71-73 Cleveland Avenue

Bay Shore, Suffolk County, New York

Site Management Plan

NYSDEC Site Number: C152196

Prepared for:
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Revisions to Final Approved Site Management Plan:

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1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1. 1 INTRODUCTION

This document is required as an element of the remedial program at 71-73 Cleveland Avenue, Bay Shore, New York (hereinafter referred to as the "Site") under the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with Brownfield Cleanup Agreement (Index # W1-1041-05-01, Site # C152196), which was executed in November 2005.

1.1.1 General

Diamond Auto Service entered into a BCA with the NYSDEC to remediate a 10,000 square feet property located in Bay Shore, New York. This BCA required the Remedial Party, Diamond Auto Service, to investigate and remediate contaminated media at the site. A figure showing the site location and boundaries of this 10,000 square foot site is provided in Figure 1. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement.

After completion of the remedial work described in the Remedial Action Work Plan, some contamination was left in the subsurface at this site, which is hereafter referred to as 'remaining contamination." This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by J.R. Holzmacher P.E., LLC (JRH), on behalf of Diamond Auto Service, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May, 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Engineering Controls (ECs) that are required by the Environmental Easement for the site.

1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Engineering Controls have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Suffolk County Clerk, will require compliance with this SMP and all ECs placed on the site. This SMP specifies the methods necessary ensure compliance with all ECs required by the Environmental Easement for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of all Engineering; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering Plan for implementation and management of ECs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual for complex systems).

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP does discuss Instructional Controls in Section 4.5, because ICs are required at the site.
- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the environmental easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA W1-1041-05-01, Site # C152196 for the site, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

The current and intended use of the property is commercial. The Volunteer, Diamond Auto Service, is an active automobile repair business. A sheet metal company and a manufacturer that used tetrachloroethene or perchloroethylene (PCE) in its manufacturing process formerly occupied the site.

The NYSDEC accepted the Site for eligibility in the Brownfield Cleanup Program and the agreement was signed on November 26, 2005. The RI Work Plan was approved by the NYSDEC on February 8, 2007. The RI was conducted on behalf of Mr. Dave Watson, the property and business owner, with the understanding that remediation is required to complete the Brownfield Cleanup Program agreement with the NYSDEC. The RI was conducted in 2007 and 2008 and a final report was submitted in March 2008.

J.R. Holzmacher P.E. LLC (JRH) submitted the final Alternative Analysis report and Remedial Plan on July 7, 2010 to address the results of the Remedial Investigation (RI) performed at the above referenced property.

The Preferred Remedy for the site consists of the following components:

- Conversion of the on-site passive sub slab depressurization system (SSDS) to active;
- Sealing of the building slab (completed);
- Determining the need for (and installing) treatment of captured vapors;
- Monitoring, sampling and maintenance of the SSDS (site management); and
- Reporting to the NYSDEC

The preferred remedy is driven by the requirements of the BCP and is consistent with the current use of the property in that it is:

- Fully protective of human health and the environment;
- Allows for the operation of the business with minimal financial stress;
- Eliminates the risks and hazards posed by vapor intrusion; and
- Meshes well with the Volunteer's hope for accelerated cleanup of the property.

This Site Management Plan (SMP) was prepared to manage residual soil vapor contamination at the site. All reports associated with the site can be viewed by contacting the Bay Shore Brightwaters- Public Library or the NYSDEC.

This SMP was prepared by JRH on behalf of the property owner in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the remedial action.

1.2.1 Site Location and Description

The property is located at 71-73 Cleveland Avenue, Bay Shore, Suffolk County, New York (Figure 1) and is approximately 10,000 square feet in size. It is occupied by an 8,000 square foot single-story building constructed in 1971. It was shared at that time by Multi-turn

Manufacturing Corporation (precision metal fabricators) and CAP Products, Inc. The most recent tenant prior to Diamond was Precision Metals Corporation, which operated a sheet metal shop.

1.2.2 Site History

A Phase I Environmental Site Assessment (ESA) was conducted by Middleton, Kontokosta Associates, LTD., North Babylon, N.Y. in February 1998 for a potential purchaser of the site. A review of Suffolk County Department of Health Services (SCDHS) records as part of the ESA summarized SCDHS inspections of the site. These inspections identified the storage and use of tetrachloroethene (PCE) for degreasing by Multi-Turn Manufacturing Corporation (Multi-Turn) as well as storage of kerosene, cutting oils, water-soluble coolant oil, and lacquer thinner. There was staining on the asphalt pavement in the vicinity of a nearby storm drain. In May 1984, when SCDHS collected and analyzed a liquid sample pooled above the storm drain cover, only copper and nickel were detected and at low concentrations.

1.2.3 Geologic Conditions

The subject property is situated approximately 59 feet above mean sea level. On-site soils generally consist of tan medium to fine grained sands with varying amounts of silt, coarse-grained sand, and gravel. Coarse-grained sand is more prevalent below the water table. The water table is approximately 4 to 6 feet below grade and site groundwater flows in a southerly direction. This corresponds with regional groundwater flow direction.

The general site area is underlain by three aquifers, consisting of the Upper Glacial, Magothy, and Lloyd. The Upper Glacial aquifer is the uppermost stratigraphic unit present in the region. In general, the unit is comprised of glacial till and outwash that was deposited during the Late Pleistocene and Holocene epochs. The Upper Glacial is comprised of stratified beds of fine to coarse-grained sand and gravel. In glacial till areas, the aquifer is poorly permeable. Areas of outwash deposits are moderately to highly permeable. The Upper Glacial extends to a depth of approximately 150 feet below grade in the vicinity of the subject site. Groundwater within the Upper Glacial is generally present under unconfined conditions and variations in rainfall directly affect the depth to groundwater in the aquifer.

The Upper Glacial aquifer is underlain by the Magothy aquifer. In general, the Magothy aquifer is comprised of clayey fine to medium-grained sand, and is interbedded with layers and lenses of coarse-grained sand, sandy clay, and solid clay. Gravel is prevalent at the base of the

aquifer. The Magothy extends from approximately 150 feet to 850 feet below grade in the vicinity of the subject site. Most layers of the Magothy aquifer are moderately permeable, with some zones of significantly higher permeability.

The Magothy aquifer is underlain by the Raritan Formation. The Raritan Formation is composed of two stratigraphic units: the Raritan Clay confining unit, which extends from approximately 850 feet to 1,000 feet below grade in the site vicinity, and the Lloyd aquifer which extends from approximately 1,000 to 1,400 feet below grade. The Lloyd aquifer is a confined aquifer, with the generally impermeable Raritan Clay unit and the underlying bedrock acting as confining layers. In general, the Lloyd Aquifer is comprised of fine to coarse-grained sand and gravel, commonly with some clay and lenses of silty clay and solid clay. The Lloyd aquifer is poorly to moderately permeable.

At that time, the SCDHS informed Multi-Turn that accumulated sludge and other wastes were to be properly stored pending disposal by an approved industrial waste hauler. SCHDS observed that there are no floor drains within the subject building. The building is heated by an oil-fired system and there is evidence of three underground storage tanks used to store fuel oil under the site. The Phase I ESA inspection also identified metal shavings behind the building in the vicinity of the storm drain and it was recommended that samples from on-site storm drains and cesspools be collected.

1.3 SUMMARY OF INTERIM REMEDIATION AND INVESTIGATION

1.3.1 Phase II ESA Investigation-1998

The then owners of the property retained Paul W. Grosser P.E., to address the recommendations in the Phase l ESA and perform a Phase II ESA investigation at the site A review of the site survey available through the Town of Islip Building Department and a site inspection identified a total of four storm drains (including one overflow located below grade) and four sanitary leaching pools associated with two sanitary systems at the site (Figure 2).

One sanitary system is located in front of the building and consists of a 1,000-gallon septic tank with two eight foot diameter overflow pools (LP-1 and LP-2), both located in a primary position. The second sanitary system, located on the south side of the building consists of a four-foot diameter leaching pool (LP-4), which overflows to an eight-foot diameter leaching pool (LP-3).

Drywell and sanitary system sampling was performed on March 25, 1998. The three storm drains with covers to grade were designated as SD-1 through SD-3 and the four sanitary leaching structures were designated as LP-1 through LP-4, as shown on Figure 2.

Sediment samples from the base of each structure were analyzed for volatile organic compounds (VOCs) by EPA Method 8260 and total metals (SCDHS list) by Ecotest Laboratories, Inc. of North Babylon, New York, (NYSDOH ID# 10320).

VOCs were detected in four of the structures. In LP-4 six VOCs were detected above SCDHS Action Levels. The sample from SD-2 indicated a wide range of petroleum related compounds, including chromium, which was the only metal detected in excess of the SCDHS Action Level. This indicates that this structure may have received contaminated runoff from the dumpster area at the rear of the building.

Based on the results of testing and comparison to the SCDHS SOP No. 9-95, PWGC recommended that LP-4 and SD-2 be cleaned out, followed by the collection of endpoint samples to determine the effectiveness of the clean out.

1.3.2 Initial Remediation-1998

The clean out of structures LP-4 and SD-2 was initiated on June 9, and completed on June 10, 1998 by Trade-Winds Environmental Restoration, Inc., Bay Shore, NY (Trade-Winds). Trade Winds subcontracted Gillette Cesspool Service to pump out the liquid sanitary waste from LP-4 and SD-2. The clean outs involved the removal of sanitary waste and standing liquid for disposal at Bergen Point Sewage Treatment Plant and bottom sediments from within the structures using a truck mounted vacuum system (Guzzler) capable of placing material directly into 55-gallon drums. Prior to clean out, depth to water and depth to bottom measurements were taken from the two structures.

Following the pump out of LP-4, affected sediments were placed directly into 55-gallon drums using the Guzzler. Sediments initially removed from LP-4 consisted of black stained sludge and medium sands and gravel. After removing two 55-gallon drums of material, characteristics of bottom sediment changed to light brown sands for LP-4. These sediments did not exhibit odor or staining and a PID response of only 0.5 calibration gas equivalents (cge) was obtained from a headspace analysis. At this time, an endpoint sample was collected in order to document the effectiveness of clean out.

Sediments in SD-2 consisted of black stained medium sands and fine gravel with metal shavings. Removal of sediments ceased due to the significant flow of water into the structure and realization that the bottom of the pool was below the water table. The pumping of standing liquid from SD-2 was discharged onto the paved surface so that it can flow to on-site storm drains located in the front of the building. An endpoint sample was collected, and a PID response of greater than 200 cge was obtained from a headspace analysis performed on excess soil sample material.

Endpoint samples from both structures were collected and analyzed by Ecotest. VOCs analyzed in LP-4 were below detectable concentrations indicating that this structure was effectively remediated by removing the bottom sediment. However, VOC and metal concentrations were elevated in SD-2. PCE was detected at a concentration exceeding NYSDEC Recommended Soil Cleanup Objective (RSCO) in the endpoint sample. This compound had not been detected in the initial sampling.

1.3.3 Additional Investigations and Remediation-1998 and 1999

In response to these findings, soil borings were drilled through SD-2 and its overflow structure. Split-spoon samples were collected at five-foot intervals below the base of SD-2 and screened with the PID. The 14-16 and 19-21 foot below grade samples were collected for laboratory analysis. Ecotest analyzed the soil samples for VOCs by EPA Method 8260 and the SCDHS metals list. The results indicated a significant reduction in PCE concentrations as depth increased. There were no issues with respect to VOCs and metals in the sediment at the base of and below the overflow structure.

PWGC recommended the installation of monitoring wells to determine groundwater quality and groundwater flow direction. Three wells were installed and developed on July 28, 1998 by Land, Air, Water Environmental Services of Center Moriches using hollow stem augers. The three wells are four inches in diameter and are screened from two to 15 feet below grade. The wells were surveyed vertically to a common datum and later tied into an existing on-site benchmark. The direction of groundwater flow was determined to be southeasterly. The three wells were purged and sampled on August 12, 1998.

The upgradient well, MW-1, had no VOC detections. Several compounds were detected in the sample from MW-3 but below the New York State Groundwater Standards. However, VOCs were detected above their respective standards in the sample from MW-2, which is

hydraulically downgradient with respect to groundwater flow of SD-2. Specifically degradation products of PCE were detected at elevated concentrations. It was determined from this round of sampling that metals were not a groundwater concern.

A HydroPunch was used to collect groundwater samples 20 feet below the bases of both SD-2 and the overflow structure. These two samples indicated that although VOCs were detected they were present below standards. Based on their review of the work and data, the SCDHS required additional remediation of SD-2 as well as additional on-site groundwater sampling and investigation. They required vertical profile groundwater sampling and the installation of a groundwater monitoring well downgradient with respect to groundwater flow of SD-2.

Under the observation of the SCDHS, Trade Winds removed an additional total of 22.37 tons of sediment from the base of SD-2. The soil was transported by Freehold Cartage, Inc. (USEPA ID# NJD054126164) and disposed of as hazardous at the City Environmental Inc. facility in Detroit, Michigan (MIC980991566).

The purpose of the vertical profile boring was to determine the vertical extent of the VOC contamination in groundwater. A total of four samples were collected (65-75, 45-55, 30-40 and 10-20) and analyzed by Ecotest for EPA Method 8260. The vertical profile well was raised and finished as a two-inch diameter monitoring well screened between four and 14 feet below grade. This well was designated MW-4.

The result of the vertical profile sampling indicated VOC detections, specifically PCE and degradates, in the samples from the two shallowest intervals. PCE was detected at 9 ppb in the 45-55 foot interval sample and all compounds were below standards in the 65-75 foot interval sample.

1.3.4 Quarterly Groundwater Sampling-1999-2000

Groundwater samples were collected from the four monitoring wells on April 23, 1999. Similar to the previous round eight months earlier, no VOCs were detected in the sample from upgradient-monitoring well MW-1. The concentrations of VOCs decreased significantly in the samples from MW-2 and MW-3. The sample from MW-4 indicated PCE degradates. Based on these data, PWGC felt that the remediation of SD-2 was successful and recommended one year of quarterly groundwater monitoring for confirmation purposes.

The next round of groundwater sampling was conducted on October 28, 1999 under the observation of the SCDHS. MW-1 and MW-3 were not sampled as per the work plan approved

by the SCDHS. The sample from MW-2 indicated no concentrations of VOCs above standards. The sample from MW-4 indicated eight compounds above standards with significant increases for cis-1, 2-DCE and vinyl chloride.

The last set of quarterly groundwater monitoring data is from January 6, 2000. Only MW-2 and MW-4 were sampled. No VOCs were detected in the sample from MW-2. There were significant increases again for both vinyl chloride and cis-1, 2- DCE in the sample collected from well MW-4.

1.4 SUMMARY OF REMEDIAL INVESTIGATION-2007 AND 2008

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the site. The results of the RI are described in detail in the following reports:

JRH was retained by the Volunteer to prepare and implement the RI work plan. Following is a summary of the work conducted and the results of the RI.

1.4.1 Monitoring Well Redevelopment

The four on-site monitoring wells had not been sampled since January 6, 2000 and were inspected by JRH on April 6, 2007. JRH determined that the wells were suitable for sampling pending redevelopment. Under JRH oversight, Clear View Environmental Services Inc. (Clear View) redeveloped the wells on April 14, 2007 by pumping and surging to ensure that they are suitable for sampling. Development water was containerized pending groundwater sampling and analysis. Approximately one 55-gallon drum was used for each well and labeled accordingly.

1.4.2 Vertical Groundwater Sampling

On April 17, 2007 a GeoprobeTM operated by Land, Air, Water Environmental Services, Inc. was used to collect groundwater samples at five-foot intervals from 55 to 20 feet below grade (a total of 8 samples). This boring was specifically located adjacent to monitoring well MW-4 (Figure 2). This vertical profile sampling was required to address the concern regarding whether contamination was deeper than the bases of the four monitoring well screens (2 to 15 feet below grade). A mill slot sampler with 3/8 inch polyethylene tubing and a peristaltic pump was used to collect the samples. Dedicated tubing was used for each sampling interval.

The eight-groundwater samples were hand delivered by JRH to American Analytical Laboratories, (NYSDOH ID# 11418) and analyzed for VOCs by EPA Method 8260.

There were no compounds detected in the 55, 50, 45, 40, 35, and 30-foot below grade groundwater samples, except for methylene chloride, which was also detected in the method blank. Other than methylene chloride there were three compounds each, detected in the 25 and 20 foot below grade groundwater samples.

Cis-1, 2-dichloroethene was detected at 4.8 and 3.7 ppb in the 25 and 20-foot samples respectively. The New York State Groundwater Standard for this compound is 5 ppb. M, p-xylene was detected at 1.8 and 1.6 ppb in each of these two samples-both detections are below the Groundwater Standard of 5 ppb. Vinyl chloride was detected at 2.7 and 3.5 ppb in the 25 and 20-foot below grade samples. The New York State Groundwater Standard for this compound is 2 ppb.

1.4.3 Groundwater Flow Direction Determination

Water levels were measured in the four monitoring wells on April 24, 2007, November 30, 2007 and January 25, 2008. Measuring points were designated at the top of the PVC well casings and surveyed vertically to a common datum. These data are summarized on Table 2.

The calculated groundwater elevation data were used to determine groundwater flow direction on each of the three dates. Three groundwater flow contour maps were presented in the March 2008 draft RI report. Although the wells are closely spaced, groundwater flow on-site is clearly to the south, consistent with mapped regional flow. Therefore, MW-1 is upgradient with respect to groundwater flow of the former source (SD-2) area and monitoring wells MW-2, MW-3 and MW-4 are downgradient of the former source area.

1.4.4 Monitoring Well Sampling

The four monitoring wells were purged and sampled by JRH on April 24, 2007 and November 30, 2007. Water levels were measured and groundwater samples were collected from each of the four monitoring wells using low-flow sampling methods. Prior to sampling, each well was purged a minimum of three casing volumes per-well dedicated tubing set in the middle of the well screen. This was performed to ensure representative samples from the formation surrounding the wells and to eliminate standing water in the wells. Temperature, pH, dissolved

oxygen, turbidity and conductivity measurements was collected and recorded after the removal of the three casing volumes on well sampling logs.

American Analytical Laboratories analyzed the four-groundwater samples for VOCs by EPA Method 8260. Groundwater according to water level measurements collected on April 24, 2007, November 30, 2007 and January 25, 2008 flows in a southerly direction consistent with previous data from 1999 and 2000 (although there was more of a southeasterly component measured at this time).

In the April 24, 2007 sampling round, toluene was detected in the samples from monitoring wells MW-1, MW-2, and MW-4 at concentrations below the New York State Groundwater Standard. The only other compound detected was tetrachloroethene in the sample from MW-4 at 1.1 ppb below the Groundwater Standard of 5 ppb.

In the November 30, 2007 sampling event, there were no detections in the samples from monitoring wells MW-1, MW-2 and MW-3. Four compounds were detected in the sample from MW-4: cis-1, 2-dichloroethane at 4.7 ppb; ethylbenzene and 0.99 ppb (laboratory estimated concentration); toluene at 1.9 ppb; and vinyl chloride at 4.4 ppb. The New York State Groundwater Standard for vinyl chloride is 2 ppb. A disguised duplicate sample was collected from MW-4 and the same four compounds were detected at comparable concentrations.

1.4.5 Soil Vapor Intrusion Investigation

Clear View installed two sub-slab vapor-monitoring points on May 19, 2007. The two points consisted of one-inch diameter .010 slotted PVC pipe set at a depth of 3.5 feet below the building slab. The annular space was sealed above the slotted pipe with a cement bentonite mixture and the points were capped and covered (as they are located in an active area in the shop).

JRH scientists conducted the soil-gas sampling on June 9, 2007 and January 5, 2008 with assistance from Clear View. The auto repair shop was closed on both dates and all doors/windows were shut, except for the two rear bay doors. Prior to sampling each sub-slab gas point was purged to evacuate a minimum of one well volume to ensure collection of a representative sample. Purging was completed using a hand held SKC sample pump, affixed with a low flow regulator, at a rate of 0.1 liter per minute (L/min). Following purging, the samples were collected directly from the tubing into a six liter laboratory supplied Summa canisters at a requested flow rate of 0.1 L/min using pre-calibrated, laboratory supplied

regulators. However, during the June 9, 2007 sampling event most of the individual canisters filled at different rates varying from one hour to over two hours.

The air samples collected were as follows; one outside air sample labeled Outdoor, two indoor air samples labeled Indoor North and Indoor South (both in the working area of the shop near chemical storage), and the two sub-slab air samples labeled VP-1 North and VP-2 South. All samples were collected at the same time. The Outdoor air sample was collected above the former source area (SD-2). These sampling locations are shown on Figure 2.

JRH delivered the June 9, 2007 air samples to Long Island Analytical Laboratories of Holbrook (NYSDOH ELAP # 11693) for analysis of VOCs by EPA Method TO-15. Because of inconsistent regulators provided by that laboratory in June 2007, the January 5, 2008 air samples were shipped by JRH to Chemtech in Mountainside, New Jersey (NYSDOH ELAP # 11376) for the same analysis.

1.4.5.1 June 9, 2007 results

There were no compounds detected in the Outdoor air sample, positioned on land surface at the former source (SD-2).

Three compounds were detected in the Indoor South sample- m, p- xylene, and o-xylene at trace levels and tetrachloroethene at 61.5 ug/m3. There were trace detections of benzene, ethylbenzene, total xylenes, and n-heptane in the Indoor North sample. Also detected in the Indoor North sample were trichloroethylene (19.5 ug/m3) and tetrachloroethene (135 ug/m3).

There were three compounds detected in sub slab vapor sample VP-1: 1,1 trichloroethane (TCA) (19.8 ug/m3), n-heptane (81.7 ug/m3) and tetrachloroethene (351 ug/m3). There were two compounds detected in sub slab vapor sample VP-2: 1,1 TCA (18.9 ug/m3) and tetrachloroethene (561 ug/m3).

1.4.5.2 January 5, 2008 Air and Vapor Sampling Summary

In response to the June 9, 2007 air sampling data, the client voluntarily began to inventory and remove/ replace all products containing tetrachloroethene (perc) including brake cleaner and engine degreaser.

On Saturday January 5, 2008 during the sampling event a strong acetone like odor was noticed outside the building in the neighborhood. This odor was noted during other activities at

the site. Despite a persistent breeze, the outdoor air sample showed an acetone concentration of 28.51 ug/m3. Tetrachloroethene was detected at 8.82 ug/m3. The remainder of the detections in the Outdoor sample was petroleum constituents including toluene at 45.22 ug/m3.

Acetone was also detected in the Indoor North and Indoor South samples likely because the bay doors were open to outside air. Acetone was detected at lower concentrations in the two sub slab vapor points, VP-1 and VP-2.

Tetrachloroethene was detected in the Indoor North sample at an estimated laboratory concentration of 223.78 ug/m3 (compared to 135 ug/m3 on June 9, 2007) Tetrachloroethene was also detected in the Indoor South sample at 67.81 ug/m3 (compared to 61.5 ug/m3 on June 9, 2007). Toluene was detected at 75.37 ug/m3 in the Indoor North sample and 52.76 ug/m3 In the Indoor South sample.

The remainder of the detections in the Indoor North and Indoor South samples was petroleum constituents. More of these compounds were detected on January 5, 2008 when compared to June 9, 2007.

Sub-slab vapor monitoring point samples also indicated tetrachloroethene. VP-1 in the north portion of the building indicated a laboratory-estimated concentration of 617.09 ug/m3 (compared to 351 ug/m3 on June 9, 2007). The duplicate sample indicated a concentration of 813.74 ug/m3. 25.77 ug/m3 of tetrachloroethene was detected in the VP-2 sample (south portion of the building) compared to 561 ug/m3 on June 9, 2007. These two samples also indicated the presence of multiple petroleum compounds.

1.4.6 Environmental Database Search

Environmental Data Resources (EDR) of Milford, Connecticut provided JRH with a computerized database search of environmental compliance records of sites within an ASTM standard radius of the property. The database report was provided as a separate volume to the draft RI report.

JRH reviewed the database output and determined the property appears on two of the regulatory agency lists; the underground storage tank and the VCP lists. This makes sense as the building is heated by fuel oil stored in a tank and the BCP program has essentially replaced the site VCP program. There was no information presented in the database search that would suggest that contamination that once existed on the Diamond property has affected other properties in the area.

1.4.7 Summary and Recommendations of RI

The Remedial Investigation conducted as per the requirements of the Brownfield Cleanup Program has been completed and a report submitted to the NYSDEC in March 2008. Based on the vertical groundwater quality data collected from the deep profile soil boring and two rounds of monitoring well sampling data, there appears to be no issue with respect to groundwater quality. This is consistent with the extensive remediation conducted in the past and the time that has elapsed since this work. Vinyl chloride was detected just above the Groundwater Standard in three of the 16-groundwater samples collected and analyzed.

More problematic are the detections of the compound of concern, tetrachloroethene (perc) in the air samples collected outside, inside and below the slab of the facility. The Volunteer who operates an auto repair facility has been voluntarily inventorying and replacing all products containing tetrachloroethene (perc). The indoor air sample data may be the result of using this compound in day-to-day auto repair operations.

The sub slab detections may reflect residual concentrations trapped between the slab and the shallow water table (four to six feet below grade). However, the sub-slab concentrations of tetrachloroethene detected in April 2007 and January 2008 combined with the indoor concentrations exceed the values presented in decision matrices in the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. The detected concentrations according to Soil Vapor/Indoor Air Matrix 2 warrant mitigation.

1.5 SUMMARY OF INTERIM CORRECTIVE MEASURES

1.5.1 Post RI Vapor Sampling

As summarized in the Remedial Investigation (RI) report dated March 2008, tetrachloroethene (perc), the historical compound of concern, has been detected in the air samples collected inside and below the slab of the active auto repair facility. The Volunteer has been continually inventorying and replacing all products containing tetrachloroethene and other chlorinated solvents.

The indoor air sample data may be the result of using this compound in day-to-day auto repair operations. However, the sub slab detections may reflect residual concentrations trapped between the slab and the shallow water table (four to six feet below grade). The sub-slab concentrations of tetrachloroethene (perc detected in April 2007 and January 2008 combined

with the indoor concentrations exceeded the values presented in decision matrices in the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. The detected concentrations according to Soil Vapor/Indoor Air Matrix 2 warrant mitigation. It was recommended in the draft RI report that an additional round of sub slab vapor and indoor air testing be conducted to facilitate the design of an appropriate mitigation system.

An additional set of sub slab vapor and indoor air samples was collected at the site on January 24, 2009. These data and the associated laboratory report are presented in a letter to the NYSDEC dated April 2, 2009.

JRH scientists conducted the three soil-gas sampling events on June 9, 2007, and January 5, 2008, and January 24, 2009. The auto repair shop was closed on all three dates and all doors/windows were shut.. As per NYSDEC/NYSDOH comments regarding the draft September 2008 RI report, the rear bay doors were closed for the January 24, 2009 event.

1.5.2 Results of January 24, 2009 Vapor Sampling

Tetrachloroethene (perc) was detected in the Indoor North sample at an estimated laboratory concentration of 153.53 ug/m3 (compared to 223.78 ug/m3 in January 2008). Tetrachloroethene was also detected in the Indoor South sample at 96.56 ug/m3 (compared to 67.81 ug/m3 in January 2009). Toluene was detected at a laboratory estimated concentration of 376.81 ug/m3 in the Indoor North sample and 304.65 ug/m3 In the Indoor South sample. The other detections in the Indoor North and Indoor South samples were petroleum constituents. More of these compounds were detected on January 24, 2009 when compared to January 5, 2008.

Sub-slab vapor monitoring point samples also indicated tetrachloroethene. VP-1 in the north portion of the building indicated a laboratory-estimated concentration of 463.43 ug/m3 (compared to 617.09 ug/m3 in January 2008). A laboratory estimated concentration of 330.11 ug/m3 of tetrachloroethene was detected in the VP-2 sample (south portion of the building) compared to 25.77 ug/m3 on June 9, 2007. These two samples also indicated the presence of multiple petroleum compounds.

Acetone was also detected in the Indoor North and Indoor South samples and at lower concentrations in the two sub slab vapor points, VP-1 and VP-2.

1.5.3 Sealing of Building Slab and Installation of Interim Mitigation System

To address the elevated concentrations of tetrachloroethene (and potential degradation products) in the sub slab vapor, Volunteer retained Clear View to install a passive sub-slab depressurization system (SSDS) system in March 2009. Volunteer also applied a sealant (four coats of Delta 2 part epoxy sealer) to the building slab in April 2009.

The SSDS was installed below the building slab to prevent any potential contaminant vapors in the soil from entering the occupied building space.

- The two vapor monitoring points (VP-1 and VP-2) were replaced by four-inch diameter slotted PVC pipe-open from the base of the slab to five feet below grade (groundwater at the time);
- The two vertical vapor collection points work in conjunction with a 20 foot length of four- inch diameter perforated High Density Polyethylene (HDPE) pipe set two feet below the slab in a bed of gravel;
- The slotted subsurface pipes were connected together using 2-inch diameter non perforated PVC pipe;
- Two- inch vertical non-perforated PVC pipe was installed to convey the collected sub slab gas to a roof wind turbine fan for discharge into the atmosphere;
- Sampling ports were created for of the three legs of the system so monitoring can be conducted.

The system was monitored on a monthly basis to ensure it was intact and functioning. Vapor readings are collected from each leg of the system on a periodic basis using a PID.

1.5.4 Remaining Contamination

The NYSDEC has released the Owner/Volunteer from further action regarding both soil and groundwater beneath the Site. The remaining soil vapor issues at the Site will be addressed by the operation of the SSDS.

2.0 ENGINEERING CONTROL PLAN

2.1 INTRODUCTION

Engineering controls have been employed at the site since March 2009 in an attempt to maintain acceptable indoor air quality. The engineering controls included the.

1. The installation and operation of a passive sub-slab depressurization system; and
2. The application of an epoxy floor covering to the concrete slab.

The NYSDEC approved the final SSDS upgrade design on July 9, 2013. The current sub-slab depressurization system was made active on July 18, 2013.

The approved design for the SSDS consisted of the following components:

- Conversion of the passive SSDS to active;
- Diagnostic testing to determine its effectiveness;
- Collection of post-mitigation air samples;
- Determining the need for treatment of off gas; and
- Monitoring, sampling and maintenance of the SSDS.

2.2 INSTALLATION OF THE ACTIVE SSDS

The goal of the active SSDS design is to establish a partial vacuum underneath the floor slab to prevent migration of contaminated vapors into the occupied work shop space, rather than to exert a capture zone outward to a particular radius. Effectively, the goal is to make sure that air will leak from the work space down into the sub slab rather than the other way around. Verification of the establishment of this partial vacuum will be achieved through field measurements of the actual vacuum induced as well as observed increases in water levels within the four on-site monitoring wells.

The modifications to the passive SSDS required to have it perform as an active SSDS are indicated on Figure 3. The components were installed are as follows:

1. A cut-in to the existing 2-inch PVC piping at the vertical run along the exterior wall to install two 90-degree bends, run two 2-inch PVC pipes through the wall, and connect to a new blower/vacuum motor on the interior east wall of the building. Power switches to meet the requirements of the National Electric Code were installed and tied in to the existing power distribution panel with a dedicated circuit breaker for the blower/vacuum motor. New audible and visual alarm components to indicate system status conditions were also installed on the interior east wall.

   The blower / vacuum pump was selected as a typical size for a medium sized building slab and is believed to be more than twice as large as the minimum acceptable size to achieve the stated goals. The manufacturer specifications for the new Fuji regenerative blower are as follows;

Item	Regenerative Blower
Inlet/Outlet (In.)	1-1/4 (F)NPT
HP	0.56
Voltage	200-230/460
Phase	3
Full Load Amps	1.7/.85
Max. Pressure (in WC)	50
Open Flow Positive Pressure (CFM)	56
Max. Vacuum H20 (In. WC)	45
Min. CFM	17
SCFM @ 10 Pressure In./Water	51
SCFM @ 10 Vacuum In./Water	49
Max. Ambient Temp. (F)	104
Base Material	Aluminum Alloy
Housing	Aluminum Alloy
Impeller Material	Aluminum Alloy
Shaft Seal	Dustproof, Protects Bearings from Contaminated Air and Foreign Particles
Overall Length (In.)	10
Overall Height (In.)	10-1/8
Overall Depth (In.)	11-5/8
For Use With	Air and Noncombustible, Noncorrosive, Nonexplosive Gases
Standard	Class B NEMA Insulation

2. Existing exterior piping now has three new manually operated PVC ball valves installed above grade to allow isolation of each soil vapor extraction point.

3. Three new PVC sample ports with PVC ball valves for shut-offs were installed above grade in each independent vapor extraction line before they join to one. In addition one new PVC sample port with a PVC ball valve for shut off was installed after the blower discharge to allow periodic collection of air samples. These sample ports are shown on Figure 3.

4. Three new vacuum gauges with manual read faces were installed in each independent vapor extraction line above grade before they join to one.

2.3 O&M OF REMEDIATION SYSTEM

Procedures for operating and maintaining the SSDS and more detailed information regarding the SSDS are documented in the Operation and Maintenance Plan (Section 7.0 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 7.0 also). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition occurs which may affect controls at the site.

As per the New York State Department of Health, October 2006, "Guidance for Evaluating

Soil Vapor Intrusion in the State of New York", the following activities (at a minimum) should be conducted during routine maintenance:

a. A visual inspection of the complete system (e.g., vent fan, piping, etc.);
b. Identification and repair of leaks; and
c. Inspection of the exhaust or discharge point to verify no air intakes have been located nearby.

As appropriate preventative maintenance (e.g., replacing the fan), repairs and/or adjustments should be made to the system to ensure its continued effectiveness at mitigating exposures related to soil vapor intrusion. The need for preventative maintenance will depend upon the life expectancy and warranty for the specific part, as well as visual observations and PID readings over time. The need for repairs and/or adjustments will depend upon the results of a specific activity compared to that obtained when system operations were initiated.

In addition to the routine O&M activities described here, the building's owner and occupant will be given information sheets that explain the system's operation, maintenance and monitoring. Therefore, at any time during the system's operation, the building's owner may check that the system is operating properly.

Records will be maintained by the Owner and Clear View and the proper operation of the sub-slab depressurization system will be certified by a P.E. on an annual basis.

2.4 POTENTIAL SHUTDOWN PROCEDURES

The NYSDEC will be kept apprised of all activities related to the SSDS as part of the Site Management Plan. Generally, mitigation processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

The SSDS will remain operational until it is no longer necessary to address current or potential exposures. This will be determined by periodic vapor/air sampling and communications with the NYSDEC and the NYSDOH. (agencies).

The SSDS will not be shut down unless approved in advance by the NYSDEC and the NYSDOH. It is understood that the NYSDEC and the NYSDOH will likely require sub-slab soil vapor and indoor air sampling to support shutdown. The Volunteer will provide a shutdown plan to the agencies proposing sampling locations and frequencies. The Volunteer will await NYSDEC and NYSDOH review and approval before taking any action.

Operation of the active SSDS is expected to rapidly remove any residual contaminated vapor that may exist below the building floor slab. Routine monitoring will be performed using a Photo Ionization Detector (PID) to perform field screening within the building interior, the exterior areas, and of the blower / vacuum pump discharge.

After one year of operation as an active SSDS, air samples will be collected from the system (pre-treatment) as well as in indoor air. Indoor air samples will be collected over an eight hour period to simulate the exposure scenario for a work place with a single shift. All samples will be analyzed by EPA Method TO-15. Based on this data the system components may be adjusted. PID readings would continue on a monthly basis until no contaminants are detectable or up to one year.

Thereafter PID monitoring will be performed monthly until no contaminants are detected for three consecutive months. Once this occurs the system will be turned off for a period of one week, and then restarted with PID sampling repeated immediately thereafter. If no "rebound" is detected then the system will remain off until the end of the month, then retested.

The SSDS will not be shut down unless approved in advance by the NYSDEC and the NYSDOH. It is understood that the NYSDEC will likely require air sampling to support shutdown.

2.5 INSPECTIONS AND NOTIFICATIONS

Compliance with this SMP by the Volunteers successors and assigns;

- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;
- Soil vapor and other environmental or public health monitoring must be performed as defined in this SMP; and
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP.

The site owner will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the site are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP.

NYSDEC retains the right to access such the site at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide

inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP ;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3.0). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 3.9).

If an emergency, such as a natural disaster or an unforeseen failure of the engineering control (SSDS) occurs, an inspection will be conducted by a qualified environmental professional within 5 days of the event to verify the effectiveness of the system.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Brownfield Cleanup Agreement (BCA), 6NYCRR Part 375, and/or Environmental Conservation Law.
- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, with written confirmation within 7 days that includes a

summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

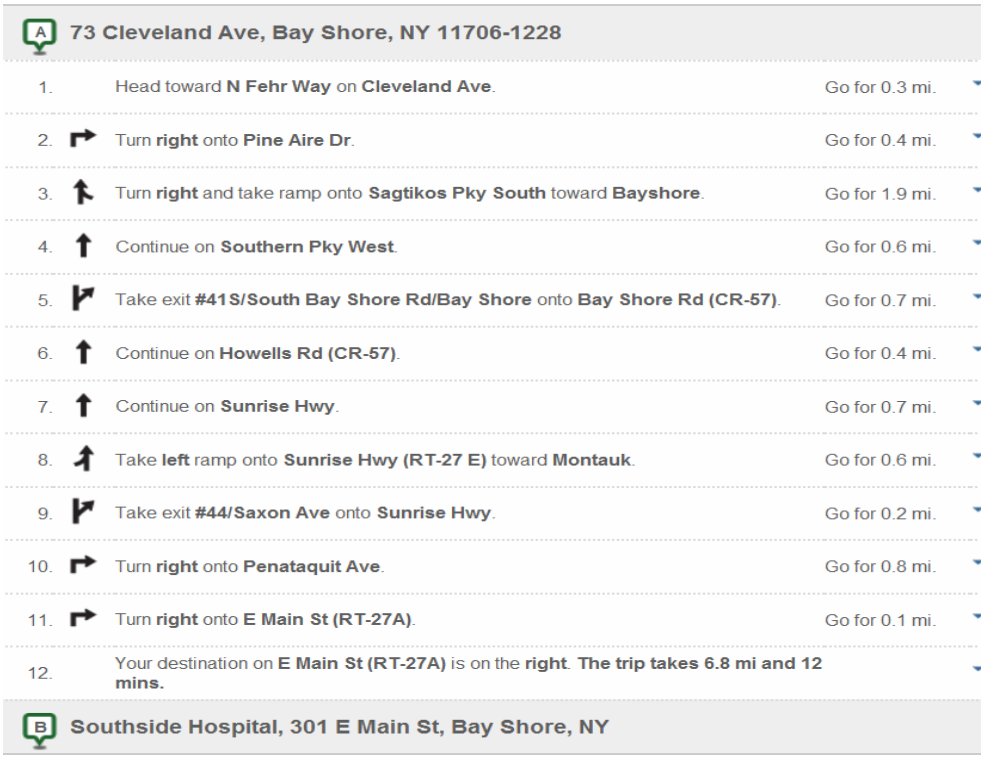
- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Brownfield Cleanup Agreement (BCA) and all approved work plans and reports, including this SMP
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.4.3 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list in Appendix B. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to J.R. Holzmacher, P.E. LLC. These emergency contact lists must be maintained in an easily accessible location at the site.

2.4.4 Map and Directions to Nearest Health Facility

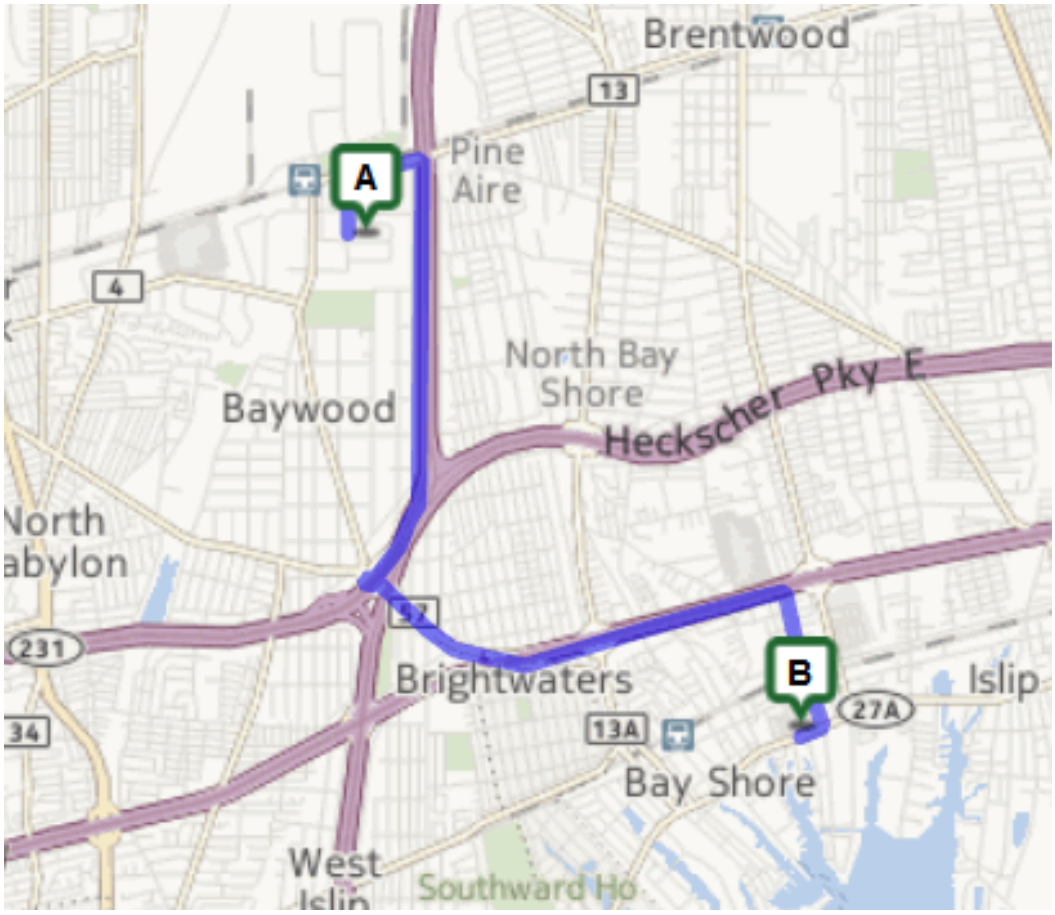
Site Location: 73 Cleveland Ave, Bay Shore NY 11706
Nearest Hospital Name: Southside Hospital
Hospital Location: 301 E Main Street, Bay Shore NY
Hospital Telephone: (631) 968-3000
Driving Directions to Southside Hospital Bay Shore



A	**73 Cleveland Ave, Bay Shore, NY 11706-1228**		
1.		Head toward **N Fehr Way** on **Cleveland Ave**.	Go for 0.3 mi.
2.	↱	Turn **right** onto **Pine Aire Dr**.	Go for 0.4 mi.
3.	↱	Turn **right** and take ramp onto **Sagtikos Pky South** toward **Bayshore**.	Go for 1.9 mi.
4.	↑	Continue on **Southern Pky West**.	Go for 0.6 mi.
5.	↗	Take exit **#41S/South Bay Shore Rd/Bay Shore** onto **Bay Shore Rd (CR-57)**.	Go for 0.7 mi.
6.	↑	Continue on **Howells Rd (CR-57)**.	Go for 0.4 mi.
7.	↑	Continue on **Sunrise Hwy**.	Go for 0.7 mi.
8.	↰	Take **left** ramp onto **Sunrise Hwy (RT-27 E)** toward **Montauk**.	Go for 0.6 mi.
9.	↗	Take exit **#44/Saxon Ave** onto **Sunrise Hwy**.	Go for 0.2 mi.
10.	↱	Turn **right** onto **Penataquit Ave**.	Go for 0.8 mi.
11.	↱	Turn **right** onto **E Main St (RT-27A)**.	Go for 0.1 mi.
12.		Your destination on **E Main St (RT-27A)** is on the **right**. **The trip takes 6.8 mi and 12 mins.**	
B	**Southside Hospital, 301 E Main St, Bay Shore, NY**		

Total Distance: 6.8 miles
Total Estimated Time: 12 minutes

Map Showing Route from the Site to the Hospital:



2.4.5 Response Procedures

As appropriate, the fire department and other emergency response groups will be notified immediately by telephone of the emergency. The emergency telephone number list is found within Appendix B. The list will also be posted prominently at the site and made readily available to all personnel at all times.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

The Site Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site. Monitoring of other Engineering Controls is described in Section 4.0, Operation and Maintenance Plan. This Plan may only be revised with the approval of NYSDEC.

3.2 INITIAL MONITORING OF THE SSDS

Once the SSDS modifications have been completed each component of the new active system will be tested to verify performance. The main performance parameters relate to the air flow rate and vacuum gauge readings associated with operation of the regenerative blower / vacuum pump.

Air flow rate readings will be accomplished using a pilot tube inserted into one side of the blower exhaust tee while the other side is blocked. The air flow measurements and vacuum gauge readings will be collected with the blower running with all three soil vapor extraction (SVE) screens open, with each screen individually, and with three combinations of two of the three SVE points open as follows:

SVE - North	SVE - Center	SVE - South	Air Flow (CFM)	Vac. Gauge (in. w.c.)		
				North	Center	South
open	closed	closed				
closed	open	closed				
closed	closed	open				
open	open	closed				
open	closed	open				
closed	open	open				
open	open	open				
closed	closed	closed				
open	open	open	Blower off			

Air flow readings will be collected only during the initial test to establish a correlation between flow rate and the vacuum gauge readings. Thereafter, only the vacuum gauge readings will be collected during routine system monitoring.

The system design is based on establishing an "area of influence" in which the blower / vacuum pump will capture any fugitive vapors. Startup testing activities are intended to verify the operating parameters of the blower / vacuum pump and the extent of the area of influence, which is a function of the soils in the vicinity of the SVE points.

The purpose of the SSDS system in this case is not to capture a defined area of some identified area of contamination but rather to exert a vacuum beneath the slab of the entire eastern side of the building. Startup of the blower / vacuum pump will be augmented with field measurements of water levels within the four existing monitoring wells. If a partial vacuum can be induced at the monitoring wells a small but measureable increase in water levels will be seen.

While it is not required to establish a partial vacuum at the wells located east of the building, confirmation of such a vacuum will demonstrate that the blower / vacuum pump is more than adequately sized to induce a partial vacuum beneath the slab. The monitoring wells will be used for convenience as existing measuring points that can be easily accessed.

After the SSDS system modifications are completed, the vacuum gauge and air flow readings tabulated above will be collected, water levels will be measured and then the blower will be left off for a period of one week. Water levels in each of the four monitoring wells will be measured prior to restarting the blower and also one hour, four hours, one day and seven days following placing the blower back into operation.

This information will be analyzed to predict vacuum gauge readings below which sub slab depressurization is no longer achieved. These readings will be used as the minimum performance threshold for operation of the blower / vacuum pump. Once routine operation of the system is achieved the final component of post construction system evaluation will include a final round of indoor and outdoor air sampling.

As per the Decision Document dated January 2013, a system communication test will be conducted to verify the effectiveness of the active system. Indoor air sampling would be conducted 30 days after system start-up and during the 2013-14 heating season. Indoor air samples will be collected from the waiting and office areas as well as in the operation areas. If post-mitigation sampling results do not indicate a significant decrease in the concentrations of VOCs in indoor air due to vapor intrusion, the reason will be identified and corrections made.

Following verification of system operation and mechanical effectiveness, an analysis of any contaminants contained in the blower / vacuum pump discharge will be performed. This analysis will include a mass balance and the airflow dilution models contained in the DAR-1 software program. The DAR-1 results will determine if the SSDS discharge airflow needs to be treated prior to discharge.

3.3 ROUTINE MONITORING (POST-SSDS START-UP)

This Monitoring Plan describes the methods to be used for:

- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Reporting requirements; and
- Annual inspection and periodic certification.

Quarterly monitoring of the performance of the SSDS will be conducted for the first year. The frequency thereafter will be determined by the NYSDEC. Trends in contaminant levels in soil vapor, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in the below Table and outlined in detail in this section and Section 3.4 below.

3.4 MONITORING/INSPECTION SCHEDULE

Monitoring Program	Frequency*	Matrix	Analysis
SSDS Inspection	Quarterly	N/A	N/A
Site Wide Inspection	Annually	N/A	N/A

*** THE FREQUENCY OF EVENTS WILL BE CONDUCTED AS SPECIFIED UNTIL OTHERWISE APPROVED BY NYSDEC AND NYSDOH**

3.5 MEDIA MONITORING PROGRAM

The soil vapor is the only media that will be monitored and is discussed below.

Sub-slab soil vapor monitoring will be performed on a periodic basis as specified in the approved SSDS design document to assess the performance of the remedy. The scope of work for the indoor air sampling will consist of a building inspection and associated observations and field measurements, followed by collection of indoor air samples, sub-slab vapor samples, and ambient/background air samples for laboratory analyses.

If damage to the building slab is observed or activities that may promote subsurface vapor intrusion are planned, indoor air and/or sub-slab vapor samples will be collected for laboratory analysis from the potentially affected area (s).

3.6 SAMPLING PROCEDURES

The scope of work for any required indoor air sampling will consist of:

- The completion of a building inspection/survey as per NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York;
- The collection of two (2) indoor air samples, two (2) sub-slab vapor samples, and one (1) ambient/background air sample for laboratory analyses to be completed during the heating season (November 1 – March 31);

- Obtain Photoionization Detector (PID) measurements from the sampling ports on the roof while the blower is in operation;
- Prior to sample collection, the tubing will be purged of a minimum of one and a maximum of three times the volume of the sampling tube, ensuring that the samples are representative of the sub-slab material. Flow rate for the purge will be kept below 0.2 liters/minute;
- After the purge is completed, the tubing will be attached to a 6-Liter Summa® canister fitted with an 8-hour flow regulator. Prior to sample collection, the initial pressure (vacuum readings) will be recorded. After eight hours, the canister will be closed and the end pressure recorded;
- Obtain Photoionization Detector (PID) measurements at each of the SVE extraction wells from the sampling ports while the fan is in operation; and
- Obtain pressure and PID measurements from the sub-slab extraction points while the SSDS is in operation.

3.7 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, the Site-Wide Inspection form will be completed (Appendix C). The form will compile sufficient information to assess the following:

- An evaluation of the condition and continued effectiveness of the SSDS;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with schedules included in the Operation and Maintenance Plan; and
- Confirmation that site records are up to date.

3.8 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the approved procedures in the RI work prepared for the Site by JRH and the requirements of the Quality Assurance

Manual (QAM) of the laboratory, Chemtech of Mountainside, New Jersey (Appendix E). Main Components of the QAM and Work Plan include:

Sample Tracking and Custody;

- Calibration Procedures:
    - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
    - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;

Internal QC and Checks;

- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.
- Sampling Program:
    - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with the NYSDEC ASP Category B requirements.
    - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.

3.9 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be subject to approval by NYSDEC and submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report or by letter report which will also be prepared, if required by NYSDEC, subsequent to each sampling event. The report (or letter) will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc.);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format); and
- Any observations, conclusions, or recommendations;

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized in the below Table.

Schedule of Monitoring/Inspection Reports

Task	**Reporting Frequency***
Sub-slab Soil Vapor/ Indoor Air	As requested
Sub-slab Depressurization System Inspection	Quarterly
Site-wide Inspection Report	Annually, to be submitted with Annual Certification Report

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This Operation and Maintenance Plan (O&M Plan) describes the measures necessary to operate, monitor, and maintain the mechanical components of the Sub-slab Depressurization System (SSDS) in operation at the site. This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the site to operate and maintain the SSDS;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in site conditions or the manner in which the SSDS are operated and maintained.

A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 SUB-SLAB DEPRESSURIZATION SYSTEM OPERATION AND MAINTENANCE

4.2.1 Scope

The operation and maintenance requirements for the SSDS system include procedures related to the following processes: start-up, routine operation, shutdown, general maintenance and monitoring requirements, and record keeping.

The current system uses the same riser pipes and subsurface piping as was installed for the original system. The passive system has been operating since March 2009. The SSDS system was upgraded to active on July 17, 2013 and consists of the items listed in Section 2.2.

4.2.2 System Start-Up and Testing

The passive system was monitored weekly for the first two months to verify air balance between the two legs. Start-up procedures for the active SSDS are provided in Section 2.3.

4.2.3 System Operation: Routine Operation Procedures

General procedures for the routine operation include:

- Adjustment and repairs are to be made on an as needed basis;
- The SSDS must be operational for 24 hours per day and seven days per week.

4.2.4 System Operation: Routine Equipment Maintenance

The equipment will be inspected and monitored on a quarterly basis unless an event precludes a more expedited inspection.

4.2.5 System Operation: Non-Routine Equipment Maintenance

If damage to the system is encountered during a scheduled inspection or during routine work on the roof of the building, attempts to repair the system will be initiated by the Owner.

4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

The SSDS was designed to be a basic, comprehensive system that will assist in the protection of the occupants of the building. The SSDS was started up on July 17, 2013. The SSDS system will be monitored frequently in the months that follow the start-up and the frequency will then be reduced to monthly, then quarterly.

The system does have an alarm indicating when the system is not operating.

The property is currently paved and occupied by an 8,000 square foot building. This cover will stay in place, however, if modified the site cover will allow for commercial use only. Where a soil cover may be required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d). The soil cover will be placed over a demarcation layer. The excavation will be backfilled with soil meeting the backfill material

requirements for commercial use as set forth in 6 NYCRR Part 375-6.7(d) with the upper six inches of the soil of sufficient quality to maintain a vegetative layer.

4.3.1 Monitoring Schedule

Baseline Monitoring was completed by Clear View technicians soon after the passive SSDS installation was completed.

- The system monitoring consisted of weekly visits for the first two months to check general system operation, record gauge readings for each of the SSDS legs, check and empty moisture separator, as necessary, and record all data in an on-Site log. The visits were reduced to monthly until October 2011, when they were reduced to quarterly.
- Moving forward, monitoring events consisting of (PID readings and pressure readings from the two legs of the SSDS) will be completed on a quarterly basis.

Inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSDS has been reported or an emergency occurs that is deemed likely to affect the operation of the system.

4.3.2 General Equipment Monitoring

A visual inspection of the complete system will be conducted during the monitoring event. The SSDS components to be monitored include the vacuum blower, the system piping, and the pressure gauges.

A complete list of components to be checked is provided in the Quarterly Inspection Checklist, presented in Appendix C. If any equipment readings are not within their typical range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan are required immediately, and the SSDS restarted.

4.3.3 System Monitoring Devices and Alarms

The SSDS has an alarm. If the system is shut down due to an electrical failure an audible noise is periodically made and a light comes on.

The system also has pressure gauges that verify air movement through individual legs of the system.

4.3.4 Sampling Event Protocol

Please see Section 3.6 for a description of sampling procedures.

4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on-file on-site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report, as specified in the Section 8.0 of this SMP.

4.4.1 Routine Maintenance Reports

Checklists or forms (Appendix C) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

4.4.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

4.5 INSTITUTIONAL CONTROLS

A series of Institutional Controls will be required to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface; and, (3) limit the use and development of the site to commercial uses only. Adherence to these Institutional Controls will be implemented under this Site Management Plan.

Compliance with this SMP by the Grantor and the Grantor's successors and assigns;

- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP.
- Soil vapor and other environmental or public health monitoring must be performed as defined in this SMP;

- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP;

Site restrictions that apply to the Controlled Property are:

The property may only be used for restricted commercial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed.

- The property may not be used for a higher level of use, such as restricted residential, use.
- All future activities on the property that will disturb subsurface material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed in the vicinity of the current building, and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

4.6 EXCAVATION PLAN

The site has been remediated for restricted commercial use. Any future intrusive work that will penetrate the soil cover or cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with an Excavation Work Plan (EWP). Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, an up to date HASP and CAMP will be submitted with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Sections 6.0 and 7.0 of this SMP. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as building damage or a flooding event that may affect the SSDS.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms for the system and can be found in Appendix C. Additionally, a general site-wide inspection form will be completed during the annual site-wide inspection (also Appendix C). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC certification to confirm that the:

- The SSDS is in place, is performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items;

- The site remedy continues to be protective of public health and the environment and is performing as designed.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a Professional Engineer licensed to practice in New York State will prepare, sign and seal the following certification:

For each institutional or engineering control identified for the site, I certify that all of the following statements are true:

- The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;
- Access to the site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and
- The information presented in this report is accurate and complete.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] for the site.

The signed certification will be included in the Periodic Review Report described below.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the NYSDEC every year, beginning eighteen (18) months after the Certificate of Completion is issued. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the full site. The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs required by the remedy for the site;
- Results of the required annual site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedences highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
    - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;

  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
  - The overall performance and effectiveness of the remedy.

- A performance summary for all treatment systems at the site during the calendar year, including information such as:
  - The number of days the system was run for the reporting period;
  - The average, high, and low flows per day;
  - The contaminant mass removed;
  - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
  - A description of the resolution of performance problems;
  - A summary of the performance, effluent and/or effectiveness monitoring; and
  - Comments, conclusions, and recommendations based on data evaluation.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Region 1 Office, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

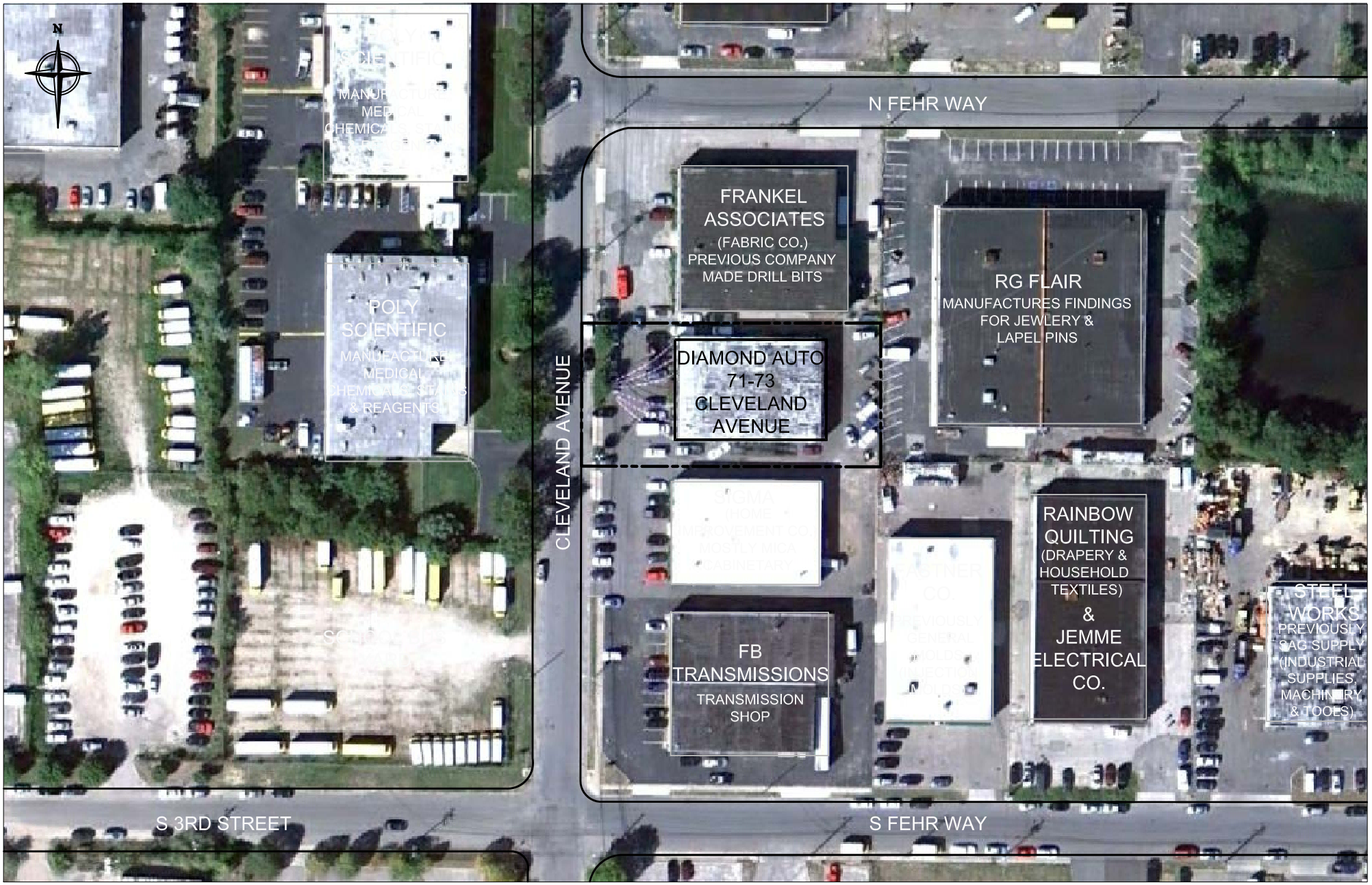
5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

6.0 REFERENCES

- Brownfield Cleanup Agreement (Index # W1-1041-05-01, Site # C152196, November 2005.
- Brownfield Site Cleanup Program, Citizen Participation Plan, Volunteer: Diamond Auto Service, Inc., March 2006
- Remedial Investigation Work Plan, Diamond Auto Service, Inc., January 2006
- Remedial Investigation Report, Diamond Auto Service, Inc., 71-73 Cleveland Avenue, Bay Shore, New York Revised September 2008
- AAR/RP, Diamond Auto Service, Inc., November 23, 2009 (Revised July 7, 2010)
- Sampling Report, Diamond Auto Service, Inc., December 9, 2011

Figures



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TITLE:

LOCATION MAP

DIAMOND AUTO SERVICE, INC.
71-73 CLEVELAND AVENUE
BAY SHORE, NEW YORK

DWN:	SCALE:	DATE:	PROJECT NO.:
AJZ	1" = 100'	1-18-13	Diamo 11-01
CHKD:	APPD:	REV.:	NOTES:
JMD	JMD	-	-

FIGURE NO.: 1

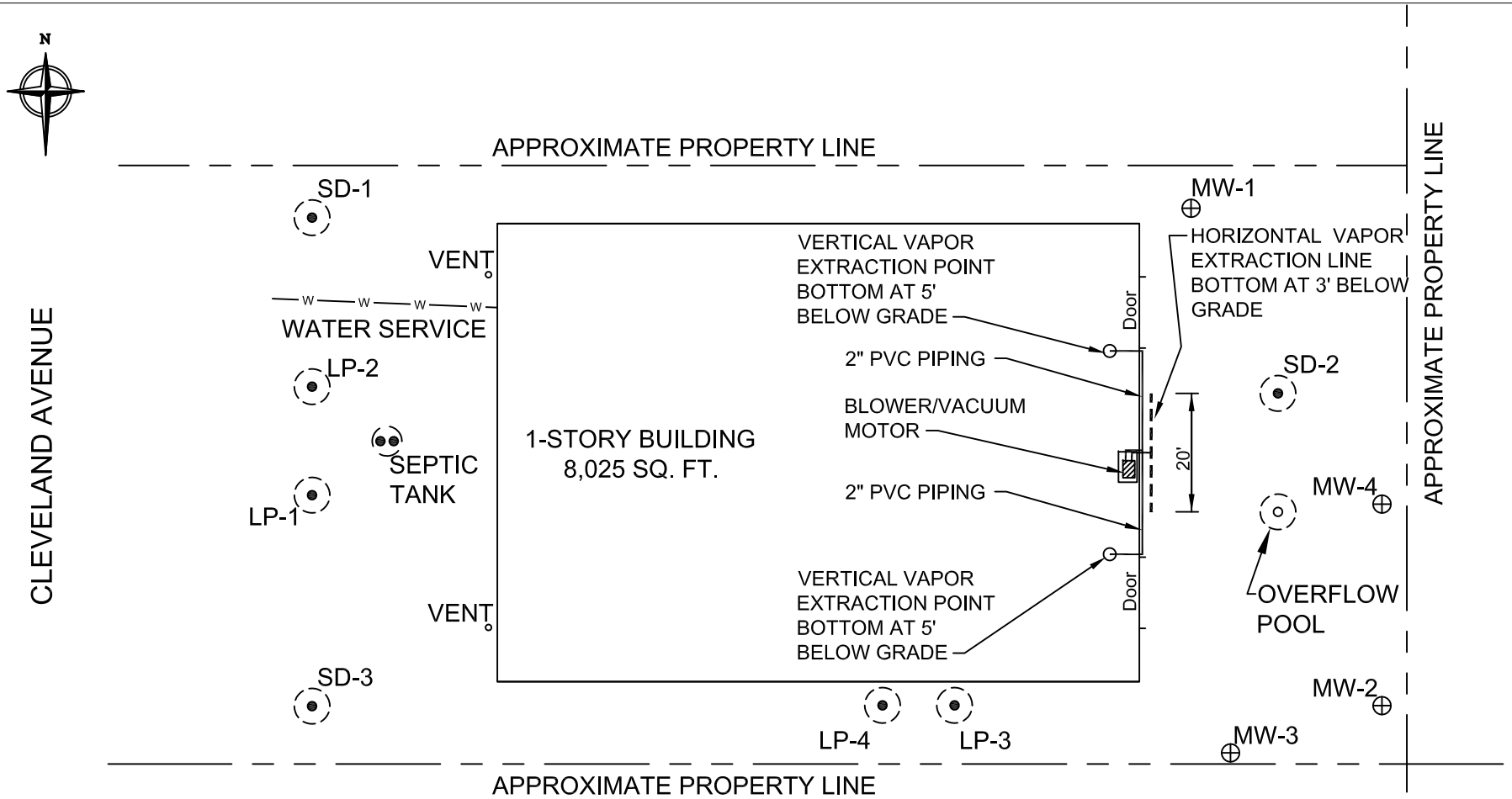

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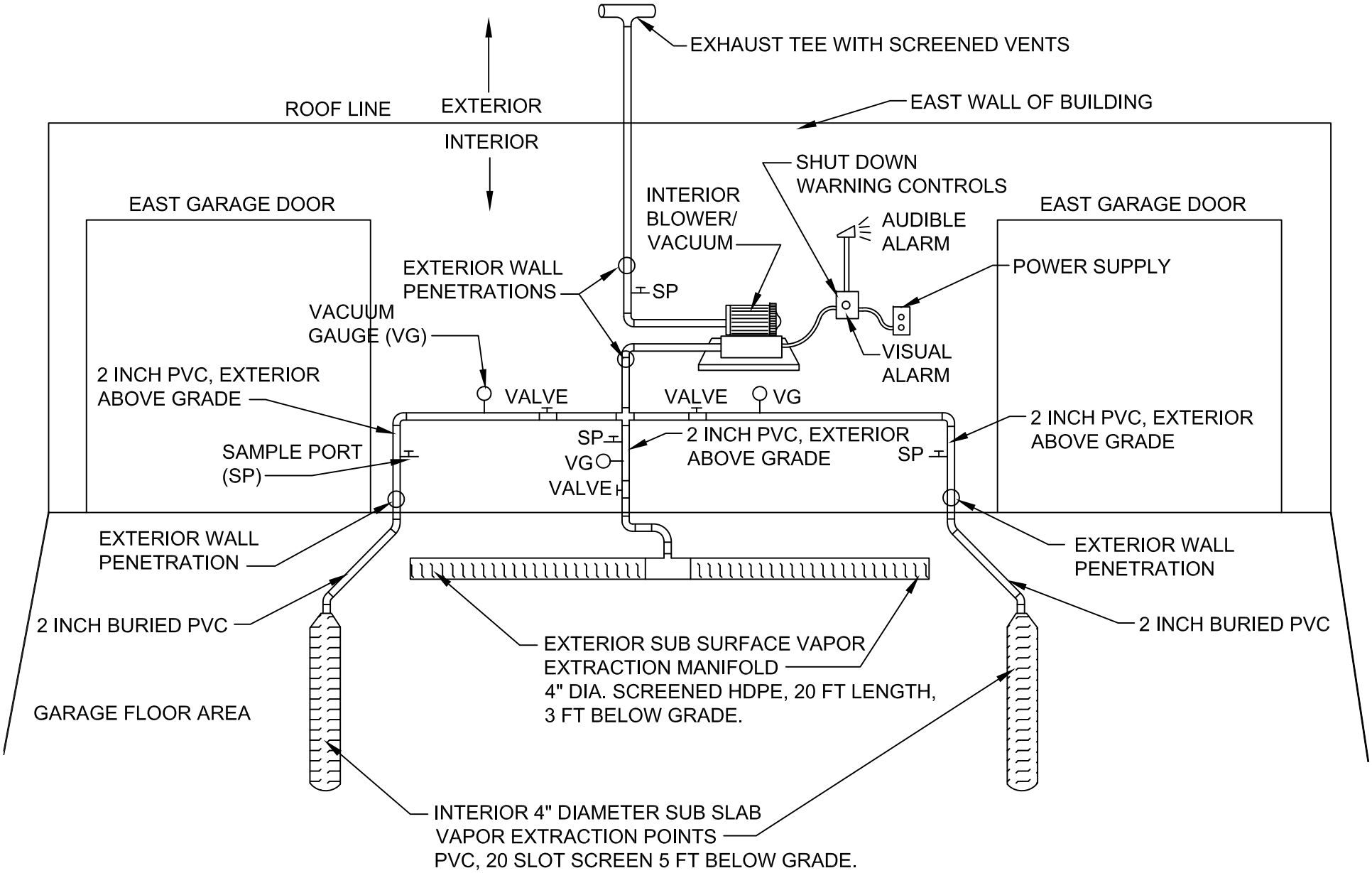
FIGURE NO.: 2



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TITLE:
Sub Slab Depressurization System Layout
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FIGURE NO.: 3

Appendix A
Approved SSDS Design Document

J.R. Holzmacher P.E., LLC

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June 27, 2013

Mr. John Sheehan
NYSDEC – Region 1
SUNY @ Stony Brook
50 Circle Road
Stony Brook, NY 11790-3409

Re: Diamond Auto Service, Inc
71-73 Cleveland Avenue
Bay Shore, New York
Index # W1-1041-05-01
Site # C152196
SSDS System Design Document - Final

Dear Mr. Sheehan:

We have prepared the following Sub Slab Depressurization System (SSDS) Design Document in response to the request from your office in an email dated January 15, 2013 and the additional comments transmitted February 14, 2013, May 10, 2013 and June 27, 2013.

Background

An existing passive SSDS was constructed in response to sub slab vapor detections during 2007/2008 and has been in operation at this site since prior to 2009. While there have been no significant detections of groundwater contamination in the on-site monitoring wells within the last ten years, the current modifications to the system are being performed in an effort to mitigate the elevated levels of Volatile Organic Compounds (VOCs) detected in the soil vapor beneath the building's slab.

Figure 1 indicates the site location and Figure 2 depicts the building and floor plan configuration indicating the location of the existing SSDS. The current SSDS consists of two four-inch diameter slotted PVC pipes installed vertically, open from the base of the slab to five feet below grade (groundwater at the time). The two vertical vapor collection points work in conjunction with a 20 foot length of four- inch diameter perforated High Density Polyethylene (HDPE) pipe set three feet below finished grade in a bed of gravel. This four-inch pipe is installed horizontally just outside the exterior of the building, parallel to, and two feet from, the east wall. The slotted subsurface pipes were connected together using 2-inch diameter non perforated PVC pipe. This piping was installed to convey collected sub slab gas out through the exterior wall, then vertically above the roof line terminating at a turbine fan for discharge to atmosphere.

Proposed Active SSDS Components

The proposed modifications to the passive SSDS required to have it perform as an active SSDS are indicated on Figure 3. The components to be installed are as follows:

1. A cut-in to the existing 2-inch PVC piping at the vertical run along the exterior wall to install two 90-degree bends, run two 2-inch PVC pipes through the wall, and connect to a new blower/vacuum motor on the interior east wall of the building. Power switches to meet the requirements of the National Electric Code will be installed and will tie in to the existing power distribution panel with a dedicated circuit breaker for the blower/vacuum motor. Installation of new audible and visual alarm components to indicate system status conditions will also be installed on the interior east wall.

The manufacturer specifications for the new Fuji regenerative blower are as follows;

Item	Regenerative Blower
Inlet/Outlet (In.)	1-1/4 (F)NPT
HP	0.56
Voltage	200-230/460
Phase	3
Full Load Amps	1.7/.85
Max. Pressure (in WC)	50
Open Flow Positive Pressure (CFM)	56
Max. Vacuum H20 (In. WC)	45
Min. CFM	17
SCFM @ 10 Pressure In./Water	51
SCFM @ 10 Vacuum In./Water	49
Max. Ambient Temp. (F)	104
Base Material	Aluminum Alloy
Housing	Aluminum Alloy
Impeller Material	Aluminum Alloy
Shaft Seal	Dustproof, Protects Bearings from Contaminated Air and Foreign Particles
Overall Length (In.)	10
Overall Height (In.)	10-1/8
Overall Depth (In.)	11-5/8
For Use With	Air and Noncombustible, Noncorrosive, Nonexplosive Gases
Standard	Class B NEMA Insulation

2. Existing exterior piping will have three new manually operated PVC ball valves installed above grade to allow isolation of each soil vapor extraction point.

3. Three new PVC sample ports with PVC ball valves for shut-offs will be installed above grade in each independent vapor extraction line before they join to one. In addition one new PVC sample port with a PVC ball valve for shut off will be

installed after the blower discharge to allow periodic collection of air samples. These sample ports are shown on Figure 3.

4. Three new vacuum gauges with manual read faces will be installed in each independent vapor extraction line above grade before they join to one.

Basis of SSDS Design

The purpose of the original passive SSD system was to reduce the likelihood of airborne contaminants entering the building, which remains in active use.

During 2007 and early 2008 measurable VOC concentrations were detected within the work shop and also below the floor slab. It is believed that the elevated vapor contaminant concentrations beneath the slab had built up over the years and were residual in nature. It is also suspected that the VOC detections in the work shop area arose, at least in part, to use of brake cleaning fluid that contained perchloroethene (PCE). This cleaner has since been replaced with one that does not contain PCE. In addition the floor slab was sealed as a precautionary measure.

The goal of the SSDS design is to establish a partial vacuum underneath the floor slab to prevent migration of contaminant laden vapors into the occupied work shop space, rather than to exert a capture zone outward to a particular radius. Effectively, the goal is to make sure that air will leak from the work space down into the sub slab rather than the other way around. Verification of the establishment of this partial vacuum will be achieved through field measurements of the actual vacuum induced as well as observed increases in water levels within the four on-site monitoring wells.

The blower / vacuum pump was selected as a typical size for a medium sized building slab and is believed to be more than twice as large as the minimum acceptable size to achieve the stated goals.

Performance Evaluation

Once the SSDS modifications have been completed each component of the new active system will be tested to verify performance. The main performance parameters relate to the air flow rate and vacuum gauge readings associated with operation of the regenerative blower / vacuum pump.

Air flow rate readings will be accomplished using a pitot tube inserted into one side of the blower exhaust tee while the other side is blocked. The air flow measurements and vacuum gauge readings will be collected with the blower running with all three soil vapor extraction (SVE) screens open, with each screen individually, and with three combinations of two of the three SVE points open as follows:

SVE - North	SVE - Center	SVE - South	Air Flow (CFM)	Vac. Gauge (in. w.c.)		
				North	Center	South
open	closed	closed				
closed	open	closed				
closed	closed	open				
open	open	closed				
open	closed	open				
closed	open	open				
open	open	open				
closed	closed	closed				
open	open	open	Blower off			

The air flow readings will be collected only during the initial test to establish a correlation between flow rate and the vacuum gauge readings. Thereafter, only the vacuum gauge readings will be collected during routine system monitoring.

The system design is based on establishing an "area of influence" in which the blower / vacuum pump will capture any fugitive vapors. Startup testing activities are intended to verify the operating parameters of the blower / vacuum pump and the extent of the area of influence, which is a function of the soils in the vicinity of the SVE points.

The purpose of the SSDS system in this case is not to capture a defined area of some identified area of contamination but rather to exert a vacuum beneath the slab of the entire eastern side of the building. Startup of the blower / vacuum pump will be augmented with field measurements of water levels within the four existing monitoring wells. If a partial vacuum can be induced at the monitoring wells a small but measureable increase in water levels will be seen.

While it is not required to establish a partial vacuum at the wells located east of the building, confirmation of such a vacuum will demonstrate that the blower / vacuum pump is more than adequately sized to induce a partial vacuum beneath the slab. The monitoring wells will be used for convenience as existing measuring points that can be easily accessed.

After the SSDS system modifications are completed, the vacuum gauge and air flow readings tabulated above will be collected, water levels will be measured and then the blower will be left off for a period of one week. Water levels in each of the four monitoring wells will be measured prior to restarting the blower and also one hour, four hours, one day and seven days following placing the blower back into operation.

This information will be analyzed to predict vacuum gauge readings below which sub slab depressurization is no longer achieved. These readings will be used as the minimum performance threshold for operation of the blower / vacuum pump. Once routine operation of the system is achieved the final component of post construction system evaluation will include a final round of indoor and outdoor air sampling.

Following verification of system operation and mechanical effectiveness, an analysis of any contaminants contained in the blower / vacuum pump discharge will be performed. This analysis will include a mass balance and the airflow dilution models contained in the DAR-1 software program. The DAR-1 results will determine if the SSDS discharge airflow needs to be treated prior to discharge.

SSDS Shut Down Procedures

The NYSDEC will be kept apprised of all activities related to the SSDS as part of the Site Management Plan.

The SSDS will remain operational until it is no longer necessary to address current or potential exposures. This will be determined by periodic air sampling and communications with the NYSDEC.

Operation of the active SSDS is expected to rapidly remove any residual contaminated vapor that may exist below the building floor slab. Routine monitoring will be performed using a Photo Ionization Detector (PID) to perform field screening within the building interior, the exterior areas and of the blower / vacuum pump discharge.

After one year of operation as an active SSDS, air samples will be collected from the system (pre-treatment) as well as in indoor air. Indoor air samples will be collected over an eight hour period to simulate the exposure scenario for a work place with a single shift. All samples will be analyzed by EPA Method TO-15. Based on this data the system components may be adjusted. PID readings would continue on a monthly basis until no contaminants are detectable or up to one year.

Thereafter PID monitoring will be performed monthly until no contaminants are detected for three consecutive months. Once this occurs the system will be turned off for a period of one week, and then restarted with PID sampling repeated immediately thereafter. If no “rebound” is detected then the system will remain off until the end of the month, then retested.

The SSDS will not be shut down unless approved in advance by the NYSDEC. It is understood that the NYSDEC will likely require air sampling to support shutdown. The Volunteer will provide a shutdown plan to the NYSDEC proposing air testing locations and frequencies. The Volunteer will await NYSDEC review and approval before taking any action.

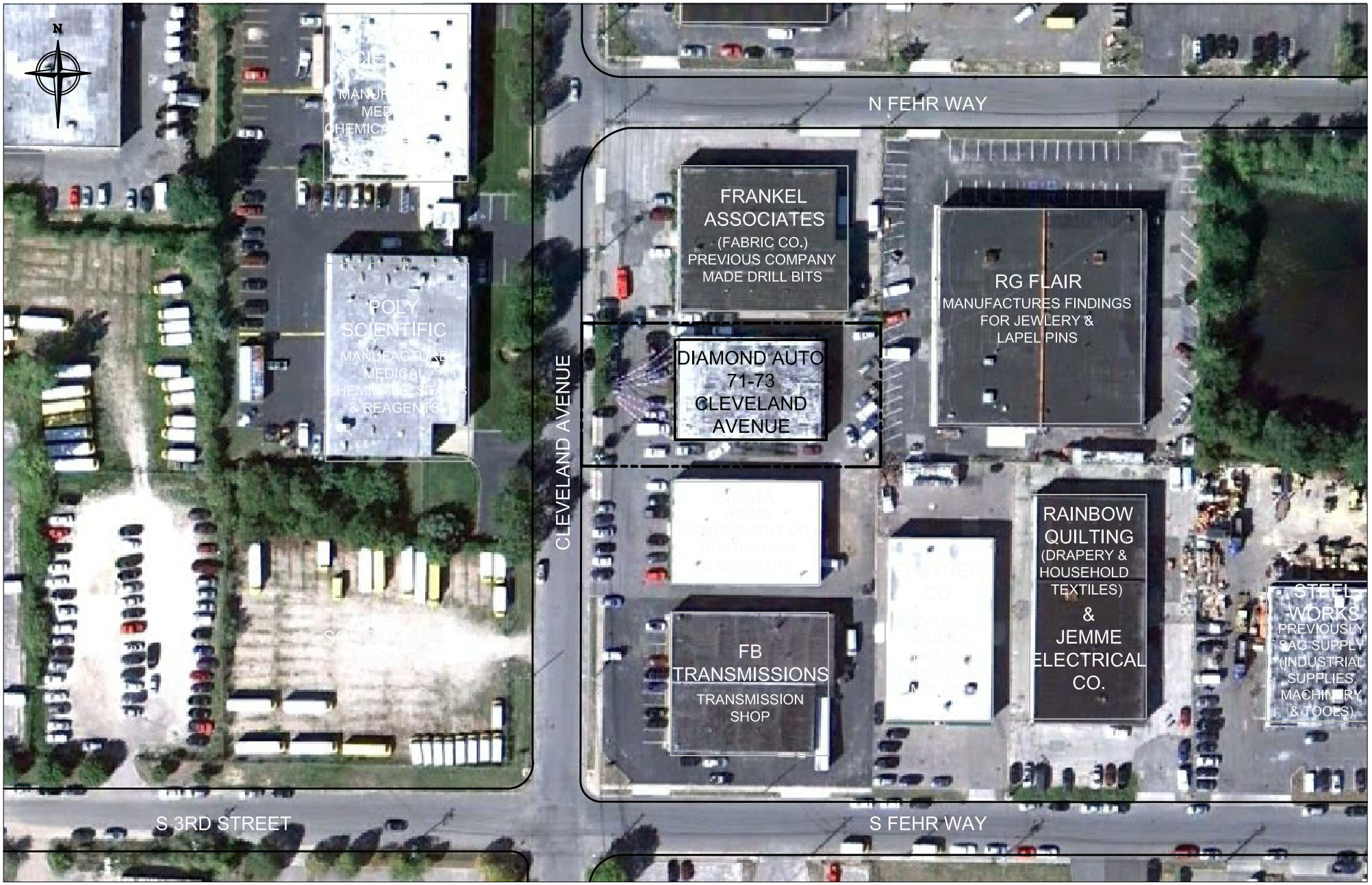
Please call if you have any questions or would like to further discuss this project.

Sincerely,
J.R. HOLZMACHER, PE LLC

J. Robert Holzmacher P.E.
Principal

CC Dave Watson, Diamond Auto Service, Inc.
Ken Watson, Clear View Environmental

Figures



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TITLE:

LOCATION MAP

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71-73 CLEVELAND AVENUE
BAY SHORE, NEW YORK

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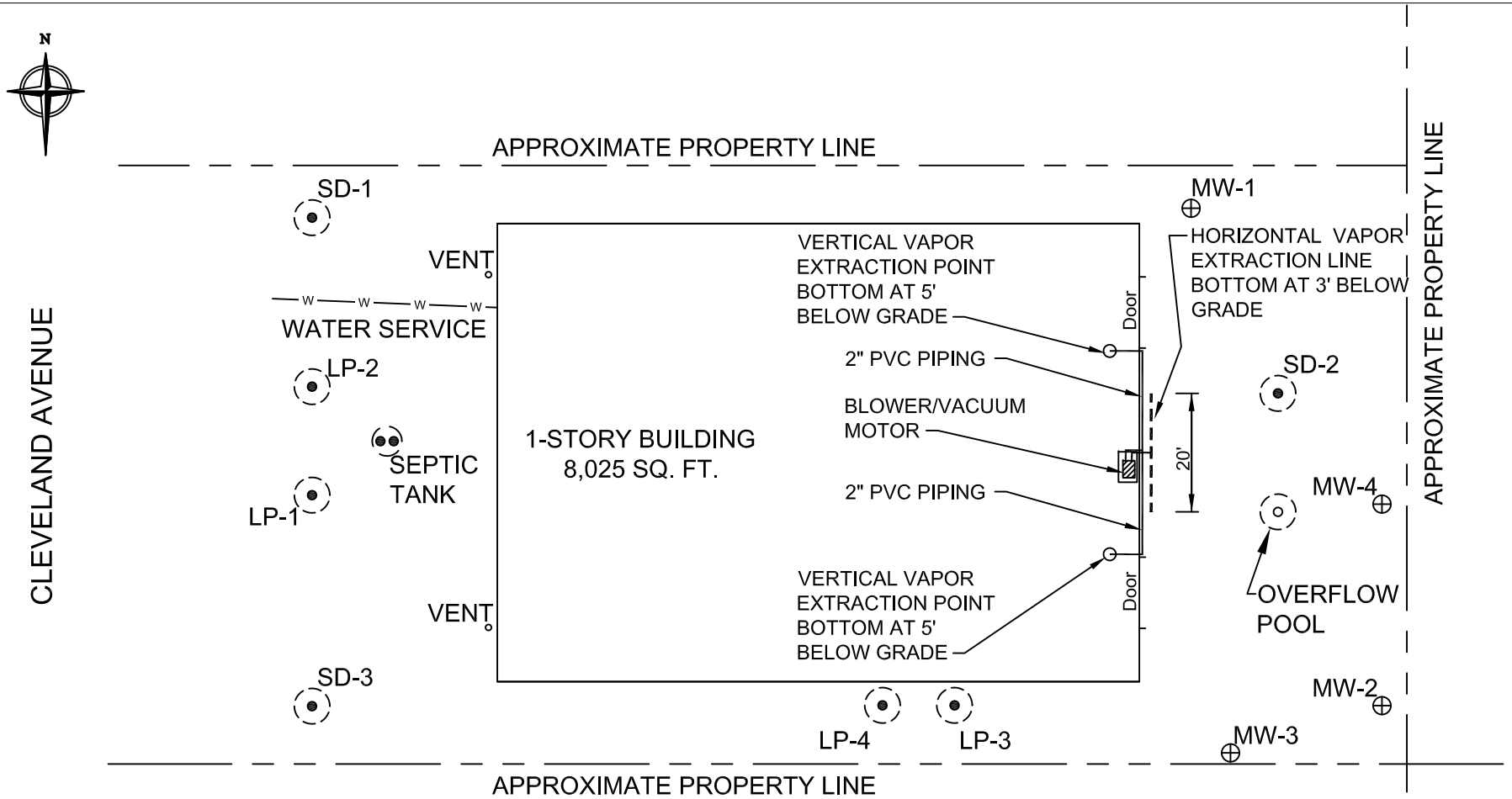
FIGURE NO.: 1



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TITLE:

BUILDING LAYOUT

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FIGURE NO.: 2

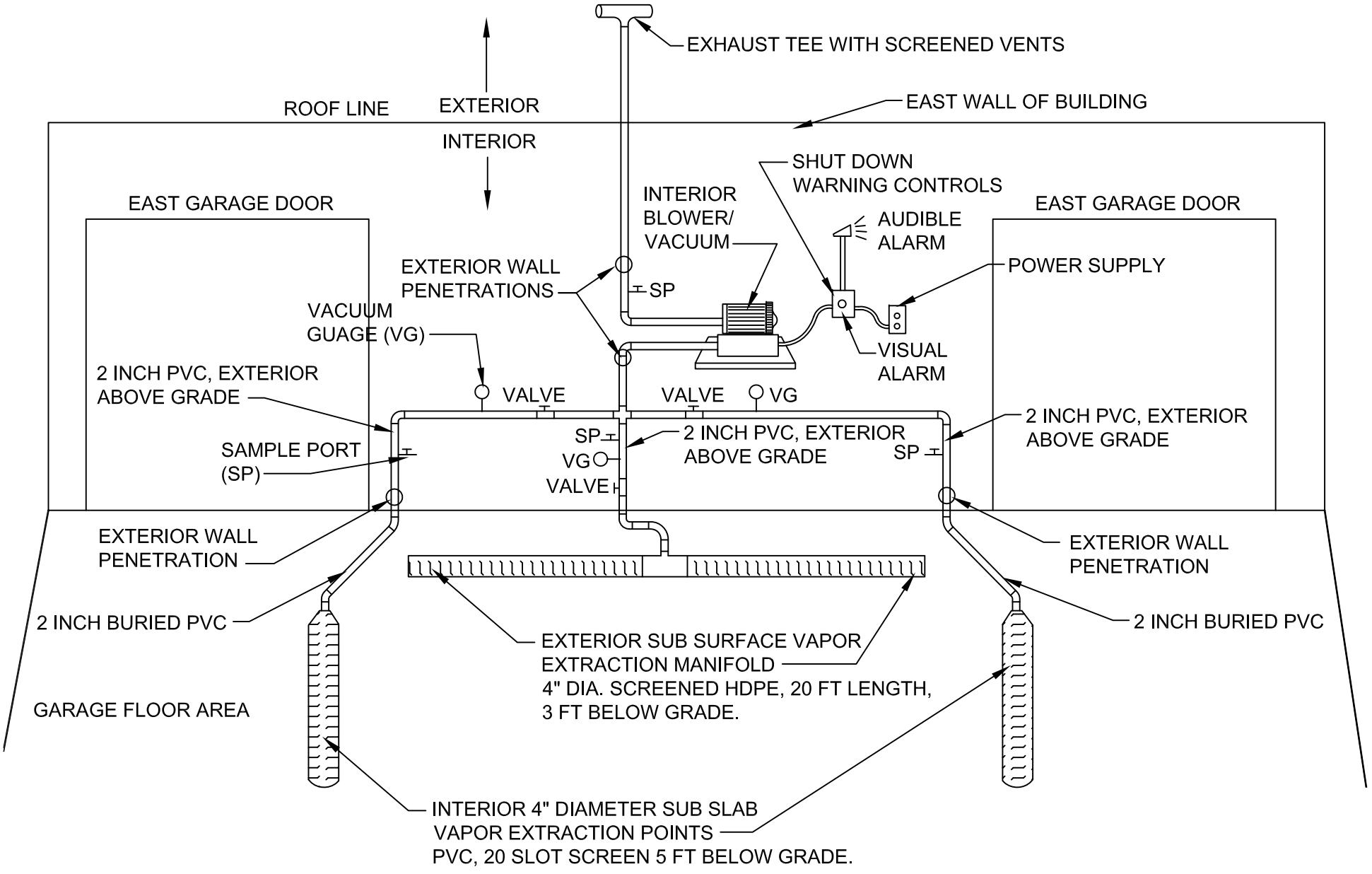

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FIGURE NO.: 3

Appendix B
Emergency Contact List

EMERGENCY CONTACT LIST

AGENCY OR CITY CONTACTS		
NAME	**AGENCY**	**PHONE**
National Response Center	Federal	1(800)424-8802 (24-hour) (202) 267-2675 (24-hour)
Environmental Protection Division	New York State Department of Environmental Conservation	NYS Spill Hotline (1-800-457-7362)
Medical, Fire, and Police		911
Poison Control Center		(800) 222-1222
One Call Center	(3 day notice required for utility markout)	(800) 272-4480
TENANT/OWNER CONTACTS (Diamond Auto)		
NAME	**TITLE**	**PHONE**
David Watson	Business Owner	631-595-1862 Cell: 631-838-5601
ENVIRONMENTAL CONSULTANT CONTACTS		
NAME	**OFFICE PHONE**	**CELL PHONE**
James M. DeMartinis	631-234-2220	Cell (516)983-6987
EMERGENCY RESPONSE CONTRACTOR CONTACTS		
NAME	**TYPE**	**PHONE**
Clear View Environmental Ken Watson	Environmental Services	(631) 859-0717 Cell: 631-455-1905

Appendix C
Inspection Forms

Quarterly Monitoring Event

Diamond Auto Service, Inc.
71 Cleveland Avenue
Bay Shore, NY 11706

Date:_____ **Time:**_____

Weather:_____

Reason for Inspection: [] Routine [] other_____

Inspection Activities

- ☐ Inspect all visible system components (system piping, fans, meters, etc.) noting any cracks in piping or other operational issues (too much or new noises, improper or different moisture drainage, etc.);
- ☐ Inspect piping on roof, noting size and location of any cracks and gaps that have not been sealed or where seal integrity may be compromised;
- ☐ Make sure that audible and visual alarm on SSDS is functioning properly.

System Pressures	**SS-1**
Observed Vacuum Pressures (3 Gauges)	
Commissioned Vacuum Pressure	
Difference	

General Observations / Comments:

Performed by:_____ _____
Printed Name Signature

_____ _____
Title Company

Annual Site-wide Inspection Form

Diamond Auto Service, Inc.
71 Cleveland Avenue
Bay Shore, NY 11706

Date:_____ Time:_____

Weather:_____

Reason for Inspection: [] Routine [] other_____

Inspection Observations

Current site use: Commercial, Diamond Auto Repair Shop

Is there evidence of any of the following site activities / conditions at the site:

[] Groundwater use

[] Unrestricted (single family) residential housing

[] Soil Disturbances

[] Environmental issue which has potential to impact human health.

[] Disturbances to Building's Concrete Slab or Epoxy Coating

[] Change in operation of HVAC System

[] SSDS is operational

[] Change in SSDS Equipment or piping

General Observations / Comments:

Performed by:_____ _____
Printed Name Signature

_____ _____
Title Company