic pump and lower the tubing into the well to approximately the middle of the screen. Tubing should be a minimum of 2 feet above the bottom of the well as this may cause mobilization of any sediment present in the bottom of the well.
- Start the pump at its lowest speed setting and slowly increase the speed until discharge occurs. Check water level. Adjust pump speed until there is little or no water level drawdown (less than 0.3 feet). If the minimal drawdown that can be achieved exceeds 0.3 feet but remains stable, continue purging until indicator field parameters stabilize.
- There should be at least 1 foot of water over the end of the tubing so there is no risk of entrapment of air in the sample. Pumping rates should be reduced to the minimum capabilities of the pump, if needed, to avoid purging the well dry. However, if the recharge rate of the well is very low and the well is purged dry, then wait until the well has recharged to a sufficient level and collect the appropriate volume of sample.
- During well purging, monitor indicator field parameters (temperature, specific conductance and pH) every three to five minutes (or less frequently, if appropriate). Note: during the early phase of purging emphasis should be put on minimizing and stabilizing pumping stress, and recording those adjustments. Purging is considered complete and sampling may begin when all the above indicator field parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings, taken at three (3) to five (5) minute intervals, are within the following limits:
  - specific conductance (3%),
  - temperature (3%),
  - pH ( $\pm 0.1$  unit)
- VOC samples should be collected directly into pre-preserved sample containers. Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence. Fill each container with sample to just overflowing so that no air bubbles are entrapped inside. Cap each bottle as it is filled.
- Label the samples, and record them on the chain of custody form. Place immediately into a cooler for shipment and maintain at 4°C.
- Remove the tubing from the well. The polyethylene tubing must either be dedicated to each well or discarded. If dedicated the tubing should be placed in a large plastic garbage bag, sealed, and labeled with the appropriate well identification number.
- Close and lock the well.

- Decontaminate pump either by changing the surgical pump tubing between wells or as follows:
  1. Flush the equipment/pump with potable water.
  2. Flush with non-phosphate detergent solution. If the solution is recycled, the solution must be changed periodically.
  3. Flush with potable or distilled/deionized water to remove all of the detergent solution. If the water is recycled, the water must be changed periodically.
  4. Flush with isopropyl alcohol (pesticide grade). If equipment blank data from the previous sampling event show that the level of contaminants is insignificant, then this step may be skipped.
  5. Flush with distilled/deionized water. The final water rinse must not be recycled.

Samples will be collected in pre-cleaned laboratory supplied glassware, stored in a cooler with ice and submitted to a New York State ELAP certified environmental laboratory. Groundwater samples from each monitoring well will be submitted for laboratory analysis of VOCs, SVOCs, pesticides / PCBs and metals.

All monitoring wells will be surveyed to determine relative casing elevation to the nearest 0.01 ft and horizontal position to the nearest 0.1ft. Survey data will be used to determine the direction and gradient of groundwater flow at the Site.

## 2.3 Soil Vapor Sampling

Soil vapor samples will be collected in accordance with the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH 10/2006) to determine if the medium is contaminated with VOCs. If VOCs are present, the results will be used to evaluate current off-site human exposures and future human exposures within the planned building. The evaluation of current off-site exposure will be useful in determining if further off-site investigation of the exposure pathway is warranted. The evaluation of future on-site exposure will determine whether or not the use of control measures will be necessary to prevent exposure by residents of the new building.

In order to determine the vapor quality in the soil beneath the Site, soil vapor samples will be taken from nine soil gas implants (SG1 through SG8) to be installed across the Site in the proposed locations shown on **Figure 6**. Soil gas implants at locations SG1-SG6 located within the planned basement area, will be set at a depth of approximately 14 feet below grade. Soil gas implants at locations SG7-SG8 will be set at a depth of approximately 8 feet below grade.

### 2.3.1 Soil Vapor Sampling Procedure

The soil gas implants will be installed with Geoprobe™ equipment and constructed in the same manner at all locations to minimize possible discrepancies. The implants will be made from stainless steel and fitted with 1/4 inch polyethylene tubing which will extend to the surface. Coarse sand will be added to create a sampling zone of one to two feet in length and sealed above with hydrated bentonite powder for a minimum distance of 3 feet. The tubing at all locations will be sealed at the surface with hydrated granular bentonite and a 12" x 12" (approximate) plastic sheet.

After installation of the soil gas probes, one to three volumes (i.e., the volume of the sample probe and tube) will be purged prior to collecting the samples to ensure samples collected are representative. Flow rates for both purging and collecting will not exceed 0.2 liters per minute to minimize outdoor air infiltration during sampling. Samples will be collected in Summa® canisters which have been certified clean by the laboratory and analyzed by using USEPA Method TO-15. All samples will be collected over a 2-hour period of time and submitted to a NYSDOH certified laboratory.

A sample log sheet will be maintained summarizing sample identification, date and time of sample collection, sampling depth, identity of samplers, sampling methods and devices, soil vapor purge volumes, volume of soil vapor extracted, vacuum of canisters before and after samples are collected, apparent moisture content of the sampling zone, and chain of custody protocols.

As part of the vapor intrusion evaluation, a tracer gas will be used in accordance with NYSDOH protocols to serve as a quality assurance/quality control (QA/QC) device to verify the integrity of the soil vapor probe seal. Helium will be used as the tracer gas and a box will serve to keep it in contact with the probe during the testing. A portable monitoring device will be used to analyze a sample of soil vapor for the tracer prior to sampling. If tracer sample results show a significant presence of the tracer, the probe seals will be adjusted to prevent infiltration.

After the collection of the analytical sample, a field reading will be recorded at each sampling points utilizing a photoionization detector capable of detecting organic compounds in the parts per billion range.

## 2.4 Laboratory Analysis

Samples will be submitted to the laboratory for a standard turnaround time, which is estimated to be one to two weeks. The proposed sampling program is summarized in **Table 1**.

### 2.4.1 Analysis of Soil and Groundwater Samples

Collected soil and groundwater samples will be placed in pre-cleaned laboratory supplied glassware, and placed in a cooler packed with ice for transport to the laboratory. Sample analysis will be provided by a New York State certified environmental laboratory; either York Analytical Laboratories of Stratford Connecticut (NYSDOH Lab I.D. No. 10854) or Phoenix Environmental Laboratories of Manchester Connecticut (NYSDOH Lab I.D. No. 11301). Soil and groundwater samples will be analyzed for one or more of the following parameters depending on location and sampling depth.

- Volatile organic Compounds (VOCs) by EPA Method 8260;
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270 (CP51 List);
- Target Analyte List (TAL) metals, and
- Pesticides/PCBs by Method 8081/8082.

### 2.4.2 Analysis of Soil Vapor Samples

Analytical procedures and corresponding reporting limits will be identified when reporting the sampling results. Samples will be analyzed for volatile organic compounds (VOCs) by USEPA

Method TO-15. All samples will be analyzed by a New York State ELAP-certified environmental laboratory: either York or Phoenix.

## **2.5 Management of Investigation Derived Wastes**

Investigation derived waste includes contaminated soil, groundwater and disposable sampling equipment generated during the remedial investigation.

Soil from borings will be returned to their original location. Excess soil from the installation of monitoring wells will be placed in U.S. Department of Transportation (DOT) – approved drums. This material will either be disposed at an appropriate off-site disposal facility or will be disposed along with other soil during subsequent remedial activities to be implemented under the RAWP. Purge water generated during groundwater sampling will be containerized in drums and analyzed for VOCs. Final classification and disposal of purge water will be based on the results of this analysis and upon approval of the NYSDEC Project Manager.

Disposable sampling equipment (gloves, tubing, acetate liners, etc.) will be placed in heavy-duty plastic bags and disposed of properly.

### 3.0 QUALITY ASSURANCE PROJECT PLAN (QAPP)

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or cold-pak(s) to maintain a temperature of 4°C.

Dedicated disposable sampling materials will be used for both soil and groundwater samples (if collected), eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight samples collected.

Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil;
- Rinse with tap water;
- Wash withalconox® detergent solution and scrub ;
- Rinse with tap water;
- Rinse with distilled or deionized water.

Prepare field blanks by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will accompany samples each time they are transported to the laboratory. Matrix spike and matrix spike duplicates (MS/MSD) will be collected at the rate of one per 20 samples submitted to the laboratory. Laboratory reports will be upgradeable to ASP category B deliverables for use in the preparation of a data usability report (DUSR). The DUSR will be applicable to all confirmation samples and final round samples. Performance monitoring samples will be in a results-only format. The QAPP prepared for the Site is provided in **Attachment B**.

#### 3.1 Soil and Groundwater Samples

Dedicated disposable materials (polyethylene tubing, dedicated samplers, etc.) will be used for collecting groundwater samples, and for soil samples (disposable acetate liners) therefore, field equipment (rinsate) blanks will not be part of the QA/QC program. Trip blanks will accompany samples each time they are transported to the laboratory.

#### 3.2 Soil Vapor Samples

Extreme care will be taken during all aspects of sample collection to ensure that sampling error is minimized and high quality data are obtained. The sampling team members will avoid actions (e.g., using permanent marker pens and wearing freshly dry-cleaned clothes or personal fragrances) which can cause sample interference in the field. A tracer gas, helium, will be used in

accordance with NYSDOH sampling protocols to serve as a QA/QC device to verify the integrity of the soil vapor probe seals. QA/QC protocols will be followed for sample collection and laboratory analysis, such as use of certified clean sample devices, meeting sample holding times and temperatures, sample accession, and chain of custody.

Samples will be delivered to the analytical laboratory as soon as possible after collection. The laboratory analyzes QC samples with each analytical batch, including a Method Blank (MB), Laboratory Control Sample (LCS), and a Laboratory Control Sample Duplicate (LCSD). Internal standards are added to all calibration standards, samples, and blanks to verify that the analytical system is in control.

### **3.3 Reporting of Results**

Sample analysis will be provided by a New York State certified environmental laboratory. Laboratory reports will include ASP category B deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format (EQuIS).

### **3.4 DUSR**

The DUSR provides a thorough evaluation of analytical data without third party data validation. The primary objective of a DUSR is to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use. Verification and/or performance monitoring samples collected under this RIWP will be reviewed and evaluated in accordance with the Guidance for the Development of Data Usability Summary Reports as presented in Appendix 2B of DER-10. The completed DUSR for verification/performance samples collected during implementation of this RIWP will be included in the final Engineering Report.

#### 4.0 HEALTH AND SAFETY PLAN

The Health and Safety Plan (HASP) takes into account the specific hazards inherent in conducting the RI, and presents the minimum requirements which are to be met by Environmental Business Consultants (EBC), its subcontractors, and other personnel in order to avoid and, if necessary, protect against health and/or safety hazards. A HASP has been prepared and is provided in **Attachment C** of this work plan.

Sub-contractors will have the option of adopting this HASP or developing their own site-specific document. If a subcontractor chooses to prepare their own HASP, it must meet the minimum requirements as detailed in the RI HASP prepared by EBC and must be made available to EBC and the NYSDEC.

Activities performed under the HASP will comply with applicable parts of OSHA Regulations, primarily 29 CFR Parts 1910 and 1926. Modifications to the HASP may be made with the approval of the EBC Site Safety Manager (SSM) and/or Project Manager (PM).

## 5.0 COMMUNITY AIR MONITORING PLAN

The Community Air Monitoring Plan (CAMP) provides measures for protection for on-site workers and the downwind community (i.e., off-site receptors including residences, businesses, and on-site commercial workers) from potential airborne contaminant releases resulting from investigation activities.

The action levels specified require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that the investigation work did not spread contamination off-site through the air.

The primary concerns during the investigation are odors from VOCs. The CAMP for this investigation is provided as **Attachment D**.

## 6.0 REMEDIAL INVESTIGATION REPORT

Following completion of the investigation and receipt of the analytical data, EBC will prepare a Remedial Investigation Report (RIR) in accordance with DER10. The RIR will which will include the following:

1. A description of the work which was performed under the RI.
2. Any modification from this work scope and the reason for the modifications
3. The nature and extent of contaminants in all media (soil, groundwater, vapor) and the potential for off-site migration
4. Soil, and groundwater conditions that were observed
5. Analytical data in tabular form comparing results to part 375-6 SCOs
6. Cross sections and data figures
7. Laboratory analytical data, sampling logs and well completion logs for all samples and areas covered by the investigation
8. Scaled drawings showing the locations of temporary sampling points, monitoring wells and surface water sampling locations
9. A Qualitative Human Health Exposure Assessment

## 7.0 SCHEDULE

Mobilization for the field work is anticipated to begin approximately 44 days following the public notification of the BCP application. The estimated duration of the full RI activity is one week total field time.

The anticipated schedule of events is as follows:

<b>Schedule Task</b>	<b>Estimated Date</b>
Distribute BCP Application / RIWP Fact Sheet	Week of December 8, 2014
End of 30 day Public Comment Period	Week of January 5, 2015
NYSDEC Approval of RIWP	Week of January 12, 2015
Mobilize equipment to the Site (begin)	Within 2 weeks of approval of RIWP
Complete Field Work	Within 2 weeks of mobilization date
Receive all Laboratory Reports	Within 2 weeks of completion of field work
Submit Remedial Investigation Report	Within 3 weeks of completion of field work
Distribute Fact Sheet on RI Results and Comment period on RAWP (if submitted with RIR)	Within 4 weeks of completion of field work

# **RESUMES**



**ENVIRONMENTAL BUSINESS CONSULTANTS**

## **Chawinie Miller, Project Manager / Industrial Hygienist**

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### **Professional Experience**

EBC: March 2013

Prior: 8 years

### **Education**

Bachelor of Science, Environmental Health and Safety, Stony Brook University, NY

### **Areas of Expertise**

- Phase I / Property Condition Assessments
- Occupational Health and Safety Sampling
- Indoor Air Quality (IAQ) Investigations
- Mold Investigations and Remediation
- Soil and Ground Water Investigations
- Noise Studies
- Lead Paint and Asbestos Surveys
- Hazardous Materials Assessments

### **Professional Certification**

- OSHA 40-hr HAZWOPER
- NYS Asbestos Inspector
- NYC Asbestos Investigator
- USEPA Lead Inspector
- USEPA Lead Risk Assesor
- OSHA 10-hr Construction Health and Safety
- Hazard Analysis and Critical Control Point (HACCP) Certified

### **PROFILE**

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Ms. Miller has 9 years experience as an environmental consultant/contractor and has worked on and managed a wide range of environmental projects. Ms. Miller has conducted Phase Is and Property Condition Assessments for commercial, industrial, and residential properties in New York, New Jersey and Connecticut. In addition, Ms. Miller has conducted various IAQ, asbestos, mold and occupational health and safety sampling investigations for a variety of city, state, federal and private clients.

### **PREVIOUS EXPERIENCE**

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The Louis Berger Group, New York, New York  
Industrial Hygienist, 2008-2013

AEI Consultants, Jersey City, New Jersey  
Environmental Scientist, 2005-2008



**ENVIRONMENTAL BUSINESS CONSULTANTS**

## Charles B. Sosik, PG, PHG, Principal

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### Professional Experience

25 years

### Education

MS, Hydrogeology, Adelphi University, NY  
BS, Geology, Northern Arizona University, AZ

### Areas of Expertise

- Brownfields Redevelopment
- Hazardous Waste Site Investigations
- Pre-purchase Site Evaluations and Support
- Regulatory Negotiations
- Remedial Planning and "Cost to Cure" Analysis
- Strategic Planning
- Real Estate Transactions
- NYC "E" Designations

### Professional Certification

- Professional Geologist, NH
- Professional Geologist, Hydrogeologist, WA
- OSHA 40-hr HAZMAT
- OSHA 8-hr. Supervisor
- NYC OER Qualified Environmental Professional

### Professional Affiliation / Committees

- NYS Council of Professional Geologists (NYSCPG)
  - Association of Groundwater Scientists & Engineers (AGSE)
  - NYS RBCA Advisory Committee
  - Massachusetts LSP Association
  - New Hampshire Association of Professional Geologists
  - Interstate Technology Regulatory Council/MTBE Team
  - Environmental Business Association, Brownfields Task Force
  - Part 375 Working Group
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## PROFILE

Mr. Sosik has 25 years of experience in environmental consulting. He specializes in advising clients on managing environmental compliance with federal, state, and municipal agencies and has successfully directed numerous investigation and remediation projects involving petroleum, pesticides, chlorinated solvents, heavy metals and radiologically activated media. His work included extensive three-dimensional investigations on MTBE, which have been used effectively to help shape public policy. He also has experience in applying models to groundwater related problems and has completed several large-scale projects to determine fate and transport of contaminants, establish spill scenarios, and closure criteria. His experience and expertise in the area of contaminant hydrogeology has resulted in requests from environmental attorneys, property owners and New York State to serve as an expert witness and technical advisor on a variety of legal disputes.

For the past 10 years Mr. Sosik has been primarily engaged in providing environmental consulting to developers responding to the extensive re-zoning of former industrial and commercial properties, which is currently taking place throughout New York City. These services include everything from pre-purchase evaluations and contract negotiations to gaining acceptance in and moving projects through the NYS Brownfields Program. Mr. Sosik has taken a pro-active role in the continued development of the NYS Brownfields Program and related policy, by attending numerous working seminars, active participation in work groups and task forces and by providing commentary to draft versions of new guidance documents. Throughout his professional career, Mr. Sosik has remained committed to developing innovative cost- efficient solutions to environmental issues, specifically tailored to the needs of his clients.

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## SELECTED PROJECTS

### Scavenger Waste Treatment Facility (SWTF), Suffolk County, NY

**Water Treatment Plant EIS - Focused EIS** - In response to requests from the Suffolk County Council on Environmental Quality and the Brookhaven Conservation Advisory Council, Mr. Sosik prepared a focused EIS to evaluate the potential impacts to an important surface water resource from the proposed facility including cumulative and synergistic effects with established contaminant plumes in the area.

### Advanced Residential Communities, Rockville Centre, NY

**Brownfield Project** – As the senior project manager on this large scale, high profile redevelopment project, Mr. Sosik was asked to develop a plan to accelerate the regulatory process in the face of general community opposition. Through numerous discussions with the BCP management team, He was able to condense the schedule and review period, through the submission of supporting documents (Investigation Report, Remedial Work Plan) with the BCP application package. Community opposition, which focused on the environmental condition of the site as a means to block the project, was used to

advantage in expediting approval of the aggressive interim remedial plan. This will allow the developer to begin remedial work approximately 5 months ahead of schedule.

### Former Temco Uniform site, West Haverstraw, NY

**Brownfield Project** – Mr. Sosik took over management of this project from another consultant following transition of this VCP site to the BCP. Mr. Sosik used the opportunity to renegotiate and revise the scope of work to allow a more cost effective and focused investigation plan without re-writing or resubmitting the RIWP. During the NYSDEC's review of the transition package, he met with and coordinated changes with the NYSDEC Project Manager to gain approval. The result saved the client a significant amount of money, but perhaps more importantly in this case, did so without loss of time.

### Grovick Properties, Jackson Heights, NY

**Brownfield Project** – This Brownfield property is somewhat unique in that it had been investigated and partially remediated by the NYSDEC through the petroleum spill fund. The client was interested in

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## **Charles B. Sosik, PG, PHG, Principal**

purchasing the property and redeveloping it as office and retail space. Mr. Sosik reviewed the NYSDEC investigation and developed a supplemental plan to meet the requirements of an RI under the BCP program. By performing this limited amount of field work "up-front" he was able to complete an RI Report and Remedial Plan and submit both with the BCP application package. The NYSDEC and NYSDOH approved the RI Report and the Remedial Plan with minor changes. This cut 120 days from the review process and allowed the client to arrange financing and move his project forward knowing what the clean-up costs would be at the outset.

### **Metro Management, Bronx, NY**

**Brownfield Project** – The site of a former gas station, the developer had planned to construct a 12-story affordable housing apartment complex with first floor retail space. Since the site was located in an Environmental zone, potential tax credits of 22% for site development, remediation and tangible property could be realized under the BCP. In a pre-application meeting with the NYSDEC, Mr. Sosik realized that the department did not believe the site was eligible for the BCP, since it had been previously investigated and closed under the spills program.

Mr. Sosik assisted the developer in securing financing, and due to the demands of an aggressive construction schedule developed an Interim Remedial Measure (IRM), based on chemical oxidation treatment. Working closely with the clients environmental counsel, Mr. Sosik was able to get the IRM approved without a public comment period. Implementation of the IRM is currently underway.

The project was awarded the 2009 NYC Brownfield Award for Innovation.

### **Brandt Airflex, NY**

**Technical Consulting Services** - Mr. Sosik provided senior level technical advice and strategic planning in developing an off-site RI/FS for the site, in negotiating a tax reduction for the property due to the environmental condition and in preparing a cost to cure estimate for settlement between business partners. After achieving a favorable tax consideration and settlement agreement for his client

### **Allied Aviation Services, Dallas, Fort Worth, Airport, Dallas, TX**

**Jet Fuel Investigation** - Mr. Sosik developed and managed an investigative plan to quickly identify the extent and source of jet fuel which was discharging from the Airport's storm drain system to a creek a mile away. Through the use of a refined conceptual model, accelerated investigative techniques and a flexible work plan, he was able to identify the source of the fuel and the migration route within a single week. He then identified remedial options and successfully negotiated a risk based plan with the Texas regulatory agency that had issued a notice of enforcement action against the facility.

### **KeySpan – Former LILCO Facilities, Various NY Locations**

**Pesticide Impact Evaluation** - Mr. Sosik developed, negotiated and implemented a site screening procedure to evaluate impact to public health and the environment as the result of past herbicide use at 211 utility sites. Using an unsaturated zone leaching model (PRZM) on a small subset of the sites, he was able to establish mass loading schedules for the remaining sites. This was combined with public well

data in a GIS environment to perform queries with respect to mass loading, time transport and proximity to vulnerable public supply wells. Using this approach Mr. Sosik was able to show that there were no concerns for future impact. This effort satisfied the public health and resource concerns of the state environmental agency and county health department in a reasonable amount of time and at a fraction of the cost of a full scale investigation.

### **Former Computer Circuits (Superfund) Site, Hauppauge, NY**

**CERCLA RI/FS** - As Senior Project Manager for the site, he played a major role in regaining control of the investigation activities for the PRP. This action prevented the USEPA from initiating an extensive investigation at the site using a RAC II contractor allowing the client to perform a more efficient investigation. He was involved in all negotiations with EPA and was the project lead in developing a revised site characterization plan (work plan, field sampling plan, quality assurance plan, etc.). By carefully managing all phases of the investigation and continued interaction with each of the three regulatory agencies involved, Mr. Sosik was able to keep the project focused and incrementally reinforce the clients position. The estimated cost of the revised investigation is expected to save the client 1.5 to 2 million dollars.

### **Sun Oil, Seaford, NY**

**Remediation Consulting Services & Project Management** - Under an atmosphere of regulatory distrust, political pressure and mounting public hostility toward the client, Mr. Sosik conducted an off-site 3-D investigation to define the extent of contamination and the potential impact on public health. By designing and implementing an aggressive source area remediation program and personal interaction with the public and regulatory agencies, he was able to successfully negotiate a limited off-site remediation favorable to the client. Source area remediation was completed within 6 months and the project successfully closed without damage to the client's public image or working relationship with the regulatory agencies.

### **Con Edison, Various Locations, NY**

**Hydrogeologic Consulting Services** - Under a general consulting contract, Mr. Sosik conducted detailed subsurface hydrogeologic investigations at five locations to assist in the development of groundwater contingency planning. He also developed and implemented work plans to investigate and remediate existing petroleum, cable fluid, and PCB releases at many of the generating facilities and substations. An important aspect of his role was in assisting the client in strategic planning and negotiations with the regulatory agency.

### **Keyspan - Tuthill Substation, Aqueboque, NY**

**Accelerated Site Characterization** - Using accelerated site characterization techniques, Mr. Sosik presented the project as a case study in establishing the transport of an herbicide and its metabolites applied at utility sites in the 1980's. The results were then used to establish a screening method for evaluating 211 similar sites controlled by the client in a reasonable and efficient manner.

### **NYSDEC Spill, East Moriches, NY**

**Spill Release Analysis** - With recognized expertise in the area of gasoline plume development on Long Island, Mr. Sosik was asked by



## **Charles B. Sosik, PG, PHG, Principal**

the State to establish the release date (and principal responsible party) of an extensive petroleum spill, which impacted a residential neighborhood. He used multiple lines of evidence, and a new EPA model (HSSM), which he has helped to refine, to reconstruct the release scenario and spill date, in support of the State Attorney General's cost recovery effort from the PRP.

### **Minmilt Realty, Farmingdale, NY**

**Fate & Transport Modeling** - He completed an RI/FS at this location for a PCE plume that had been in transit for over 30 years. Mr. Sosik applied a conservative model to evaluate time/concentration impacts under a variety of transport scenarios to a municipal wellfield located 13,000 feet away. Through the use of the model and careful interpretation of an extensive data set compiled from several sources, Mr. Sosik was able to propose a plan which was both acceptable to the regulator and favorable to the client.

### **Sebonack Golf Course Project, Town of Southampton, NY**

**IPM Pesticide Study** - Provided professional hydrogeologic services in support of the EIS prepared for the development of the site. The proposed development included an 18-hole golf course, clubhouse, dormitory facility, cottages, associated structures, and a 6,000 square foot research station for Southampton College. Mr. Sosik performed an extensive evaluation (using a pesticide-leaching model) on the effects of pesticide and nitrogen loading to groundwater as part of the projects commitment to an Integrated Pest Management (IPM) approach.

### **NYSDEC, Spills Division, Regions 1 - 4**

**Petroleum Spills Investigation & Remediation** - As a prime contractor/consultant for the NYSDEC in Regions 1-4, Mr. Sosik has managed the investigation and remediation of numerous petroleum spills throughout the State. Many of these projects required the development of innovative investigation and remediation techniques to achieve project goals. He was also involved in many pilot projects and research studies to evaluate innovative investigation techniques such as accelerated site characterization, and alternative approaches to remediation such as monitored natural attenuation and risk based corrective action.

### **Sun Oil, E. Meadow, NY**

**Exposure Assessment** - Performed to seek closure of the spill file, despite the presence of contaminants above standards, Mr. Sosik determined after the extended assessment that the level of remaining contamination would not pose a future threat to human health or the environment. He used multiple lines of evidence, and a fate and

transport model to show that degradation processes would achieve standards within a reasonable time.

### **Sand & Gravel Mine, NY**

**Property Development** - As part of the development of a sand and gravel mine, Mr. Sosik provided environmental consulting services to assist in obtaining a mining permit, which would result in the construction of a 150-acre lake. Specifically, Mr. Sosik investigated if the proposed lake would reduce groundwater quantity to domestic and public well fields, and/or accelerate the migration of potential surface contaminants to the lower part of the aquifer. After assuming the lead role in negotiations with the regulatory agency, Mr. Sosik was able to obtain a permit for the client by adequately addressing water quality and quantity issues, and by preparing a monitoring plan and spill response plan, acceptable to all parties.

### **NYSDEC, Mamaroneck, NY**

**Site Characterization / Source Identification** - In a complex hydrogeologic setting consisting of contaminant transport through fractured metamorphic bedrock and variable overburden materials, Mr. Sosik was able to develop and implement a sub-surface investigation to differentiate and separate the impact associated with each of two sources. The results of this investigation were successful in encouraging the spiller to accept responsibility for the release.

### **Riverhead Municipal Water District, NY**

**Site Characterization / Remedial Planning** - Using accelerated characterization techniques, he implemented a 3-D site investigation to identify two service stations 4,000 ft. away as the source of contamination impacting a municipal wellfield. In accordance with the strict time table imposed by the need to return the wellfield to production by early spring, he designed and implemented a multi-point (9 RW, 6 IW) recovery and injection well system using a 3-d numerical flow model, and completed the project on time. Using a contaminant transport model, Mr. Sosik developed clean-up goals which were achieved in 9 months of operation, well below the projected 3 to 5 year project duration.

### **Montauk Fire Department, NY**

**Site Assessment** - Mr. Sosik performed a limited investigation and used a 2-D flow model to demonstrate that the property could not have been the source of contamination which had impacted an adjacent wellfield as per the results of a previous investigation. This small focused effort successfully reversed a \$500,000, and rising, claim against the department by the water district and the NYSDEC.

## **PREVIOUS EXPERIENCE**

### **P.W. Grosser Consulting, Bohemia, NY**

Senior Project Manager, 1999-2006

### **Environmental Assessment & Remediation, Patchogue, NY**

Senior Project Manager, 1994-1999

### **Miller Environmental Group, Calverton, NY**

Project Manager, 1989-1994

### **DuPont Biosystems, Aston, PA**

Hydrogeologist, 1988-1989



Charles B. Sosik, PG, PHG, Principal

EXPERT WITNESS TESTIMONY AND DEPOSITIONS

Fact Witness -Testimony on relative age of petroleum spill based on nature and extent of residual and dissolved components at the Delta Service Station in Uniondale, NY Fall/1999

Expert Witness / Expert Report for defendant in cost recovery case by NYS Attorney General regarding a Class II Inactive Hazardous Waste (State Superfund) project by the NYSDEC (October 2004 – present, Report: March 2005, Deposition: April 2005, 2nd Report: Aug. 2013, 2nd Deposition Nov. 2013, Bench Trial: December 2013 - qualified as expert in Federal Court),

Expert Witness / Fact Witness for plaintiff seeking compensation for partial expenses incurred during the investigation and remediation of a USEPA CERCLA site due to the release and migration of contaminants from an "upgradient" industrial property. (Deposition May 2005, case settled April 2007).

Expert Witness / Fact Witness for NYS Attorney General with respect to cost recovery for a NYSDEC petroleum spill site in Holtzville, NY (Deposition April 2005 - case settled).

Expert Witness – Statement of opinion and expert testimony at trial for plaintiff seeking damages from a major oil corporation for contamination under a prior leasing agreement in Rego Park, NY. Case decided in favor of plaintiff. Trial July 2007, in favor of Plaintiff. Qualified as Expert.

Expert Witness / Fact Witness for NYS Attorney General with respect to cost recovery for a NYSDEC petroleum spill site in Lindenhurst, NY (Trial date Dec. 2009, in favor of plaintiff. Qualified as Expert State Supreme Court.

Expert Witness - for NYS Attorney General regarding NYSDEC cost recovery for a petroleum spill site at Riverhead, NY. Case settled July 2008.

Expert Witness for plaintiffs in class action case with respect to damages from chlorinated plume impact to residences in Dayton, OH. (Draft Report – May 2013).

Expert Witness / Fact Witness for defendant with respect to cost recovery and third party responsibility for a NYSDEC petroleum spill site in Lindenhurst, NY (Expert Statement of Fact – October 2005).

Expert Witness for plaintiff seeking damages related to a petroleum spill from the previous owner/operator of a gas station in College Point, NY. Case settled 2009.

Expert Witness for plaintiff (municipal water supply purveyor) seeking damages from major oil companies and manufacturer of MTBE at various locations in Suffolk County, NY. Expert reports July 2007, August 2007 and October 2007, Case settled August, 2008.

Expert Witness - Deposition for NYS Attorney General regarding NYSDEC cost recovery for a petroleum spill site at Sag Harbor, NY. August 2002

Expert Witness for defendant responding to a claim from adjacent commercial property owner on the origin of chlorinated solvents on plaintiff's property located in Cedarhurst, NY. Expert opinion submitted to lead counsel on March 6, 2009, case settled April 2009.

Expert Report - for Attorney General on modeling performed to determine the spill release scenario at a NYSDEC petroleum spill site in East Moriches, NY. June 2000.

Expert Witness - for plaintiff in case regarding impact to private wells from a spill at adjacent Town and County properties with open gasoline spill files in Goshen, NY. Expert report submitted August 2013.

Expert Witness for defendant with respect to cost recovery from Sunoco for a NYSDEC petroleum spill site. (Declaration – January 2013).

Expert Witness - for plaintiff (municipal water supply purveyor) seeking damages from Dow Chemical for PCE impact at various locations in Suffolk County, NY. Affidavit submitted 2011.

MODELING EXPERIENCE (PARTIAL LISTING)

Table with 3 columns: PROJECT, MODEL, APPLICATION. Rows include Riverhead Water District, NYSDEC - Region 1, AMOCO, Keyspan Energy, Saboneck Golf Club, Suffolk County Department of Public Works, SCDPW SUNY Waste Water Treatment Plant, and Water Authority of Great Neck North.

PUBLICATIONS / PROFESSIONAL PAPERS

- Smart Pump & Treat Strategy for MTBE Impacting a Public Water Supply (14th Annual Conference on Contaminated Soils Proceedings, 1998)
Transport & Transformation of BTEX & MTBE in a Sand Aquifer (Groundwater Monitoring & Remediation 05/1998)
Characteristics of Gasoline Releases in the Water Table Aquifer of Long Island (Petroleum Hydrocarbons Conference Proceedings, 1999)
Field Applications of the Hydrocarbon Spill Screening Model (HSSM) (USEPA Interactive Modeling Web Course www.epa.gov/athens/software/training/webcourse Authored module on model application and applied use of calculators, 02/2000)
Comparative Evaluation of MTBE Sites on Long Island, US EPA Workshop on MTBE Bioremediation (Cincinnati, 02/2000)
Comparison of Four MTBE Plumes in the Upper Glacial Aquifer of Long Island (American Geophysical Union, San Francisco, 12/1996)
Analysis and Simulation of the Gasoline Spill at East Patchogue, New York (American Geophysical Union, San Francisco, 12/1998)



**ENVIRONMENTAL BUSINESS CONSULTANTS**

## **Kevin R. Brussee, Senior Project Manager**

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### **Professional Experience**

EBC: January 2008

Prior: 6 years

### **Education**

Bachelor of Science, Environmental Science, Plattsburgh State University, NY

Master of Science, Environmental Studies, University of Massachusetts, Lowell

### **Areas of Expertise**

- Management of Site Investigations / Remedial Oversight NYC “E” Designation Sites
- Management of RI Investigations / RAWP Implementation NYS BCP Sites
- NYSDEC Spill Site Investigations
- Phase I / Phase II Property Assessments
- Waste Characterization / Soil Management

### **Professional Certification**

- OSHA 40-hr HAZWOPER
- OSHA 8-hr HAZWOPER Supervisor

### **PROFILE**

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Mr. Brussee has 10 years experience as an environmental consultant/contractor and has worked on and managed a wide range of environmental projects. Mr. Brussee has conducted Phase I, II and III Environmental Site Assessments for commercial, industrial, and residential properties in New York, New Jersey, Maryland and Delaware.

Mr. Brussee’s field experience includes tank removal and installations, spill management and closure, soil and groundwater sampling, and both the oversight and operation of soil boring and well installation equipment. In addition, Mr. Brussee has performed project research, data reduction and evaluation, and has prepared reports for both regulatory and client use.

### **PREVIOUS EXPERIENCE**

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Eastern Environmental Solutions, Inc., Manorville, NY

Project Manager, 2006-2008

EA Engineering, Science & Technology

Hydrogeologist, 2005-2006

P.W. Grosser Consulting, Bohemia, NY

Field Hydrogeologist, 2002-2003



**ENVIRONMENTAL BUSINESS CONSULTANTS**

## **Kevin R. Brussee, Senior Project Manager**

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### **SELECT PROJECT EXPERIENCE**

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- Project:** Former Dico G, Auto and Truck Repair Site - Bronx Park Apartments, redevelopment from commercial to mixed use  
**Location:** Bronx, NY, White Plains Road  
**Type:** NYS BCP Site, Former gas station, repair shop & junk yard  
**Contamination:** Petroleum - Gasoline  
**Role:** Project Manager, during Site Management Phase
- Project:** Former Uniforms for Industry Site – Richmond Hill Senior Living Residences / Richmond Place  
**Location:** Jamaica Ave, Richmond Hill Queens, NY  
**Type:** NYS BCP, NYC E-Site Hazmat, Noise, Former industrial Laundry  
**Contamination:** Chlorinated Solvents, Historic Fill, Petroleum - Fuel oil/Mop oil  
**Role:** Project Manager, RAWP implementation
- Project:** Former Gas Station / car wash to mixed use affordable housing / commercial  
**Location:** Bronx, NY, Southern Boulevard  
**Type:** NYS BCP, NYC E-Site Hazmat, Former gas station / gar wash  
**Contamination:** Petroleum - Gasoline  
**Role:** Project Manager, RAWP implementation
- Project:** Redevelopment of former industrial property to residential  
**Location:** Williamsburg section of Brooklyn, NY, Bedford Ave  
**Type:** NYC E-Designation Site, Former dye manufacturing plant  
**Contamination:** Hazardous levels of heavy metals, fuel oil tanks  
**Role:** Project Manager, RAWP implementation
- Project:** Former Domsey Fiber Corp Site  
**Location:** Williamsburg section of Brooklyn, NY, Kent Ave  
**Type:** NYC E-Designation Site, Former commercial property  
**Contamination:** Chlorinated solvents, fuel oil and Historic fill  
**Role:** Project Manager, RIWP Development and Implementation, RAWP development and implementation, waste characterization and soil management

### **PUBLICATIONS**

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Chemical Stress Induced by Copper, Examination of a Biofilm System;  
(Water Science Technology, 2006; 54(9): 191-199.)



**ENVIRONMENTAL BUSINESS CONSULTANTS**

## **Kevin Waters, Hydrogeologist**

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### **Professional Experience**

EBC: October 2010

Prior: 5 years

### **Education**

Bachelor of Science, Geology, State University of New York, Stony Brook

### **Areas of Expertise**

- Field Operations
- Phase II and RI Implementation, Site Characterization Studies
- Health & Safety Monitoring and Oversight
- Waste Characterization / Soil Management
- Site Logistics

### **Professional Certification**

- OSHA 40-hr HAZWOPER
- OSHA 8-hr HAZWOPER Supervisor

### **PROFILE**

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Mr. Waters has 7 years experience as an environmental consultant and has worked on a wide range of environmental projects. Mr. Waters has conducted Phase II and III Environmental Site Assessments for commercial, industrial, and residential properties in New York.

Mr. Waters' field experience includes soil, air and groundwater sampling, operations and maintenance of groundwater remediation systems, tank removals, spill management and closure, and oversight of monitoring well installations. In addition, Mr. Waters has prepared reports for both regulatory and client use.

### **PREVIOUS EXPERIENCE**

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P.W. Grosser Consulting, Bohemia, NY

Field Hydrogeologist, 2003-2008

### **SELECT PROJECT EXPERIENCE**

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Project:	Former Gas Station / car wash to mixed use affordable housing / commercial
Location:	Bronx, NY, Southern Boulevard
Type:	NYS BCP, NYC E-Site Hazmat, Former gas station / gar wash
Contamination:	Petroleum - Gasoline
Role:	Field Operations Manager, Health and Safety Officer



**ENVIRONMENTAL BUSINESS CONSULTANTS**

## **Kevin Waters, Hydrogeologist**

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### **SELECT PROJECT EXPERIENCE**

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Project: Former Uniforms for Industry Site – Richmond Hill Senior Living Residences / Richmond Place  
Location: Jamaica Ave, Richmond Hill Queens, NY  
Type: NYS BCP, NYC E-Site Hazmat, Noise, Former industrial Laundry  
Contamination: Chlorinated Solvents, Historic Fill, Petroleum - Fuel oil/Mop oil  
Role: Field Operations Manager, Health and Safety Monitoring and Field Oversight

Project: Rikers Island – West Intake Facility  
Location: NYC Department of Corrections, Rikers Island, NY  
Type: Municipal Construction Project  
Contamination: Hazardous levels of lead, heavy metals in Historic fill  
Role: Field Operations Manager, Health and Safety Monitoring and Field Oversight

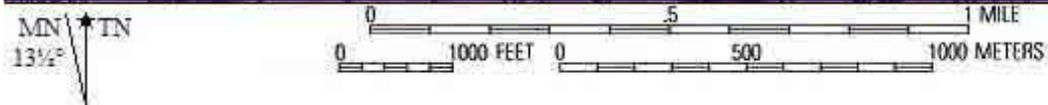
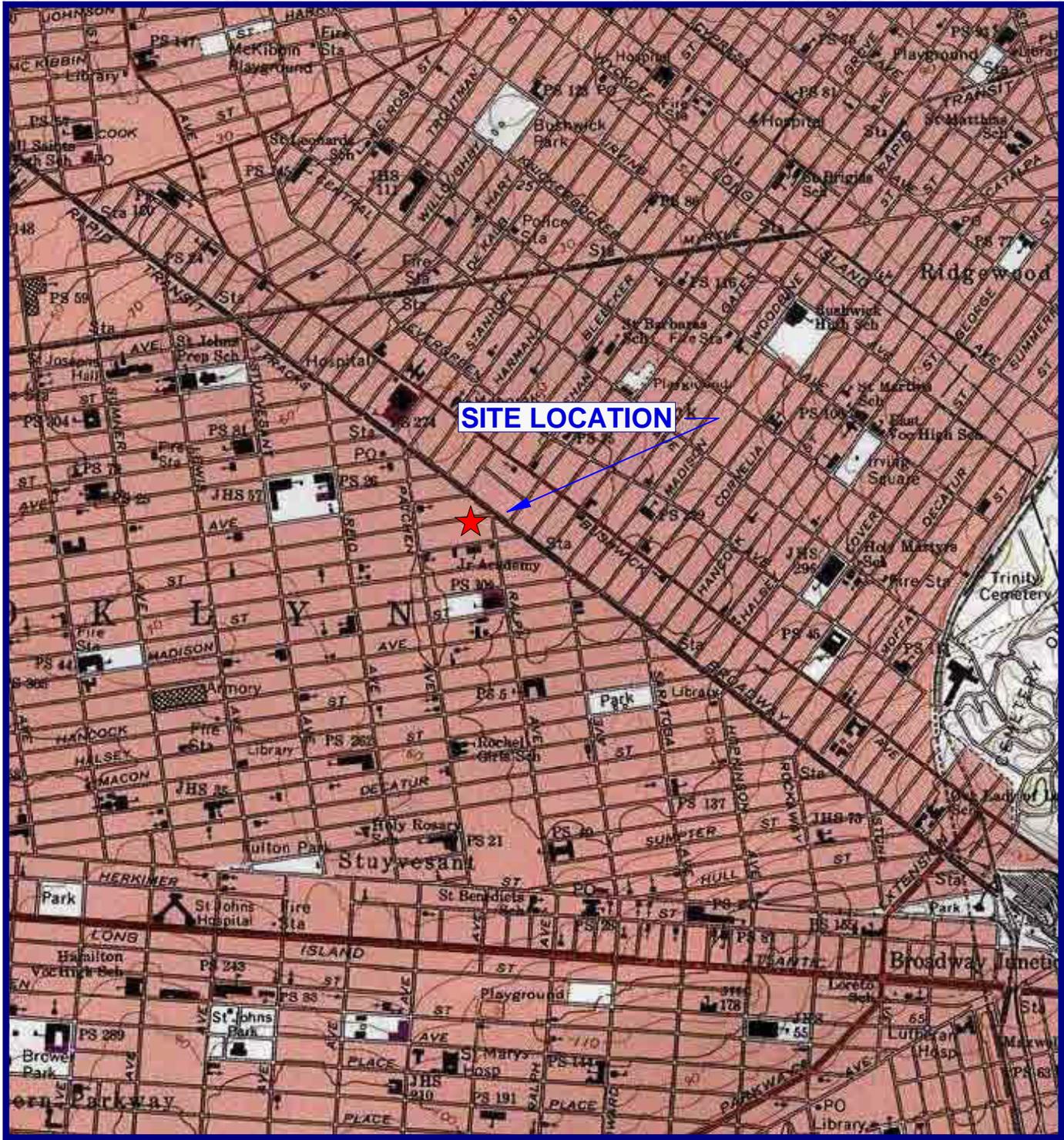
Project: Residential Redevelopment Project  
Location: Williamsburg Section of Brooklyn, Wallabout Street  
Type: NYC E-Designation Site  
Contamination: Hazardous levels of lead, heavy metals, SVOCs in Historic fill  
Role: Implement RI Work Plan, Supervise sample collection in all media

# **TABLES**

**TABLE 1  
SUMMARY OF  
SAMPLING PROGRAM RATIONALE AND ANALYSIS**

<b>Matrix</b>	<b>Location</b>	<b>Approximate Number of Samples</b>	<b>Rationale for Sampling</b>	<b>Laboratory Analysis</b>
Subsurface soil (0 to 5 feet bgs)	from 3 of the borings throughout the site.	3	To assess quality of historic fill across the Site.	VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, TAL metals.
Subsurface soil (13 to 15 feet bgs)	9 borings throughout the site.	10	To evaluate the extent of soil impact and obtain information on soil quality at the Site.	VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, TAL metals.
<b>Total (Soils)</b>		13		
Groundwater (water table)	From 7 monitoring wells across the Site.	7	To assess groundwater quality at the Site.	VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, TAL metals dissolved and total.
<b>Total (Groundwater)</b>		7		
Soil Gas (14 ft below existing grade)	8 soil gas implants to be installed across the Site.	8	Evaluate soil gas across the Site.	VOCs EPA Method TO15
<b>Total (Soil Gas)</b>		8		
MS/MSD	Matrix spike and Matrix spike duplicates at the rate 5%	2	To meet requirements of QA / QC program	1 MS/MSD for VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, TAL metals for each matrix.
Trip Blanks	One laboratory prepared trip blank to accompany samples each time they are delivered to the laboratory.	2	To meet requirements of QA / QC program	VOCs EPA Method 8260B
<b>Total (QA / QC Samples)</b>		4		

# **FIGURES**

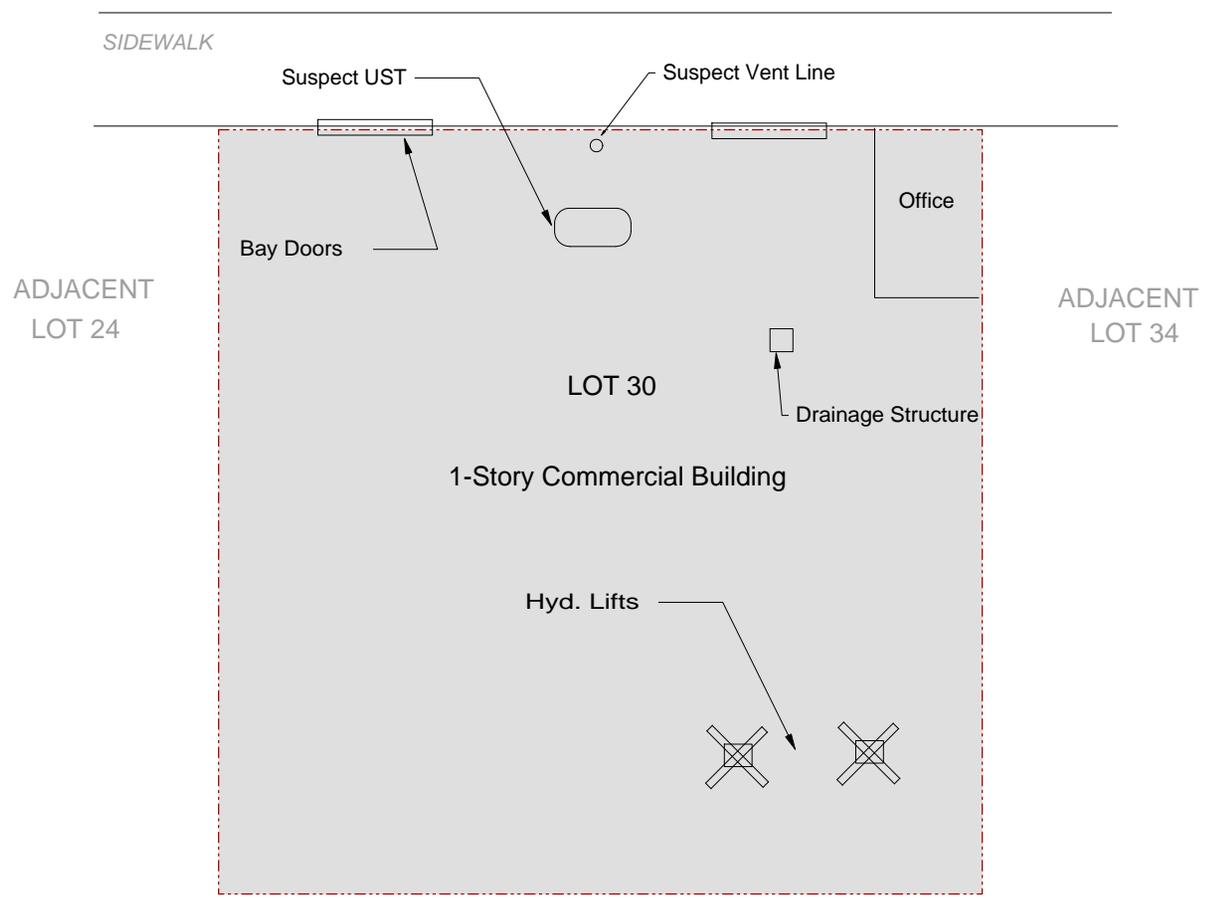


USGS Brooklyn Quadrangle 1995, Contour Interval = 10 feet

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 Fax 631.924.2870

**FORMER MOTOR FREIGHT GARAGE**  
 834 GREENE AVENUE, BROOKLYN, NY  
**FIGURE 1** SITE LOCATION MAP

LEXINGTON AVENUE



KEY

 Property Boundary

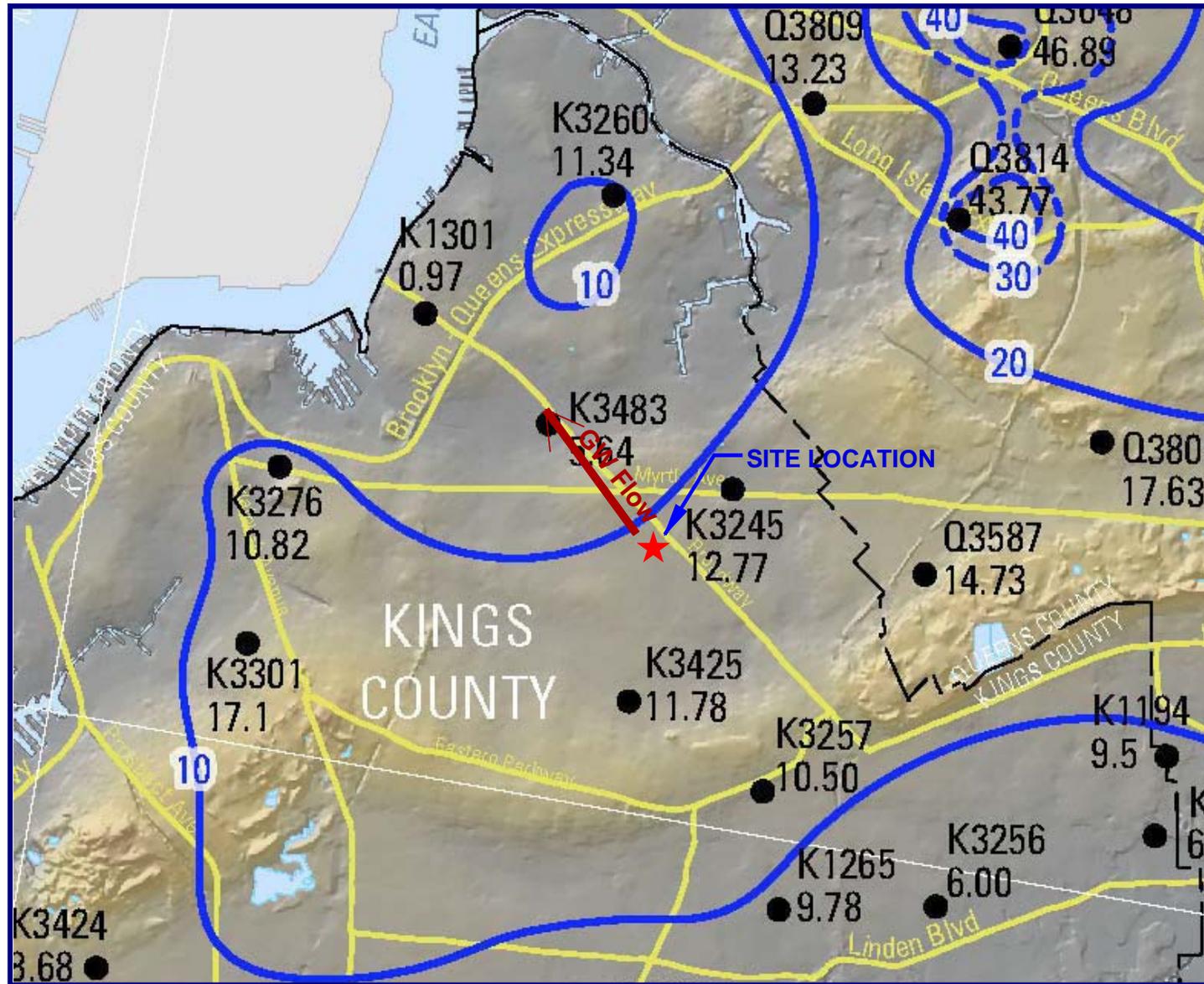
SCALE

  
1 inch = 25 feet

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Figure No.  
**2**

Site Name: **FORMER MOTOR FREIGHT GARAGE**  
Site Address: **834 LEXINGTON AVENUE, BROOKLYN, NY**  
Drawing Title: **SITE PLAN**



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FORMER MOTOR FREIGHT GARAGE  
834 LEXINGTON AVENUE, BROOKLYN, NY

**FIGURE 3**

REGIONAL  
GROUNDWATER MAP

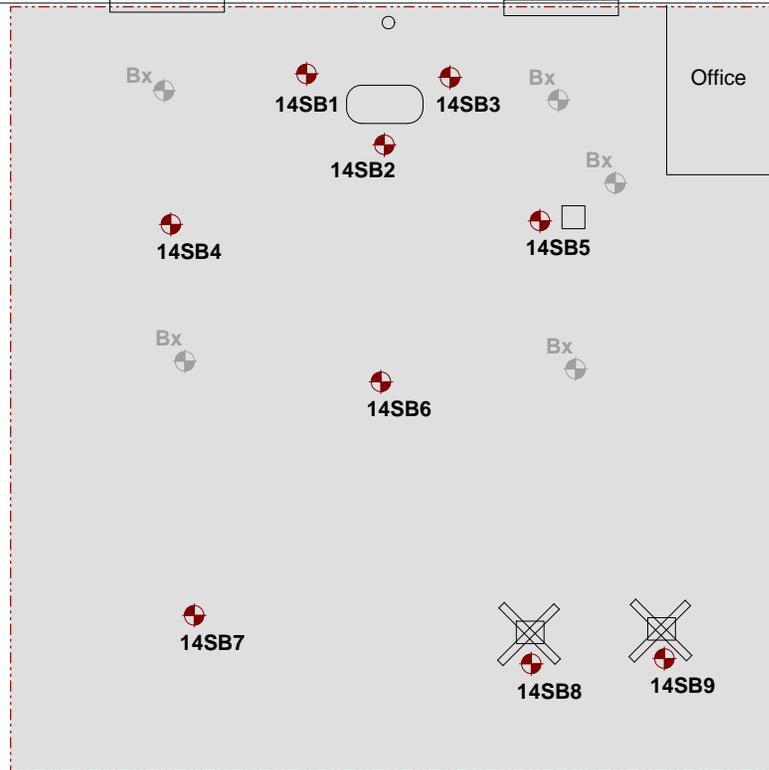
LEXINGTON AVENUE



SIDEWALK

ADJACENT  
LOT 24

ADJACENT  
LOT 34



KEY



Property Boundary

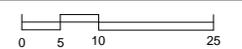


Phase II Boring Location



Soil Boring Location

SCALE



1 inch = 25 feet



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Figure No.  
**4**

Site Name: **FORMER MOTOR FREIGHT GARAGE**

Site Address: **834 LEXINGTON AVENUE, BROOKLYN, NY**

Drawing Title: **PROPOSED SOIL BORINGS**

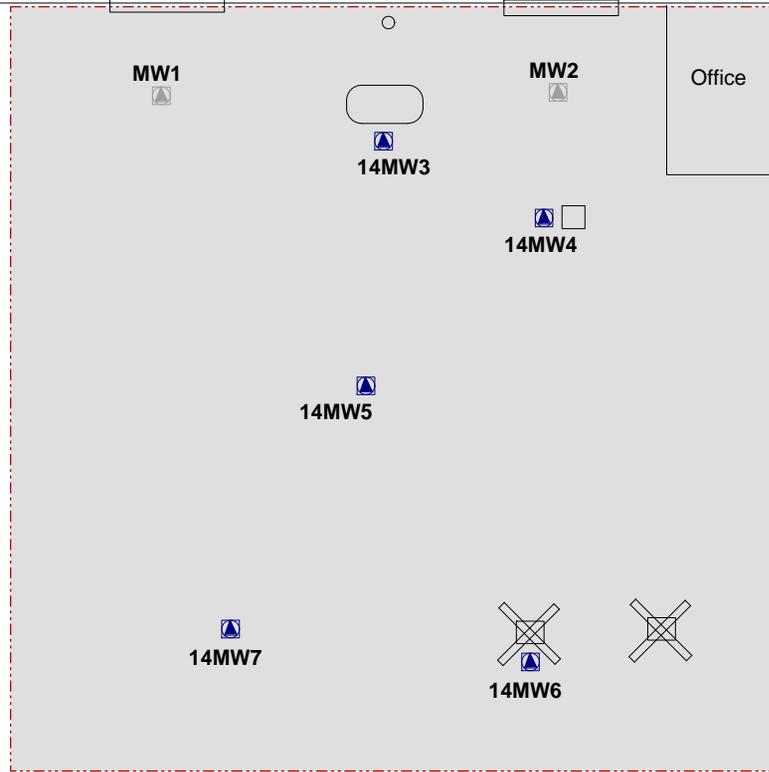
LEXINGTON AVENUE

SIDEWALK



ADJACENT LOT 24

ADJACENT LOT 34



14MWx  
▲

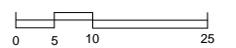
KEY

Property Boundary

MWx  
▲ Oct. 2013 Well Location

14MWx  
▲ Monitoring Well Location

SCALE



1 inch = 25 feet

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Phone 631.504.6000  
Fax 631.924.2870

Figure No.  
**5**

Site Name: **FORMER MOTOR FREIGHT GARAGE**  
Site Address: **834 LEXINGTON AVENUE, BROOKLYN, NY**  
Drawing Title: **PROPOSED MONITORING WELLS**

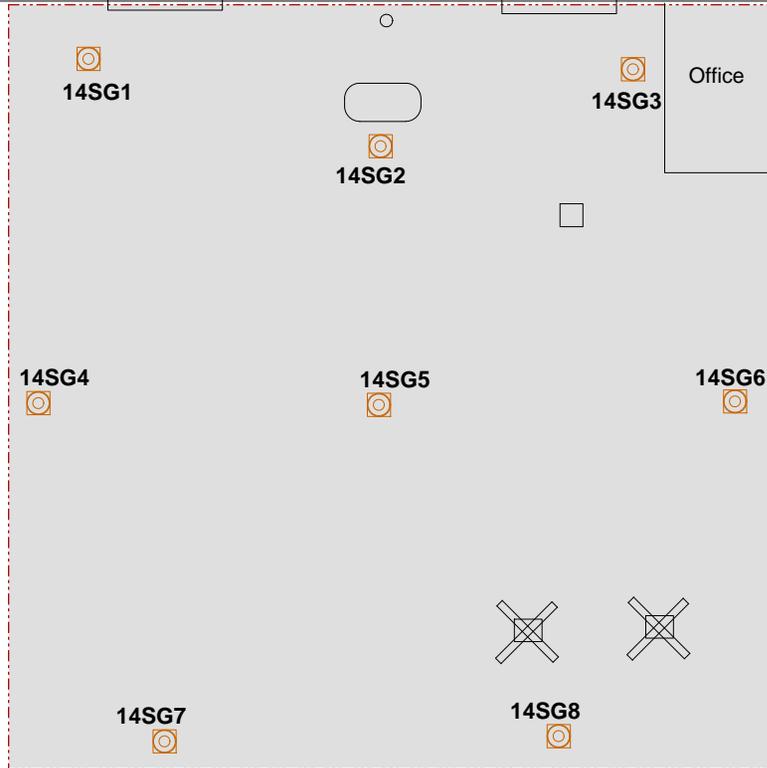
LEXINGTON AVENUE

SIDEWALK



ADJACENT LOT 24

ADJACENT LOT 34

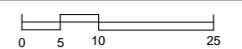


KEY

Property Boundary

**14SGx**  
 Proposed Soil Gas Location

SCALE



1 inch = 25 feet

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Figure No.  
**6**

Site Name: **FORMER MOTOR FREIGHT GARAGE**  
 Site Address: **834 LEXINGTON AVENUE, BROOKLYN, NY**  
 Drawing Title: **PROPOSED SOIL GAS LOCATIONS**

**ATTACHMENT A**  
**PREVIOUS REPORTS – DIGITAL FILE**

**ATTACHMENT B**  
**QUALITY ASSURANCE PROJECT**  
**PLAN**

**QUALITY ASSURANCE PROJECT PLAN  
FORMER MOTOR FREIGHT GARAGE  
834 Lexington Avenue, Brooklyn, NY**

---

**Prepared on behalf of:**

Lexington Flats LLC  
183 Wilson Avenue, Suite 133  
Brooklyn, NY 11211

**Prepared by:**

***EBC***  
***ENVIRONMENTAL BUSINESS CONSULTANTS***  
RIDGE, NY 11961

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## 1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been prepared in accordance with DER-10 to detail procedures to be followed during the course of the sampling and analytical portion of the project, as required by the approved work plan.

To ensure the successful completion of the project each individual responsible for a given component of the project must be aware of the quality assurance objectives of his / her particular work and of the overall project. The EBC Project Director, Charles Sosik will be directly responsible to the client for the overall project conduct and quality assurance/quality control (QA/QC) for the project. The Project Director will be responsible for overseeing all technical and administrative aspects of the project and for directing QA/QC activities. As Project Director Mr. Sosik will also serve as the Quality Assurance Officer (QAO) and in this role may conduct:

- conduct periodic field and sampling audits;
- interface with the analytical laboratory to resolve problems; and
- interface with the data validator and/or the preparer of the DUSR to resolve problems.

Kevin Brussee will serve as the Project Manager and will be responsible for implementation of the Remedial Investigation and coordination with field sampling crews and subcontractors. Reporting directly to the Project Manager will be the Field Operations Officer, Kevin Waters; who will serve as the on-Site qualified environmental professional who will record observations, direct the drilling crew and be responsible for the collection and handling of all samples.

### 1.1 Organization

Project QA will be maintained under the direction of the Project Manager, in accordance with this QAPP. QC for specific tasks will be the responsibility of the individuals and organizations listed below, under the direction and coordination of the Project Manager

GENERAL RESPONSIBILITY	SCOPE OF WORK	RESPONSIBILITY OF QUALITY CONTROL
Field Operations	Supervision of Field Crew, sample collection and handling	K. Waters, EBC
Project Manager	Implementation of the RI according to the RIWP.	Kevin Brussee, EBC
Laboratory Analysis	Analysis of soil samples by NYSDEC ASP methods Laboratory	NYSDOH-Certified Laboratory
Data review	Review for completeness and compliance	3 <sup>rd</sup> party validation

## 2.0 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES

### 2.1 Overview

Overall project goals are defined through the development of Data Quality Objectives (DQOs), which are qualitative and quantitative Statements that specify the quality of the data required to support decisions; DQOs, as described in this section, are based on the end uses of the data as described in the work plan.

In this plan, Quality Assurance and Quality Control are defined as follows:

- Quality Assurance - The overall integrated program for assuring reliability of monitoring and measurement data.
- Quality Control - The routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process.

### 2.2 QA / QC Requirements for Analytical Laboratory

Samples will be analyzed by a New York State Department of Health (NYSDOH) certified laboratory that is certified in the appropriate categories. Data generated from the laboratory will be used to evaluate contaminants such as chlorinated and other volatile organic compounds (VOCs) in soil, soil gas and groundwater. The QA requirements for all subcontracted analytical laboratory work performed on this project are described below. QA elements to be evaluated include accuracy, precision, sensitivity, representativeness, and completeness. The data generated by the analytical laboratory for this project are required to be sensitive enough to achieve required quantification limits as specified in NYSDEC Analytical Services Protocol (NYSDEC ASP, 07/2005) and useful for comparison with clean-up objectives. The analytical results meeting the required quantification limits will provide data sensitive enough to meet the data quality objectives of this remedial program as described in the work plan. Reporting of the data must be clear, concise, and comprehensive. The QC elements that are important to this project are completeness of field data, sample custody, sample holding times, sample preservation, sample storage, instrument calibration and blank contamination.

#### 2.2.1 Instrument Calibration

Calibration curves will be developed for each of the compounds to be analyzed. Standard concentrations and a blank will be used to produce the initial curves. The development of calibration curves and initial calibration response factors must be consistent with method requirements presented in the most recent version of NYSDEC ASP 07/2005).

#### 2.2.2 Continuing Instrument Calibration

The initial calibration curve will be verified every 12 hrs by analyzing one calibration standard. The standard concentration will be the midpoint concentration of the initial calibration curve. The calibration check compound must come within 25% relative percent difference (RPD) of the average response factor obtained during initial calibration. If the RPD is greater than 25%, then corrective action must be taken as provided in the specific methodology.

#### 2.2.3 Method Blanks

Method blank or preparation blank is prepared from an analyte-free matrix which includes the same reagents, internal standards and surrogate standards as the related samples. It is carried through the

entire sample preparation and analytical procedure. A method blank analysis will be performed once for each 12 hr period during the analysis of samples for volatiles. An acceptable method blank will contain less than two (2) times the CRQL of methylene chloride, acetone and 2-butanone. For all other target compounds, the method blank must contain less than or equal to the CRQL of any single target compound. For non-target peaks in the method blank, the peak area must be less than 10 percent of the nearest internal standard. The method blank will be used to demonstrate the level of laboratory background and reagent contamination that might result from the analytical process itself.

#### 2.2.4 Trip Blanks.

Trip blanks consist of a single set of sample containers filled at the laboratory with deionized, laboratory-grade water. The water used will be from the same source as that used for the laboratory method blank. The containers will be carried into the field and handled and transported in the same way as the samples collected that day. Analysis of the trip blank for VOCs is used to identify contamination from the air, shipping containers, or from other items coming in contact with the sample bottles. (The bottles holding the trip blanks will be not opened during this procedure.) A complete set of trip blanks will be provided with each shipment of samples to the certified laboratory.

#### 2.2.5 Surrogate Spike Analysis

For organic analyses, all samples and blanks will be spiked with surrogate compounds before purging or extraction in order to monitor preparation and analyses of samples. Surrogate spike recoveries shall fall within the advisory limits in accordance with the NY5DEC ASP protocols for samples falling within the quantification limits without dilution.

#### 2.2.6 Matrix Spike / Matrix Spike Duplicate / Matrix Spike Blank (MS/MSDIMSB) Analysis

MS, MSD and MSB analyses will be performed to evaluate the matrix effect of the sample upon the analytical methodology along with the precision of the instrument by measuring recoveries. The MS / MSD / MSB samples will be analyzed for each group of samples of a similar matrix at a rate of 5% (one for every 20 field samples). The RPD will be calculated from the difference between the MS and MSD. Matrix spike blank analysis will be performed to indicate the appropriateness of the spiking solution(s) used for the MS/MSD. 10% of the samples of each matrix should be sampled and analyzed as Duplicates.

### 2.3 Accuracy

Accuracy is defined as the nearness of a real or the mean (x) of a set of results to the true value. Accuracy is assessed by means of reference samples and percent recoveries. Accuracy includes both precision and recovery and is expressed as percent recovery (% REC). The MS sample is used to determine the percent recovery. The matrix spike percent recovery (% REC) is calculated by the following equation:

$$\%REC = \frac{SSR - SR}{SA} \times 100$$

Where:

SSR = spike sample results

SR = sample results

SA = spike added from spiking mix

## 2.4 Precision

Precision is defined as the measurement of agreement of a set of replicate results among themselves without a Precision is defined as the measurement of agreement of a set of replicate results among themselves without assumption of any prior information as to the true result. Precision is assessed by means of duplicate/replicate sample analyses.

Analytical precision is expressed in terms of RPD. The RPD is calculated using the following formula:

$$\text{RPD} = \frac{D^1 - D^2}{(D^1 + D^2)/2} \times 100$$

Where:

RPD = relative percent difference

D<sup>1</sup> = first sample value

D<sup>2</sup> = second sample value (duplicate)

## 2.5 Sensitivity

The sensitivity objectives for this plan require that data generated by the analytical laboratory achieve quantification levels low enough to meet the required detection limits specified by NYSDEC ASP and to meet all site-specific standards, criteria and guidance values (SGCs) established for this project.

## 2.6 Representativeness

Representativeness is a measure of the relationship of an individual sample taken from a particular site to the remainder of that site and the relationship of a small aliquot of the sample (i.e., the one used in the actual analysis) to the sample remaining on site. The representativeness of samples is assured by adherence to sampling procedures described in the Remedial Investigation Work Plan.

## 2.7 Completeness

Completeness is a measure of the quantity of data obtained from a measurement system as compared to the amount of data expected from the measurement system. Completeness is defined as the percentage of all results that are not affected by failing QC qualifiers, and should be between 70 and 100% of all analyses performed. The objective of completeness in laboratory reporting is to provide a thorough data support package. The laboratory data package provides documentation of sample analysis and results in the form of summaries, QC data, and raw analytical data. The laboratory will be required to submit data packages that follow NYSDEC ASP Category B reporting format which, at a minimum, will include the following components:

1. All sample chain-of-custody forms.
2. The case narrative(s) presenting a discussion of any problems and/or procedural changes required during analyses. Also presented in the case narrative are sample summary forms.
3. Documentation demonstrating the laboratory's ability to attain the contract specified detection limits for all target analytes in all required matrices.
4. Tabulated target compound results and tentatively identified compounds.
5. Surrogate spike analysis results (organics).
6. Matrix spike/matrix spike duplicate/matrix spike blank results.
7. QC check sample and standard recovery results
8. Blank results (field, trip, and method).
9. Internal standard area and RT summary.

## 2.8 Laboratory Custody Procedures

The following elements are important for maintaining the field custody of samples:

- Sample identification
- Sample labels
- Custody records
- Shipping records
- Packaging procedures

Sample labels will be attached to all sampling bottles before field activities begin; each label will contain an identifying number. Each number will have a suffix that identifies the site and where the sample was taken. Approximate sampling locations will be marked on a map with a description of the sample location. The number, type of sample, and sample identification will be entered into the field logbook. A chain-of-custody form, initiated at the analytical laboratory will accompany the sample bottles from the laboratory into the field. Upon receipt of the bottles and cooler, the sampler will sign and date the first received blank space. After each sample is collected and appropriately identified, entries will be made on the chain-of-custody form that will include:

- Site name and address
- Samplers' names and signatures

## 2.9 Sample Handling and Decontamination Procedures

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or cold-pak(s) to maintain a temperature of 4°C.

Dedicated disposable sampling materials will be used for both soil and groundwater samples (if collected), eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight samples collected. No field filtering will be conducted; any required filtration will be completed by the laboratory.

Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil;
- Rinse with tap water;
- Wash withalconox® detergent solution and scrub ;
- Rinse with tap water;
- Rinse with distilled or deionized water.

Prepare field blanks by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will accompany samples each time they are transported to the laboratory. Matrix spike and matrix spike duplicates (MS/MSD) will be collected at the rate of one per 20 samples submitted to the laboratory and duplicate samples will be collected at a rate of one per ten samples submitted to the laboratory.

### **3.0 ANALYTICAL PROCEDURES**

#### **3.1 Laboratory Analysis**

Samples will be analyzed by the NYSDOH ELAP laboratory for one or more of the following parameters: VOCs + TICs in soil / groundwater by USEPA Method 8260C, SVOCs + TICs in soil / groundwater by USEPA Method 8270D, Target Analyte List (TAL) Metals 6010 in soil and groundwater, pesticides / PCBs by USEPA Method 8081B/8082A and VOCs in air by USEPA Method TO15 (Table 2). If any modifications or additions to the standard procedures are anticipated and if any nonstandard sample preparation or analytical protocol is to be used, the modifications and the nonstandard protocol will be explicitly defined and documented. Prior approval by EBC's PM will be necessary for any nonstandard analytical or sample preparation protocol used by the laboratory, i.e., dilution of samples or extracts by greater than a factor of five (5).

## **4.0 DATA REDUCTION, REVIEW, AND REPORTING**

### **4.1 Overview**

The process of data reduction, review, and reporting ensures the assessments or a conclusion based on the final data accurately reflects actual site conditions. This plan presents the specific procedures, methods, and format that will be employed for data reduction, review and reporting of each measurement parameter determined in the laboratory and field. Also described in this section is the process by which all data, reports, and work plans are proofed and checked for technical and numerical errors prior to final submission.

### **4.2 Data Reduction**

Standard methods and references will be used as guidelines for data handling, reduction, validation, and reporting. All data for the project will be compiled and summarized with an independent verification at each step in the process to prevent transcription/typographical errors. Any computerized entry of data will also undergo verification review.

Sample analysis will be provided by a New York State certified environmental laboratory. Laboratory reports will include ASP category B deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. Analytical results shall be presented on standard NYSDEC ASP-B forms or equivalents, and include the dates the samples were received and analyzed, and the actual methodology used. Note that if waste characterization samples are analyzed they will be in results only format and will not be evaluated in the DUSR.

Laboratory QA/QC information required by the method protocols will be compiled, including the application of data QA/QC qualifiers as appropriate. In addition, laboratory worksheets, laboratory notebooks, chains-of-custody, instrument logs, standards records, calibration records, and maintenance records, as applicable, will be provided in the laboratory data packages to determine the validity of data. Specifics on internal laboratory data reduction protocols are identified in the laboratory's SOPs.

Following receipt of the laboratory analytical results by EBC, the data results will be compiled and presented in an appropriate tabular form. Where appropriate, the impacts of QA/QC qualifiers resulting from laboratory or external validation reviews will be assessed in terms of data usability.

### **4.3 Laboratory Data Reporting**

All sample data packages submitted by the analytical laboratory will be required to be reported in conformance to the NYSDEC ASP (7/2005), Category B data deliverable requirements as applicable to the method utilized. All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. Note that waste characterization samples, if analyzed, will be in results only format and will not be evaluated in the DUSR.

## 5.0 CORRECTIVE ACTION

Review and implementation of systems and procedures may result in recommendations for corrective action. Any deviations from the specified procedures within approved project plans due to unexpected site-specific conditions shall warrant corrective action. All errors, deficiencies, or other problems shall be brought to the immediate attention of the EBC PM, who in turn shall contact the Quality Assurance/Data Quality Manager or his designee (if applicable).

Procedures have been established to ensure that conditions adverse to data quality are promptly investigated, evaluated and corrected. These procedures for review and implementation of a change are as follows:

- Define the problem.
- Investigate the cause of the problem.
- Develop a corrective action to eliminate the problem, in consultation with the personnel who defined the problem and who will implement the change.
- Complete the required form describing the change and its rationale (see below for form requirements).
- Obtain all required written approvals.
- Implement the corrective action.
- Verify that the change has eliminated the problem.

During the field investigation, all changes to the sampling program will be documented in field logs/sheets and the EBC PM advised.

If any problems occur with the laboratory or analyses, the laboratory must immediately notify the PM, who will consult with other project staff. All approved corrective actions shall be controlled and documented.

All corrective action documentation shall include an explanation of the problem and a proposed solution which will be maintained in the project file or associated logs. Each report must be approved by the necessary personnel (e.g., the PM) before implementation of the change occurs. The PM shall be responsible for controlling, tracking, implementing and distributing identified changes.

**TABLE 1  
SUMMARY OF  
SAMPLING PROGRAM RATIONALE AND ANALYSIS**

<b>Matrix</b>	<b>Location</b>	<b>Approximate Number of Samples</b>	<b>Rationale for Sampling</b>	<b>Laboratory Analysis</b>
Subsurface soil (0 to 5 feet bgs)	from 3 of the borings throughout the site.	3	To assess quality of historic fill across the Site.	VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, TAL metals.
Subsurface soil (13 to 15 feet bgs)	9 borings throughout the site.	10	To evaluate the extent of soil impact and obtain information on soil quality at the Site.	VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, TAL metals.
<b>Total (Soils)</b>		13		
Groundwater (water table)	From 7 monitoring wells across the Site.	7	To assess groundwater quality at the Site.	VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, TAL metals dissolved and total.
<b>Total (Groundwater)</b>		7		
Soil Gas (14 ft below existing grade)	8 soil gas implants to be installed across the Site.	8	Evaluate soil gas across the Site.	VOCs EPA Method TO15
<b>Total (Soil Gas)</b>		8		
MS/MSD	Matrix spike and Matrix spike duplicates at the rate 5%	2	To meet requirements of QA / QC program	1 MS/MSD for VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, TAL metals for each matrix.
Trip Blanks	One laboratory prepared trip blank to accompany samples each time they are delivered to the laboratory.	2	To meet requirements of QA / QC program	VOCs EPA Method 8260B
<b>Total (QA / QC Samples)</b>		4		

**TABLE 2  
SAMPLE COLLECTION AND ANALYSIS PROTOCOLS**

<b>Sample Type</b>	<b>Matrix</b>	<b>Sampling Device</b>	<b>Parameter</b>	<b>Sample Container</b>	<b>Sample Preservation</b>	<b>Analytical Method#</b>	<b>CRQL / MDLH</b>	<b>Holding Time</b>
Soil	Soil	Scoop Direct into Jar	VOCs	(1) 2 oz Jar	Cool to 4° C HCL	EPA Method 8260	Compound specific (1-5 ug/kg)	14 days
Soil	Soil	Scoop Direct into Jar	SVOCs	(1) 8 oz jar	Cool to 4° C	EPA Method 8270 BN	Compound specific (1-5 ug/kg)	14 day ext/40 days
Soil	Soil	Scoop Direct into Jar	Pest/PCBs	from 8oz jar above	Cool to 4° C	EPA Method 8081/8082	Compound specific (1-5 ug/kg)	14 day ext/40 days
Soil	Soil	Scoop Direct into Jar	Metals	from 8oz jar above	Cool to 4° C	TAL Metals	Compound specific (01-1 mg/kg)	6 months
Groundwater	Water	Pump tubing	VOCs	(3) 40 ml vials	Cool to 4° C	EPA Method 8260	Compound specific (1-5 ug/L)	14 days
Groundwater	Water	Pump tubing	SVOCs	(1) 1 Liter Amber Bottle	Cool to 4° C	EPA Method 8270 BN	Compound specific (1-5 ug/L)	14 days
Groundwater	Water	Pump tubing	Pesticides and PCBs	(2) 1 Liter Amber Bottle	Cool to 4° C	EPA Method 8081 / 8082	Compound specific (1-5 ug/L)	14 days
Groundwater	water	Pump tubing	Total Metals	(1) 100 ml	HNO3	TAL Metals	Compound specific (1-5 mg/L)	6 months
Groundwater	water	Pump tubing	Dissolved Metals	(1) 100 ml	None	TAL Metals	Compound specific (1-5 mg/L)	6 months

*Notes:*

All holding times listed are from Verified Time of Sample Receipt (VTSR) unless noted otherwise. \* Holding time listed is from time of sample collection.

The number in parentheses in the "Sample Container" column denotes the number of containers needed.

Triple volume required when collected MS/MSD samples

The number of trip blanks are estimated.

CRQL / MDL = Contract Required Quantitation Limit / Method Detection Limit.

MCAWW = Methods for Chemical Analysis of Water and Wastes.

NA = Not available or not applicable.

**ATTACHMENT C**  
**HEALTH AND SAFETY PLAN**

UNDER SEPERATE COVER

**ATTACHMENT D**  
**COMMUNITY AIR MONITORING**  
**PLAN**

COMMUNITY AIR MONITORING PLAN

FORMER MOTOR FREIGHT GARAGE  
834 LEXINGTON AVENUE  
BROOKLYN, NY

NOVEMBER - 2014

**Prepared on behalf of:**

Lexington Flats LLC  
183 Wilson Street, Suite 133  
Brooklyn, NY 11211

**Prepared by:**



***ENVIRONMENTAL BUSINESS CONSULTANTS***  
RIDGE, NY 11961

**COMMUNITY AIR MONITORING PLAN  
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***APPENDICES***

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Appendix A    Action Limit Report

## 1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared for the drilling and sampling activities to be performed under a Remedial Investigation Work Plan (RIWP) at the Former Motor Freight Garage Site. The CAMP provides measures for protection for the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the investigation activities) from potential airborne contaminant releases resulting from investigative activities at the site.

Compliance with this CAMP is required during all activities associated with drilling and sampling activities that have the potential to generate airborne particulate matter and volatile organic compounds (VOCs). These activities include drilling and soil and groundwater sampling. This CAMP has been prepared to ensure that investigation activities do not adversely affect passersby, residents, or workers in the area immediately surrounding the Site and to preclude or minimize airborne migration of investigation-related contaminants to off-site areas.

### 1.1 Regulatory Requirements

This CAMP was established in accordance with the following requirements:

- New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan as presented in DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC May 3, 2010). This guidance specifies that a community air-monitoring program shall be implemented to protect the surrounding community and to confirm that the work does not spread contamination off-site through the air;
- New York State Department of Environmental Conservation (NYSDEC) Technical and Guidance Memorandum (TAGM) #4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites: This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

## **2.0 AIR MONITORING**

Petroleum VOCs and SVOCs and chlorinated solvents are the constituents of concern at the Site. The appropriate method to monitor air for these constituents during investigation activities is through real-time VOC and air particulate (dust) monitoring.

### **2.1 Meteorological Data**

At a minimum, wind direction will be evaluated at the start of each workday, noon of each workday, and the end of each workday. These readings will be utilized to position the monitoring equipment in appropriate upwind and downwind locations.

### **2.2 Community Air Monitoring Requirements**

To establish ambient air background concentrations, air will be monitored at several locations around the site perimeter before activities begin. These points will be monitored periodically in series during the site work. When the drilling area is within 20 feet of potentially exposed populations or occupied structures, the perimeter monitoring points will be located to represent the nearest potentially exposed individuals at the downwind location.

Fugitive respirable dust will be monitored using a MiniRam Model PDM-3 aerosol monitor (or equivalent). Air will be monitored for VOCs with a portable Ionscience 3000 photoionization detector (PID), or equivalent. All air monitoring data will be documented in a site log book by the designated site safety officer. The site safety officer or delegate must ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. All instruments will be zeroed daily and checked for accuracy. A daily log will be kept. If additional monitoring is required, the protocols will be developed and appended to this plan

### 3.0 VOC MONITORING, RESPONSE LEVELS, AND ACTIONS

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present.

The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

All readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report, as shown in Appendix A, will be completed.

#### 3.1 Potential Corrective Measures and VOC Suppression Techniques

If the 15-minute integrated VOC level at the downwind location persists at a concentration that exceeds the upwind level by more than 5 ppm but less than 25 ppm during remediation activities, then vapor suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive organic vapors:

- Collection of purge water in covered containers;
- storage of excess sample and drill cuttings in drums or covering with plastic

## 4.0 PARTICULATE MONITORING

Air monitoring for particulates (i.e., dust) will be performed continuously during drilling activities using both air monitoring equipment and visual observation at upwind and downwind locations. Monitoring equipment capable of measuring particulate matter smaller than 10 microns (PM<sub>10</sub>) and capable of integrating (averaging) over periods of 15 minutes or less will be set up at upwind (i.e., background) and downwind locations, at heights approximately four to five feet above land surface (i.e., the breathing zone). Monitoring equipment will be MIE Data Ram monitors, or equivalent. The audible alarm on the particulate monitoring device will be set at 90 micrograms per cubic meter (µg/m<sup>3</sup>). This setting will allow proactive evaluation of worksite conditions prior to reaching the action level of 100 µg/m<sup>3</sup> above background. The monitors will be calibrated at least once per day prior to work activities and recalibrated as needed thereafter. In addition, fugitive dust migration will be visually assessed during all intrusive work activities.

The following summarizes particulate action levels and the appropriate responses:

- If the downwind PM-10 particulate level is 100 µg/m<sup>3</sup> greater than background (upwind perimeter) for the 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 µg/m<sup>3</sup> above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 µg/m<sup>3</sup> above the upwind level, work must be stopped and an evaluation of activities initiated. Work can resume provided that dust suppression measures (as described in Section 2.3.1 below) and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 µg/m<sup>3</sup> of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report as shown in **Appendix A** will be completed.

### 4.1 Potential Particulate Suppression Techniques

If the integrated particulate level at the downwind location exceeds the upwind level by more than 100 µg/m<sup>3</sup> at any time during drilling activities, then dust suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive dusts:

- Placement of drill cuttings in drums or covering stockpiles with plastic;
- Misting of the drilling area with a fine water spray from a hand-held spray bottle

Work may continue with dust suppression techniques provided that downwind PM<sub>10</sub> levels are not more than 150 µg/m<sup>3</sup> greater than the upwind levels.

There may also be situations where the dust is generated by drilling activities and migrates to downwind locations, but is not detected by the monitoring equipment at or above the action level. Therefore, if dust is observed leaving the working area, dust suppression techniques such as those listed above will be employed.

If dust suppression techniques do not lower particulates to below  $150 \mu\text{g}/\text{m}^3$ , or visible dust persists, work will be suspended until appropriate corrective measures are identified and implemented to remedy the situation.

All air monitoring readings will be recorded in the field logbook and will be available for the NYSDEC and NYSDOH personnel to review.

## **5.0 DATA QUALITY ASSURANCE**

### **5.1 Calibration**

Instrument calibration shall be documented on instrument calibration and maintenance sheets or in the designated field logbook. All instruments shall be calibrated as required by the manufacturer. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

### **5.2 Operations**

All instruments shall be operated in accordance with the manufacturer's specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on-site by the SSO for reference.

### **5.3 Data Review**

The SSO will interpret all monitoring data based the established criteria and his/her professional judgment. The SSO shall review the data with the PM to evaluate the potential for worker exposure, upgrades/downgrades in level of protection, comparison to direct reading instrumentation and changes in the integrated monitoring strategy.

Monitoring and sampling data, along with all sample documentation will be periodically reviewed by the PM.

## 6.0 RECORDS AND REPORTING

All air readings must be recorded on daily air monitoring log sheets and made available for review by personnel from NYSDEC and NYSDOH.

**APPENDIX A**  
**ACTION LIMIT REPORT**

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