Site Management Plan

Former Albany Laboratories
67 Howard and 140 State Street
Albany, New York

Site No. 401061

CHA Project Number: 21645

Prepared for:
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June 20, 2014

Revisions to Final Site Management Plan:

Revision No.	Submitted Date	Summary of Revision	DEC Approval Date

CERTIFICATION

I, the undersigned, certify that I am currently a New York State registered professional engineer and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) *Final DER-10 Technical Guidance for Site Investigation and Remediation*, dated May 2010. This Site Management Plan (SMP) has been submitted for the continual and proper operation, maintenance, and monitoring of all Institutional and Engineering Controls employed at the Site.

For Clough Harbour & Associates LLP:

(Professional Seal)

Michael E. Hollowood
Printed Name of Certifying Engineer

Signature of Certifying Engineer

06/20/2014
Date of Certification

068351
Registration Number

New York
Registration State

Clough Harbour & Associates LLP
Company

Vice President
Title

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LIST OF ACRONYMS & ABBREVIATIONS

bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
BUD	Beneficial Use Determination
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CHA	Clough Harbour & Associates LLP
CNS	Central Nervous System
COC	Certificate of Completion
CY	Cubic Yards
DCE	Dichloroethene
DER	Division of Environmental Remediation
EAP	Emergency Action Plan
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
EPA	Environmental Protection Agency
ESC	Erosion and Sediment Control
EWP	Excavation Work Plan
FER	Final Engineering Report
FPS	Feet per Second
HASP	Health & Safety Plan
IC	Institutional Control
IRM	Interim Remedial Measure
MC	Medical Consultant
mg/m^3	Milligrams per Cubic Meter
MMD	Mas Median Diameter
MPH	Miles per Hour
MSDS	Material Safety Data Sheet
NICD	Nickel-Cadmium
NOI	Notice of Intent
NYCRR	New York Code, Rules & Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OSHA	Occupational Safety & Health Administration
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PM	Particulate Matter
PPE	Personal Protective Equipment
PPM	Parts Per Million
QEP	Qualified Environmental Professional
RI	Remedial Investigation

ROD	Record of Decision
SAE	Society of Automotive Engineers
SCG	Standard, Criteria, and Guidance
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SO	Safety Officer
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-slab Depressurization System
STEL	Short-Term Exposure Limit
SVI	Soil Vapor Intrusion
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
$\mu g/m^3$	Micrograms per Cubic Meter
µm	Micrometers or microns
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 INTRODUCTION & DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at the Former Albany Laboratories Site located at 67 Howard Street and 140 State Street, Albany, New York (hereinafter referred to as the "Site") under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The Site was remediated in accordance with Order on Consent Index #DER-401061-02-25-11, Site # 401061, which was executed on April 12, 2011.

1.1.1 SMP Organization

This SMP has been divided into eight (8) major sections, including:

Section 1: Summarizes the purpose of the SMP, provides the Site background, and summarizes the investigations and remedial actions completed at the Site

Section 2: Engineering and Institutional Control Plan

Section 3: Site Soil Cover Monitoring Plan

Section 4: Site Operation and Maintenance Plan for Active Sub-Slab Depressurization Systems (primarily for the sub-slab depressurization system located at 144 State Street)

Section 5: Site Operation and Maintenance Plan for Passive Ventilation Systems (for the sub-slab ventilation system located at 140 State Street)

Section 6: Provides requirements for inspections of the Site and reporting & certification requirements to the NYSDEC

Section 7: Excavation Work Plan

Section 8: Health and Safety Plan Requirements (minimum requirements)

1.1.2 General

Columbia Eagle LLC (Columbia Eagle) entered into an Order on Consent with the NYSDEC to remediate a 0.226 acre Site located in the City of Albany, New York. This Order on Consent required the Remedial Party, Columbia Eagle, to investigate and remediate contaminated media at

the Site. Two figures showing the Site location and boundaries of this 0.226-acre are provided in Figures 1 and 2, respectively. The boundaries of the Site are more fully described in the metes and bounds site description that is part of the Environmental Easement, and attached as Appendix A.

At the time of the Order on Consent, the Site consisted of properties identified as 67 Howard Street and 140 State Street only. In 2014, Columbia Eagle subdivided previously purchased parcels on the same city block including 132, 134, 136, and 138 State Street, as well as 59 Howard Street. As shown on Figure 2 and indicated in Table 1 below, Columbia Eagle subdivided these parcels such that 59 Howard Street and the western approximately three quarters of the 132, 134, 136, 138, and 140 State Street properties were incorporated into 67 Howard Street, while the remaining approximately one quarter of each site retained their original addresses, with the exception of 134 State Street which was combined with 136 State Street. In addition, please note that 144 State Street was historically referred to as 142 State Street. A comparison of historical and current parcels is identified below.

Table 1. Comparison of Historical and Current Parcels

Historical Parcel	Current Parcel
59 Howard Street	67 Howard Street
67 Howard Street	67 Howard Street
132 State Street	67 Howard Street 132 State Street
134 State Street	67 Howard Street 136 State Street
136 State Street	67 Howard Street 136 State Street
138 State Street	67 Howard Street 138 State Street
140 State Street	67 Howard Street 140 State Street
142 State Street	144 State Street

While the subdivision of the parcels has resulted in address changes to the property, it is noted that only the original 67 Howard Street and 140 State Street were included in the Consent Order with the NYSDEC. While remedial action at 138 and 144 State Streets (formerly referred to as 142 State Street) is discussed in this SMP, it is noted that these parcels were not part of the property included

under the Consent Order. Additionally, it is noted that the SMP is not applicable to the former 132, 134, 136, and 138 State Street or to 59 Howard Street.

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 Clough Harbour & Associates LLP (CHA), on behalf of Columbia Eagle, 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 Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the Site.

1.1.3 **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 Albany County Clerk, will require compliance with this SMP and all ECs and ICs placed on the Site. The ICs place restrictions on Site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs 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 and Institutional Controls; (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 five plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Site Soil Cover Monitoring Plan for monitoring of the Site soil cover; (3) an Operation, Maintenance, and Monitoring Plan for the active sub-slab depressurization system; (4) an Operation, Maintenance, and Monitoring Plan for a passive sub-slab ventilation system; and (5) an Excavation Work Plan.

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 details the Site-specific implementation procedures that are required by the deed restriction. Failure to properly implement the SMP is a violation of the deed restriction, which is grounds for revocation of the Site No Further Action;

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the Order on Consent (Index # DER-401061-02-25-11; Site # 401061) for the Site, and thereby subject to applicable penalties.

1.1.4 **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. Any approved revisions to this SMP must be denoted on the cover page of the plan.

Proposed changes to the allowable Site uses in the Environmental Easement should only be considered under extraordinary circumstances due the fact that the cleanup levels achieved at the Site were specific to the proposed use of the Site, and therefore, may limit other types of uses, particularly lighter type uses, such as residential use. However, any such proposed changes would require the explicit, written authorization by the NYSDEC as well as significant modifications to both this SMP and the Environmental Easement for the Site, at a minimum.

1.2 SITE BACKGROUND

1.2.1 Site Location & Description

The Site is located in the City of Albany, County of Albany, New York and is historically identified as 67 Howard Street and 140 State Street. Following subdivision in 2014, the site is entirely encompassed on the 67 Howard Street property as detailed above. The Site is an approximately 0.226-acre area bounded by the building at 144 State Street (historically referenced as 142 State Street) to the northwest, Howard Street to the southwest and an adjacent vacant lot to the northeast and southeast (see Figures 1 and 2). In addition to the Site, 144 State Street is also subject to the requirements of this SMP based on migration of contamination from the Site.

1.2.2 Site History

Sometime prior to 1934, the property associated with 67 Howard Street was originally a dairy farm. On a 1934 Sanborn map, 67 Howard Street was shown to have a chemical laboratory and the courtyard behind the building was shown to be used as a "Thinner storage yard in metal drums". According to city directories, the 67 Howard Street property was operated as Albany Laboratories from 1935 to 1985. The property has been vacant since 1985.

The earliest records indicate that the 140 State Street property was originally a private dwelling. Circa 1914 documents reported that the property was used as doctor's offices and apartments. At some time prior to 1934 and until at least 1979, the building was used as the Berkshire Hotel. The building was vacant thereafter until it was demolished in 2008.

Prior to the Site being listed on the New York State Registry of Inactive Waste Disposal Sites in February 2011, the Site was overseen by the NYSDEC as spill No. 0704683. In July 2007, a 2,000 gallon fuel oil underground storage tank (UST) was identified on the 140 State Street property and in September 2008, the UST was removed and impacted soil around the tank was excavated and disposed of off Site.

Contamination was primarily observed in the location of a courtyard formerly located within the northern portion of the 67 Howard Street parcel and the southern end of the 140 State Street parcel. Contamination had also migrated east to the 138 State Street parcel.

In September and October 2008, the top three feet of soil, approximately 251.5 tons, was removed from the former courtyard area. Post-excavation samples indicated the presence of remaining soil

contamination above the SCGs. Additional excavation of contaminated soil was conducted in January and February 2011. Soil was excavated along the foundation wall of the building located at 144 State Street. The excavation spanned the two lots that make up the Site and the adjacent lot located at 138 State Street. Approximately 895 tons of petroleum-contaminated soil was excavated. Of this total, 34.14 tons of soil was disposed of off-Site as hazardous waste while the remaining soil was disposed of off-Site as non-hazardous waste. Excavations were backfilled with clean fill material brought to the Site which met the requirements for the identified Site use as set forth in 6 NYCRR Part 375-6.7(d).

Excavation to the west was limited by the foundation of the 144 State Street building and as a result sub-slab vapor, indoor air and outdoor air samples were collected in February and November 2012 within and outside the building to evaluate whether actions were necessary to address exposures related to soil vapor intrusion. This investigation indicated mitigation was recommended in accordance with the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH, October 2006).

1.2.3 **Geologic Conditions**

The United States Department of Agriculture (USDA) Soil Survey for Albany County indicates that the soils of the subject Site are classified as Urban Land. The Urban Land designation is assigned to areas where 85 percent or greater of the surfaces are covered by impervious materials. Surficial and bedrock geologic maps compiled by the USGS, Hudson Mohawk Sheets, indicate that the surficial soils of the subject Site consist of lacustrine silt and clay which are underlain by bedrock of Normanskill Shale with minor mudstone and sandstone. Based on topographic information and previous investigations, groundwater is estimated to be at a depth of greater than 50 feet below ground surface (bgs). The direction of groundwater flow beneath the subject Site has not been physically verified; however, based on regional topography, local groundwater flow beneath the Site is inferred to be in an east/southeasterly direction toward the Hudson River. Surface flow is also in an east/southeasterly direction toward the Hudson River, with stormwater runoff directed in a southeasterly direction to storm drains along bordering streets.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

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:

- Site Characterization Report (CHA, August 2010)
- Remedial Investigation Report (CHA, August 2013)

1.3.1 **Areas of Concern**

Generally, the RI determined that the 144 State Street property (historically referred to as 142 State Street) was likely impacted by a historical release that occurred at the adjacent former 67 Howard Street property. In addition, a leaking fuel oil underground storage tank (UST) located on the 140 State Street property impacted Site soils. Contamination was observed primarily in the locations of the courtyard that historically occupied the northern portion of the former 67 Howard Street and the southern portion of 140 State Street. Contamination had also migrated east to the former 138 State Street.

In 2008 and 2011 (two separate events), all accessible, impacted soil located at the former 67 Howard Street and 138 and 140 State Street was excavated and disposed off-Site, therefore eliminating the source area of the contamination. In addition, soil was excavated along the foundation wall of the 144 State Street building.

1.3.2 **Nature & Extent of Contamination**

Below is a summary of Site conditions when the RI was performed.

Soil

Prior to the soil removal conducted under the Spill Response Program between 2008 and 2011, on-Site soil samples were collected. Volatile organic compounds (VOCs) related to historical Site activities were present at elevated concentrations in soil in the former courtyard area, including the solvents tetrachloroethylene (PCE) and trichloroethylene (TCE). Semivolatile organic compounds (SVOCs), including benzo(a)anthracene (up to 5.9 ppm), benzo(a)pyrene (up to 5.1 ppm), benzo(b)fluoranthene (up to 6.5 ppm), benzo(k)fluoranthene (up to 2.7 ppm), chrysene (up to 5.2 ppm), and indeno(1,2,3-cd)pyrene (up to 1.5 ppm) were also found. Mercury was detected slightly above its restricted soil cleanup objective (SCO). Certain SVOCs and metals are byproducts of the combustion of coal and other petroleum fuels and are commonly found in historic fill material. Historic fill has been observed across most of the Site. The spill cleanup excavations focused on removing VOCs and left certain areas of SVOCs in place.

Site Related Groundwater

A planned groundwater monitoring well was drilled through 50 feet of dense clay in an attempt to investigate groundwater quality beneath the Site. However, no groundwater was found at, or above a depth of 50 feet, and drilling activities were terminated. Considering the thick layer of dense clay and the depth to groundwater, no Site related impacts to groundwater are likely.

Site Related Soil Vapor Intrusion

Based on the findings of the RI, the presence of PCE, TCE, dichloroethene (DCE) and carbon tetrachloride has resulted in the contamination of soil vapor.

Because no buildings were present on 140 State Street and 67 Howard Street covered by the Consent Order, only soil vapor was evaluated on-Site. However, the 144 State Street building is immediately west of and adjacent to the on-Site area where impacted soil was removed as a part of the soil excavation conducted under the Spill Response Program. Therefore, sub-slab vapor, indoor air and outdoor air samples were collected within and outside the adjacent building to evaluate potential exposures related to soil vapor intrusion. Three sub-slab samples and three indoor air samples were obtained from the 144 State Street building in February and November 2012. The findings of the investigation indicated the presence of VOCs in sub-slab vapor beneath the eastern portion of the building at concentrations which recommend mitigation in accordance with the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH, October 2006).

Based on the concentration detected, and in comparison with the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH, October 2006), soil vapor contamination identified during the RI is addressed by the off-Site sub-slab depressurization (SSDS) Interim Remedial Measure (IRM) and, at a minimum, an evaluation is needed for any buildings developed on the historical 67 Howard Street and 140 and 144 State Street parcels.

1.4 SUMMARY OF REMEDIAL ACTIONS

The Site was remediated in accordance with the NYSDEC-approved Interim Remedial Measure Work Plan dated January, 2011 and historical remediation under the Spill Response Program.

Remedial activities were completed at the Site in February 2011. The following is a summary of the Remedial Actions performed at the Site:

1. Excavation of accessible soil/fill (those soils not beneath a building or so close to a building foundation that removal could jeopardize the structural integrity of a foundation) exceeding unrestricted SCOs listed in Table 2;

The following is a summary of Remedial Actions which will be performed in accordance with this SMP:

1. Construction and maintenance of a soil cover system consisting of 12-inches of clean fill on the 67 Howard Street property and 24-inches of clean fill on the 140 State Street parcel to prevent human exposure to remaining contaminated soil/fill remaining at the Site;

2. Execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the Site;

3. Installation and operation of a sub-slab depressurization system (SSDS) within the basement level of the building located at 144 State Street;

4. Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;

1.4.1 **Removal of Materials from the Site**

As previously described, the top three feet of soil, equaling approximately 251.5 tons, was removed from the former courtyard area on the historical 67 Howard Street and 140 State Street parcels. Post-excavation samples indicated the presence of remaining soil contamination above the SCGs. Once the buildings located on the historical 67 Howard Street and 140 State Street parcels were demolished beginning in 2009, excavation of an additional 895 tons of impacted soil from the former location of the UST was conducted in the winter of 2011.

Additional excavation of contaminated soil was conducted in January and February 2011. Soil was excavated along the foundation wall of the building located at 144 State Street. The excavation spanned the two lots that make up the Site and a portion of the adjacent lot located at 138 State Street. Approximately 895 tons of petroleum-contaminated soil was excavated. Of this total, 34.14 tons of soil was disposed of off-Site as hazardous waste based on VOC results while the remaining soil was disposed of off-Site as non-hazardous waste. Excavations were backfilled with clean fill material brought to the Site which met the requirements for the identified Site use as set forth in 6 NYCRR Part 375-6.7(d). A figure showing areas where excavation was performed is shown in Figure 3.

A list of the soil cleanup objectives (SCOs) for the primary contaminants of concern (COCs) and applicable land use (unrestricted use) for this Site is provided in the attached Table 2.

1.4.2 **Remaining Contamination**

Table 2 summarizes the results of all soil samples remaining at the Site after completion of Remedial Action that exceed the Track 1 (unrestricted) SCOs.

The source soil removal completed as an IRM was conducted to address the VOCs at the Site and impacts to the adjacent 138 State Street property. As a result, the post-excavation soil samples were only analyzed for VOCs. A total of 17 soil samples, 6 bottom and 11 sidewall samples were collected during the excavation activities. Once the excavation was complete, all but one sample were found to have all VOCs below the Part 375 Unrestricted SCOs. The excavation to the northwest was limited at the foundation of the adjacent former Dewitt Clinton Hotel at 144 State Street due to structural concerns. VOC contamination may have migrated to an inaccessible area beneath 144 State Street.

Excavations conducted under the Spill Response Program removed the historical source of soil contamination at the Site; however there may be residual concentrations of VOCs, SVOCs and metals in the surface/subsurface soil.

2.0 ENGINEERING & INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Since remaining contaminated soil and soil vapor exists beneath the Site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the Site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the Site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs that will be set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

The NYSDEC has defined an engineering control as "any physical barrier or method employed to actively or passively contain, stabilize, or monitor contamination, restrict the movement of contamination to ensure the long-term effectiveness of a remedial program, or eliminate potential exposure pathways to contamination. Engineering controls include, but are not limited to, pavement, caps, covers, subsurface barriers, vapor barriers, slurry walls, building ventilation systems, fences,

access controls, provision of alternative water supplies via connection to an existing public water supply, adding treatment technologies to such water supplies, and installing filtration devices on private water supplies."

The two primary engineering controls at the Site include:

- Soil cover system
- Sub-slab depressurization systems (SSDS)

2.2.1 **Engineering Control Systems**

2.2.1.1 Soil Cover

Exposure to remaining contamination in soil/fill at the Site is prevented by a soil cover system placed over the Site. This cover system is comprised of a minimum of 12 inches (historical 67 Howard Street) and 24 inches (historical 140 State Street) of clean soil (i.e., crusher run aggregate material imported from a quarry) over non-woven geotextile fabric (demarcation barrier), asphalt pavement, concrete-covered sidewalks, and concrete building slabs. The top 6 inches of this cover will be a material which is sufficient to maintain vegetative cover. The Excavation Work Plan that appears in Section 7.0 outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Site Soil Cover Monitoring Plan included in Section 3.2 of this SMP.

2.2.1.2 Sub-Slab Depressurization System at 144 State Street

An active sub-slab depressurization system (SSDS) for vapor mitigation on the former 142 State Street (now referred to as 144 State Street) was designed in a Remedial Action Work Plan dated June 5, 2013 and approved by the NYSDEC on August 13, 2013. The active SSDS system was designed to provide a constant and continuous negative pressure of the sub-slab air with respect to the room air in selected areas of the footprint of the building. The SSDS will be comprised of seven sub-systems, each of which will have a system fan and distinct exhaust stack. Details of the active SSDS can be found in the Remedial Action Work Plan for the former 142 State Street (now 144 State Street) attached in Appendix B.

Procedures for operating, maintaining, and monitoring the active SSDS at 144 State Street are documented in the Operation, Maintenance, and Monitoring Plan (Section 4.0 of this SMP).

2.2.1.3 Passive Sub-Slab Ventilation System at 140 State Street

Based upon the limited remaining contamination identified at 140 State Street, a passive sub-slab ventilation system was selected for this site. This system will be designed and installed similar to an active SSDS with the primary difference being that no active ventilation fan will initially be installed. While the system will work primarily as a passive system, the exhaust stack will be equipped with a wind-driven turbine ventilator that will create a negative draft in the system with winds as low as four miles per hour. This system could readily be converted to an active SSDS in the future should indoor air quality monitoring indicate the passive system is insufficient.

The passive sub-slab ventilation system to be installed at 140 State Street will be constructed in accordance with the details outlined in this SMP. The ventilation system will passively mitigate soil vapor with the installation of porous stone media, perforated sub-slab piping, and a vapor barrier beneath the concrete slab with an exhaust stack extending above the roof line. The stone media and perforated piping will capture soil vapors under the vapor barrier and convey them to the roof where they will be exhausted. While only wind-driven, a turbine ventilator will be installed on the exhaust stack to create limited negative pressure within the system. Specifically, the passive ventilation system will be constructed in accordance with the design details provided on Figure 5 and Figure 6, as well as the Specifications provided in Appendix C.

Procedures for operating, maintaining, and monitoring the passive sub-slab ventilation system at 140 State Street are documented in the Operation, Maintenance, and Monitoring Plan (Section 5 of this SMP).

2.2.2 **Criteria for Completion of Remediation**

Generally, remedial 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.

2.2.2.1 Soil Cover System

The soil cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

2.2.2.2 Active Sub-Slab Depressurization System

The active SSD system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSD system is no longer required, a proposal to discontinue the SSD system will be submitted by the property owner to the NYSDEC and NYSDOH.

2.2.2.3 Passive Sub-Slab Ventilation System

Similar to the active SSDS, the passive sub-slab ventilation system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the passive sub-slab ventilation system is no longer required, a proposal to discontinue the system will be submitted by the property owner to the NYSDEC and NYSDOH.

2.3 INSTITUTIONAL CONTROLS

The NYSDEC has defined an institutional control as "any non-physical means of enforcing a restriction on the use of real property that limits human and environmental exposure, restricts the use of groundwater, provides notice to potential owners, operators, or members of the public, or prevents actions that would interfere with the effectiveness of a remedial program or with the effectiveness and/or integrity of operation, maintenance, or monitoring activities at or pertaining to a remedial Site."

A series of Institutional Controls is required by the ROD to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the Site to restricted residential (140 State Street only), commercial and industrial uses only. Adherence to these Institutional Controls on the Site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and 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 on the Controlled Property 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;

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The Site has a series of Institutional Controls in the form of Site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- The property may only be used for restricted residential (140 State Street only), commercial or industrial 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 unrestricted or restricted residential use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;

- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;

- The potential for vapor intrusion must be evaluated for any buildings developed on 67 Howard Street or 140 State Street as noted on Figure 2, and any potential impacts that are identified must be monitored or mitigated;

- 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.

2.3.1 **Excavation Work Plan**

The Site has been remediated for restricted residential (140 State Street only), commercial or industrial use. Any future intrusive work that will penetrate the soil cover, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with Section 7.0 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. HASP requirements are summarized in Section 8.0 of this SMP and shall be prepared in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, a HASP and CAMP will be prepared and submitted with the notification provided in 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 6.0).

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.

2.3.2 **Soil Vapor Intrusion Evaluation**

Prior to the construction of any enclosed structures located over areas of the Site a SVI evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, an SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive sub-slab depressurization system (for new construction only) that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH "Guidance for Evaluating Vapor Intrusion

in the State of New York". Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. Validated SVI data will be transmitted to the property owner within 30 days of validation. If any indoor air test results exceed NYSDOH guidelines, relevant NYSDOH fact sheets will be provided to all tenants and occupants of the property within 15 days of receipt of validated data.

SVI sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

No SVI sampling or evaluation is needed prior to the construction of open-aired structures (i.e. parking garages) built on Site provided that there are no occupied areas or rooms (e.g., kiosk, booth, etc.) within the structure. If buildings with occupied rooms are constructed, a passive sub-slab ventilation system shall be designed and installed per the specifications attached (for gas venting material, geotextile, vapor barrier, piping, and roof turbine ventilator) in Appendix C and Figure 5 of this SMP. Following installation of these occupied structures, SVI sampling and evaluation shall be conducted.

2.4 INSPECTIONS & NOTIFICATIONS

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 and the Environmental Easement;
- 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 Plans of this SMP (Sections 3.0 through 5.0). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 6.0).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the Site by a qualified environmental professional (QEP) as determined by NYSDEC.

2.4.2 **Notifications**

Notifications will be submitted by the Site 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 Order on Consent 6NYCRR Part 375, and/or Environmental Conservation Law.
- 7-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- 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 Order on Consent 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.

2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.5.1 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 below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to CHA. These emergency contact lists must be maintained in an easily accessible location at the Site.

Table 3. Emergency Contact Numbers

Contact	Phone Number
Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
CHA, Seth Fowler:	(518) 453-4547
Columbia Eagle, Michael Arcangel:	(518) 862-9133

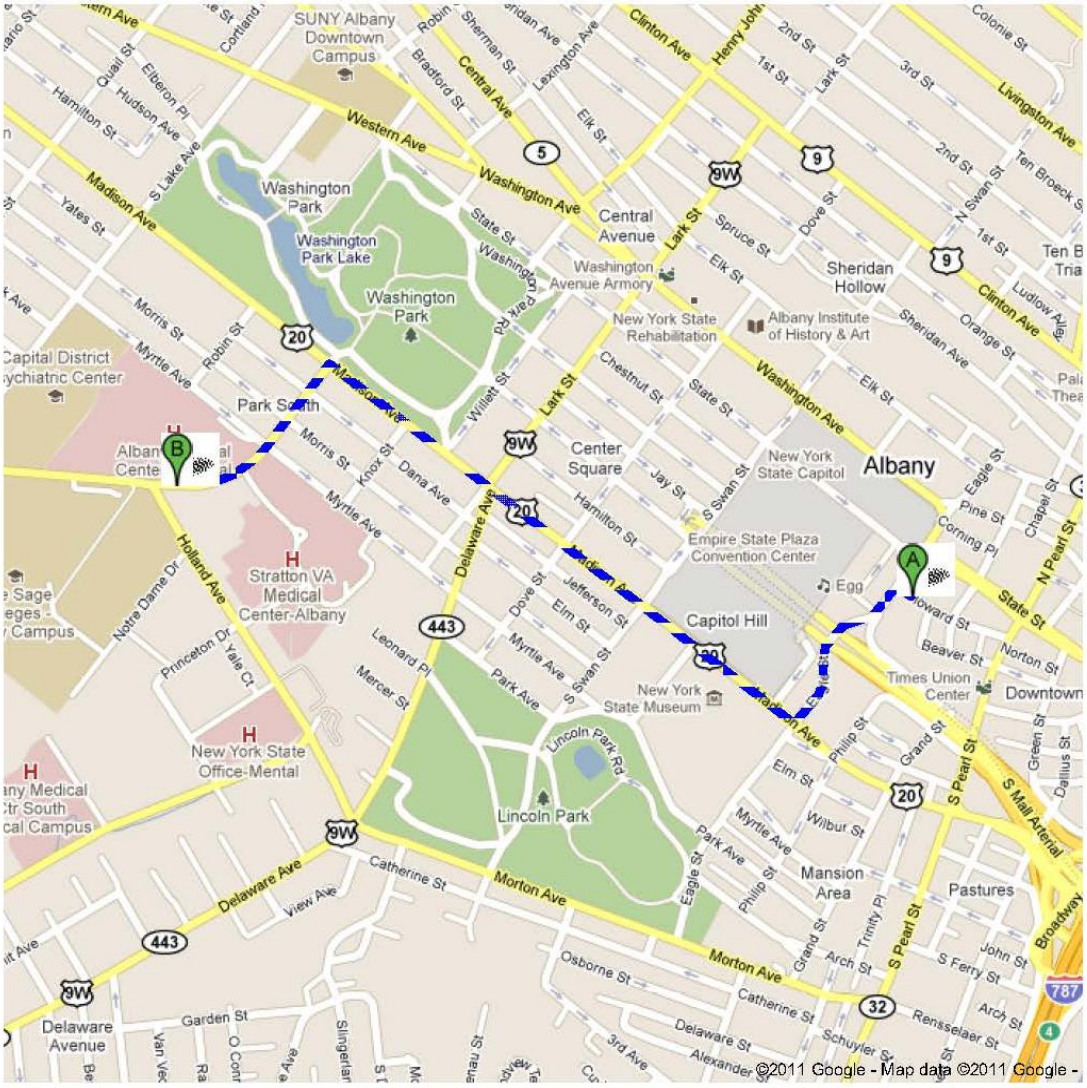
2.5.2 Map and Directions to Nearest Health Facility

Site Location: 67 Howard Street and 140 State Street, Albany, NY
Nearest Hospital Name: Albany Medical Center Hospital
Hospital Location: 43 New Scotland Avenue, Albany, NY

Hospital Telephone: (518) 262-1200
Directions to the Hospital:

1. Head northwest on Howard Street toward Eagle Street
2. Turn left onto Eagle Street
3. Take second rights onto US-20W/Madison Avenue
4. Continue to follow US-20W
5. Turn left at New Scotland Avenue

Total Distance: 1.4 miles
Total Estimated Time: 5 minutes



2.5.3 **Response Procedures**

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 3). The list will also be posted prominently at the Site and made readily available to all personnel at all times.

2.5.3.1 Contingency Plan Amendments

The Site owner will notify the NYSDEC of any amendments to the Contingency Plan a minimum of 60-days prior to implementing the proposed changes. The procedures noted in this SMP are general in nature given that the Site was vacant at the time the SMP was prepared. However, as the Site is developed, more detailed plans, particularly evacuation plans, will be prepared.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Site Monitoring Plan describes the measures for evaluating the performance and effectiveness of the soil cover system. Monitoring of other active and passive Engineering Controls are described in Sections 4.0 and 5.0, respectively, of the Operation, Monitoring and Maintenance Plan. This Site Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose & Schedule

This Site Monitoring Plan describes the methods to be used for:

- 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 Site Soil Cover Monitoring Plan provides information on:

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

Annual monitoring and inspection of the on-Site soil cover will be conducted for the first five years. The frequency thereafter will be determined by NYSDEC. The monitoring program consists of an annual soil cover system inspection well as a Site wide inspection. The monitoring program is summarized in Table 5 below and outlined in detail in Sections 3.2 and 3.3 below.

Table 4. Schedule of Monitoring/Inspection Reports

Monitoring Program	Frequency[1]	Performed By	Analysis
Soil Cover System/Site Wide Inspection	Annually	QEP	Visual Inspection

Note: 1. The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH.

3.2 SOIL COVER SYSTEM MONITORING

The soil cover system will be monitored annually to assess the condition and the performance of the remedy. The monitoring will include a visual inspection to identify any deficiencies associated with the soil cover. Common problems or deficiencies which may occur with the soil cover include rutting, erosion, inadequate drainage, and vector damage. An inspection checklist, as included in Appendix D, will be completed during each of the annual inspections, and submitted to the NYSDEC. If at any time, the soil cover system is damaged it should be repaired by replacing the geotextile demarcation barrier, replacing the soil cover material, and compacting the soil cover material. The soil cover should be a minimum of 12 inches (placed on the historical 67 Howard Street) or 24 inches (placed on the historical 140 State Street) of clean soil (i.e., crusher run and topsoil). Repairs to any damage resulting in excavation of subgrade soils below the demarcation fabric must comply with the Excavation Work Plan as outlined in Section 7.0.

3.3 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, an inspection form will be completed (Appendix D). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- 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 permits and schedules included in the Operation and Maintenance Plans; and
- Confirm that Site records are up to date.

3.4 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 (1) subject to approval by NYSDEC and (2) 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 an annual basis in the Periodic Review Report. The report will be prepared by a QEP as defined in NYSDEC's DER-10 and will include, at a minimum:

- Date of event;
- Personnel conducting the visual inspection;
- Description of the activities performed;
- Copies of all field forms completed (e.g., inspection forms); and
- Any observations, conclusions, or recommendations.

Data will be reported in hard copy and/or digital format as determined by NYSDEC. 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 Section 6.0 of this SMP.

4.0 OPERATION, MAINTENANCE, AND MONITORING PLAN FOR AN ACTIVE SSDS SYSTEM (144 STATE STREET)

4.1 INTRODUCTION

This Operation, Maintenance, and Monitoring Plan describes the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the Site. This Operation, Maintenance, and Monitoring Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Site to operate and maintain the active sub-slab depressurization system (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 active SSDS is operated and maintained.

Information on non-mechanical Engineering Controls (i.e. soil cover system) is provided in Section 3.0 - Site Soil Cover Monitoring Plan. A copy of this Operation, Maintenance, and Monitoring Plan, along with the complete SMP, will be kept at the Site. This Operation, Maintenance, and Monitoring Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 ENGINEERING CONTROL & SYSTEM OPERATION & MAINTENANCE

4.2.1.1 System Scope

The sub-slab depressurization system for vapor mitigation is designed to create a constant and continuous negative pressure of the sub-slab air with respect to the indoor air in select areas of the footprint of the building. The system is designed to achieve the performance criteria of sub-slab negative pressures of greater than or equal to 0.002 inches of water column. The SSDS is designed to be comprised of seven sub-systems, each of which will have a system fan and distinct exhaust stack. The system can be operated in its entirety or in any combination of sub-systems, thus enabling certain sub-systems to be shut down over time, as conditions allow.

4.2.1.2 System Startup & Testing

Before initial system startup or following any significant changes to the active SSDS, specifically at 144 State Street, the following testing will be performed to verify that the SSDS system is operating

optimally:

- Verification that the system fans are operating within manufacturer's specifications (i.e. not exceeding maximum operating pressure, etc.). If not, the fan selection will be modified and a new fan will be installed.

- Verification that system switches and gauges are operating correctly by turning off system fans and observing results.

- Performance of sub-slab to interior differential pressure testing using a digital micro-manometer to verify pressure field extension throughout the area of influence.

- Test locations will be selected in a manner sufficient to demonstrate sufficient negative pressure field extension.

- The SSDS will be considered to be operating effectively when the minimum sub-slab to room differential pressure of -0.002 inches of water column can be continuously demonstrated throughout the area requiring mitigation.

- All pressure test holes will be permanently sealed airtight (i.e. patching of the concrete slab) following demonstration of compliance with the performance criteria.

Before initial startup of the system the above testing will be conducted. The system testing described above will also be conducted if, in the course of the SSDS system lifetime, significant changes are made to the system, and the system must be restarted. Periodic replacement of the system fans (average life expectancy of most fans is approximately 5 to 7 years) with equivalent fans (similar vacuum and air flow rates) is not considered a significant change.

4.2.1.3 System Operation: Routine Operation Procedures

Subsequent to the installation of the SSDS and post-installation system testing, CHA will prepare a Construction Completion Report. The report will include the following:

- A written description of the systems installed, including make/model of fans, fan serial numbers, system fan manufacturing dates.

- As-built drawing of the location of fans, system piping, gauges, valves, alarms, etc.

- A chart indicating the pressure, airflow and valve position in each sub-slab extraction line and the pressure and airflow in each exhaust stack.

- Manufacturer paperwork (including warranty paperwork, operational manuals, etc.) for all fans, meters, alarms, and switches installed.

- Operations and maintenance procedures, including criteria for evaluating the proper operation of the systems and a timeline for annual inspection of the systems.

While diagnostics and trouble-shooting will be specific to each system and blower, the following table provides a list of general trouble-shooting guidelines for most blower units:

Table 5. Blower System Trouble-Shooting Chart

Problem	Reason	Remedy
Increased sound/noise	Noise absorbing foam is damaged. The impeller may be rubbing inside the blower unit.	Replace foam. Send unit to an authorized repair facility.
Excessive vibration	Damaged impeller. Motor and/or impeller may be dirty.	Replace impeller. Clean motor and impeller periodically.
Ambient and exhaust temperature increases	Motor and/or blower are dirty. Filters are dirty.	Clean motor and blower periodically. Replace filters.
Decreased inlet air pressure	Inlet air filter is clogged.	Clean or replace inlet filter.
Unit is very hot	Wrong wiring. Low voltage. Inlet air filter is clogged. Motor and/or blower are dirty. Operating at too high of pressure or vacuum.	Check wiring. Supply proper voltage. Clean inlet filter. Replace cartridge. Clean motor and blower periodically. Install a relive valve and pressure or vacuum gauge.
Unusual sound	Impeller is damaged or dirty. Bearing Failure	Clean or replace impeller. Send unit to an authorized repair facility.
Motor overload	Low voltage	Check power source. Check wire size and wire connections.
Unit does not start	Incorrect electrical connection or power source. Impeller is damaged.	Check wiring diagram, circuit fusing and circuit capacity. Clean and replace impeller. Install proper filtration.

Sections 4.2.4 and 4.2.5 of this SMP provide a summary of routine and non-routine maintenance requirements. Failure to follow these maintenance guidelines as well as specific maintenance

requirements specified by the manufacturer could also result in operational issues with the SSD system or premature failure of the blower unit.

4.2.1.4 System Operation: Routine Equipment Maintenance

Subsequent to the installation of the SSDS and post-installation system testing, CHA will prepare a Construction Completion Report which will include instructions for routine maintenance. The following routine equipment inspection and maintenance must be performed monthly by facility personnel to ensure continued operation of the SSD system:

- A monthly visual inspection of the complete system (vent fan, blower, piping, warning device, labeling, etc.)
- Identification and repair of leaks
- Inspection of exhaust or discharge point to verify there are no obstructions and no air intakes have been located nearby.
- Maintenance blowers per manufacturer's recommendations.

As appropriate, preventative maintenance should be made to the system to ensure its continued effectiveness. The need for preventative maintenance will depend upon the life expectancy and warranty for the specific part, as well as visual inspections over time. Details for specific part warranties will be provided in the Construction Completion Report.

4.2.1.5 System Operation: Non-Routine Equipment Maintenance

Subsequent to the installation of the SSDS and system startup testing as described in Section 4.2.1.2, CHA will prepare a Construction Completion Report which will include instructions for non-routine maintenance.

The SSD system will be equipped with pressure/vacuum gauges that can be visually inspection to ensure that the blower system is operating properly. Additionally, the SSDS will be equipped with an audible alarm that will notify building management of a malfunction.

Any damaged components critical to the operation of the SSDS (e.g. the blower unit, inlet/discharge piping, etc.) will be repaired or replaced within a maximum of five (5) days of discovery. Any peripherally damaged equipment (e.g. gauges, sampling ports, labeling systems, etc.) will be repaired within a maximum of 48 hours of discovery.

Section 4.4 of this SMP identifies performance monitoring requirements for the SSDS. Should the effectiveness of the SSDS be found to be reduced either through monitoring of the pressure field or indoor air quality monitoring, diagnostic testing will be performed to determine the cause. Diagnostic testing will include checking the operation of the blower unit (and ensuring it has been properly maintained), checking the piping systems for leaks or cracks, checking the discharge pipe for obstructions, checking joints and penetrations in the slab for leaks, etc. If the system effectiveness cannot be restored, the blower unit may need to be replaced.

4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

Performance monitoring is required to ensure the SSDS is operating properly upon startup, but also to ensure continued long-term performance of the systems.

4.3.1 **Monitoring Schedule**

A visual inspection of the complete system will be conducted by facility personnel during the monthly monitoring events and conducted by a QEP during the annual monitoring events. 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. Monitoring deliverables for the SSDS are specified later in this Plan.

Once the active SSDS is in full operation, the system shall be inspected both monthly by facility personnel and annually by a QEP to evaluate the condition of system components (and repair or replace as necessary) and to confirm proper operation of the system. In addition to the annual inspection, sub-slab vapor and indoor air quality testing shall be performed periodically to verify successful operation of the system as well as facilitate an evaluation for the potential future shutdown of one or more of the sub-systems. Such testing shall be performed at the following times:

1. Approximately two weeks following system installation and startup.
2. At least one year following the system installation and during the heating season.
3. Once every five years following the post-installation sampling events, during heating season, to verify continued effectiveness of the vapor mitigation systems.
4. Prior to evaluating the potential shutdown of one or more of the SSDS sub-systems.

4.3.2 General Equipment Monitoring

A visual inspection of the complete system will be conducted during the monthly monitoring events conducted by facility personnel and the annual monitoring events conducted by a QEP. Sub-slab depressurization system components to be monitored include, but are not limited to, the following:

- Blower system,
- Vacuum and pressures gauges
- Above-grade vacuum & discharge piping;
- Discharge piping above roof line
- Pipe support systems
- Labeling systems
- Alarm systems
- Floor joints, penetrations and crack (e.g. checking of floors for potential leak points)

A complete list of components to be checked is provided in the Inspection Checklist, presented in Appendix E. 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 system restarted.

4.3.3 System Monitoring Devices and Alarms

The SSDS system has a warning device to indicate that the system is not operating properly. In the event that the warning device is activated, applicable maintenance and repairs will be conducted, as specified in the Operation and Maintenance Plan, and the SSDS system restarted. Operational problems will be noted in the subsequent Periodic Review Report.

A visual low pressure alarm will be installed at the monitoring panel. The alarm will be activated when the pressure in the SSDS falls to or below 0.25 inches of water column. An adjustable differential pressure switch (dry contact, double pole) will be installed on each sub-system and available for connection to the building alarm/monitoring system.

4.3.4 **Sampling Event Protocol**

To verify the effectiveness of the vapor mitigation system, sub-slab and indoor air samples are required. Both sub-slab and indoor air quality sampling will be conducted in accordance with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.* A total of six (6) samples (three (3) sub-slab and three (3) indoor) will be collected during each sampling event. Sub-slab vapor samples will be collected from the three (3) previously installed permanent sub-slab sampling probes which were installed during the Remedial Investigation in the eastern portion of the basement at 144 State Street. Three (3) indoor air samples will also be collected from the basement of the building. During sub-slab sampling, helium will be used as a tracer gas in the field as a quality assurance/quality control measure to verify the integrity of the sub-slab vapor probe per the New York State Department of Health guidance.

All air samples will be collected via laboratory-supplied SUMMA canisters with pre-calibrated regulators. Upon conclusion of the sampling event, the SUMMA canisters will be submitted to a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory, to be analyzed for the presence of volatile organic compounds (VOCs) via Environmental Protection Agency (EPA) Method TO-15. The sampling schedule is described above in Section 4.3.1 Monitoring Schedule.

4.3.5 **Sampling QA/QC Procedures**

Both sub-slab and indoor air quality sampling will be conducted in accordance with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.* In general, appropriate QA/QC procedures will be followed during all aspects of sample collection and analysis to ensure that sampling error is minimized and high quality data are obtained. The following QA/QC procedures will be implemented while conducting sub-slab and indoor sampling:

1. Sampling team members should avoid actions (e.g., fueling vehicles, using permanent marking pens, wearing freshly dry-cleaned clothing or personal fragrances, etc.) which can cause sample interference in the field.
2. Air sampling equipment should be stored, transported and between samples decontaminated in a manner consistent with the best environmental consulting practices to minimize problems such as field contamination and cross-contamination.
3. Samples will be collected using certified clean sample devices. Where applicable, steps will be taken to ensure that the gas used by the laboratory to clean the sample device is different from the gas used as a tracer during sampling (e.g., helium).

4. Samples should meet sample holding times and temperatures, and will be delivered to the analytical laboratory as soon as possible after collection. In addition, laboratory accession procedures will be followed, including field documentation (sample collection information and locations), chain of custody, field blanks, field sample duplicates and laboratory duplicates, as appropriate.
5. Laboratories chosen to analyze samples will have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations.
6. Laboratory data will be validated by a third party, and the results submitted to the NYSDEC.
7. As discussed above, during sub-slab sampling, helium will be used as a tracer gas in the field as a quality assurance/quality control measure to verify the integrity of the sub-slab vapor probe per the New York State Department of Health guidance.

4.4 MAINTENANCE & 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 6 of this SMP.

4.4.1 Routine Maintenance Reports

Checklists or forms (see Appendix E) 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).

5.0 OPERATION, MAINTENANCE, AND MONITORING PLAN FOR PASSIVE SUB-SLAB VENTILATION SYSTEM (140 STATE STREET)

5.1 INTRODUCTION

This Operation, Maintenance and Monitoring Plan describes the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the Site. This Operation, Maintenance and Monitoring Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Site to operate and maintain the passive sub-slab ventilation system;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in Site conditions or the manner in which the passive sub-slab ventilation systems are operated and maintained.

5.2 ENGINEERING CONTROL & SYSTEM OPERATION & MAINTENANCE

5.2.1.1 System Scope

The passive sub-slab ventilation system to be installed at 140 State Street is designed to passively mitigate soil vapor with the installation of porous stone media, perforated sub-slab piping, and a vapor barrier beneath the concrete slab of the building as well as a roof-mounted turbine ventilator. The stone media along with the perforated piping will capture soil vapors under the vapor barrier and convey them to the roof with the use of the turbine ventilator. The passive ventilation system has been designed in a manner which allows for the easy in-line installation of a blower to convert to an active depressurization system if changes in Site conditions are observed.

5.2.1.2 System Startup & Testing

No system testing is required for startup or significant changes to a passive sub-slab ventilation system.

5.2.1.3 System Operation: Routine Operation Procedures

There are no routine operating procedures associated with the passive sub-slab ventilation system, only quarterly inspection procedures as described in the following sections.

5.2.1.4 System Operation: Routine Equipment Maintenance

There are no routine maintenance procedures associated with the passive sub-slab ventilation, only quarterly inspection procedures as described in the following sections.

5.2.1.5 System Operation: Non-Routine Equipment Maintenance

If an inspection identifies a damage or deficiency to equipment during operation, the damage should be repaired, and the NYSDEC should be notified. Non-Routine maintenance procedures should be recorded following the guidelines outlined in Section 5.4.2.

Any damaged components critical to the operation of the sub-slab ventilation system (e.g. the turbine ventilator, inlet/discharge piping, etc.) will be repaired or replaced within a maximum of five (5) days of discovery. Any peripherally damaged equipment (e.g. sampling ports, labeling systems, etc.) will be repaired within a maximum of 48 hours of discovery.

Section 5.4 of this SMP identifies performance monitoring requirements for the passive sub-slab ventilation system. Should the effectiveness of the passive sub-slab ventilation system be found to be reduced through monitoring of indoor air quality monitoring, diagnostic testing will be performed to determine the cause. Diagnostic testing will include checking the operation of the turbine ventilator, checking the piping systems for leaks or cracks, checking the discharge pipe for obstructions, checking joints and penetrations in the slab for leaks, etc. If the system effectiveness cannot be restored, the system may require installation of a fan ton convert the system to an active sub-slab depressurization system similar to that described in Section 4.0 of this SMP.

5.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

As indicated in Section 4.0 active SSDS and passive sub-slab ventilation systems will be installed to mitigate possible soil vapor intrusion into occupied buildings. Performance monitoring is required to ensure the passive sub-slab ventilation system continued long-term performance of the systems.

5.3.1 **Monitoring Schedule**

Quarterly inspections by facility personnel should occur to ensure that the passive ventilation system is operating properly. 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 passive

sub-slab ventilation systems has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the passive sub-slab ventilation systems are specified later in this Plan.

Immediately following passive sub-slab ventilation system installation, both sub-slab sampling and indoor air sampling will be conducted prior to building occupancy to evaluate soil vapor and indoor air quality. The system will then be inspected annually by a QEP to evaluate the condition of system components (and repair or replace as necessary) and to confirm proper operation of the system. In addition to the initial system start up sampling and annual inspection, sub-slab and indoor air quality testing would be performed annually for the first two years during the heating season to evaluate soil vapor quality and effectiveness of the ventilation system. The sub-slab vapor and indoor air samples will be evaluated based on the NYSDOH decision matrices included in its *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.* The following provides the monitoring schedule for three different scenarios:

1. If both the sub-slab vapor and indoor air quality sampling indicate that there is no presence of compounds at levels requiring mitigation and monitoring, based on the NYSDOH Guidance document (referenced above) after two years of annual monitoring, no additional monitoring would be required.
2. If sub-slab vapor sampling indicates the presence of compounds at levels requiring mitigation and monitoring, based on the NYSDOH Guidance document AND the indoor air quality sampling indicates *no* presence of these compounds, then indoor air sampling only would continue annually for the next three years, and then once every three years after. After eight (8) years of monitoring the passive sub-slab ventilation system and inspection frequency should be re-evaluated.
3. If both sub-slab vapor and indoor air sampling indicates the presence of compounds at levels requiring mitigation and monitoring based on the NYSDOH Guidance document, the passive sub-slab ventilation system would be converted to an active SSD system following the *NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York*. In the event that the passive ventilation system is converted to an active depressurization system, this SMP will be amended with details of the Operation, Maintenance, and Monitoring of the system.

5.3.2 General Equipment Monitoring

A visual inspection of the complete system will be conducted quarterly by facility personnel as well as during the annual monitoring event. Sub-slab ventilation system components to be monitored include, but are not limited to, the following:

- Any visible piping systems
- Turbine ventilator
- Discharge piping above roof line
- Pipe support systems
- Labeling systems
- Floor joints, penetrations and crack (e.g. checking of floors for potential leak points)

A complete list of components to be checked is provided in the Inspection Checklist, presented in Appendix F. If any damages or deficiencies are noted, they should be documented and reported.

5.3.3 System Monitoring Devices and Alarms

Since the system at this location is a passive mitigation system, no alarms or warning devices will be installed. Any damages or deficiencies will be monitored and reported during the quarterly visual inspection.

5.3.4 Sampling Event Protocol

To verify the effectiveness of the vapor mitigation system, sub-slab and indoor air samples are required. Both sub-slab and indoor air quality sampling will be conducted in accordance with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.* A total of four (4) samples (two (2) sub-slab and two (2) indoor) will be collected during each sampling event. Sub-slab vapor samples will be collected from the two (2) permanent sub-slab sampling probes which will be installed in the basement at 140 State Street. Two (2) indoor air samples will also be collected from the basement of the building. During sub-slab sampling, helium will be used as a tracer gas in the field as a quality assurance/quality control measure to verify the integrity of the sub-slab vapor probe per the New York State Department of Health guidance.

All air samples will be collected via laboratory-supplied SUMMA canisters with pre-calibrated regulators. Upon conclusion of the sampling event, the SUMMA canisters will be submitted to a

NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory, to be analyzed for the presence of volatile organic compounds (VOCs) via Environmental Protection Agency (EPA) Method TO-15. The schedule for air sampling is described above in Section 5.3.1.

5.3.5 **Sampling QA/QC Procedures**

Both sub-slab and indoor air quality sampling will be conducted in accordance with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.* In general, appropriate QA/QC procedures will be followed during all aspects of sample collection and analysis to ensure that sampling error is minimized and high quality data are obtained. The following QA/QC procedures will be implemented while conducting sub-slab and indoor sampling:

1. Sampling team members should avoid actions (e.g., fueling vehicles, using permanent marking pens, wearing freshly dry-cleaned clothing or personal fragrances, etc.) which can cause sample interference in the field.
2. Air sampling equipment should be stored, transported and between samples decontaminated in a manner consistent with the best environmental consulting practices to minimize problems such as field contamination and cross-contamination.
3. Samples will be collected using certified clean sample devices. Where applicable, steps will be taken to ensure that the gas used by the laboratory to clean the sample device is different from the gas used as a tracer during sampling (e.g., helium).
4. Samples should meet sample holding times and temperatures, and will be delivered to the analytical laboratory as soon as possible after collection. In addition, laboratory accession procedures will be followed, including field documentation (sample collection information and locations), chain of custody, field blanks, field sample duplicates and laboratory duplicates, as appropriate.
5. Laboratories chosen to analyze samples will have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations.
6. Laboratory data will be validated by a third party, and the results submitted to the NYSDEC.
7. As discussed above, during sub-slab sampling, helium will be used as a tracer gas in the field as a quality assurance/quality control measure to verify the integrity of the sub-slab vapor probe per the New York State Department of Health guidance.

5.4 MAINTENANCE & 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 6 of this SMP.

5.4.1 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).

6.0 INSPECTIONS, REPORTING & CERTIFICATIONS

6.1 SITE INSPECTIONS

6.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3.0 Monitoring Plan, Section 4.0 Operation, Maintenance, and Monitoring Plan for Active SSDS and Section 5.0 Operation, Maintenance, and Monitoring Plan for Passive Ventilation System of this SMP. As previously described, 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 an erosion or flooding event that may affect the ECs. The table below describes the inspection schedule for the Site. See Section 4.3.1 and Section 5.3.1 for system monitoring schedules.

Table 6. Inspection Schedule

Monitoring Program	Frequency[1]	Performed By
Soil Cover System Monitoring	Annually	QEP
Site Wide Inspection	Annually	QEP
144 State Street Active SSDS	Annually	QEP
	Monthly	Facility Personnel
140 State Street Passive Sub-Slab Ventilation System	Annually	QEP
	Quarterly	Facility Personnel

Note: 1. The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH.

6.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms for their respective system, including the following:

- Appendix D: Site-Wide and Soil Cover System
- Appendix E: SSDS Inspection Checklist
- Appendix F: Passive Sub-Slab Ventilation System Inspection Checklist

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.

6.1.3 Evaluation of Records and Reporting

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

- EC/ICs are in place, are performing properly, and remain effective;
- The Site 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 in the RAWP and FER.

6.2 CERTIFICATION OF ENGINEERING & INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a QEP will prepare 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 institutional control and/or 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 Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;

- Use of the Site is compliant with the environmental easement;
- 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] (and if the Site consists of multiple properties): [I have been authorized and designated by all Site owners to sign this certification] for the Site.

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

For each institutional identified for the Site, I certify that all of the following statements are true:

- The institutional 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 Department 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;
- Use of the Site is compliant with the environmental easement.
- 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] (and if the Site consists of multiple properties):

[and I have been authorized and designated by all Site owners to sign this certification] for the Site.

- No new information has come to my attention, including groundwater monitoring data from wells located at the Site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-Site contamination are no longer valid; and

Every five years the following certification will be added:

- The assumptions made in the qualitative exposure assessment remain valid.
- The signed certification will be included in the Periodic Review Report described below.

6.3 PERIODIC REVIEW REPORT

Periodic Review Report will be submitted to the Department every year, beginning eighteen months after the No Further Action 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 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/ICs 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 exceedances 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 ROD;
  - 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;
  - 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 Regional Office in which the Site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

6.4 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.

7.0 EXCAVATION WORK PLAN

7.1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the Department. Currently, this notification will be made to:

Michael MacCabe
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233
(518) 402-9768
mdmaccab@gw.dec.state.ny.us

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan, in electronic format, in accordance with Section 8.0, Health and Safety Plan Requirements
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

7.2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based soil screening will be performed by a QEP during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-Site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

7.3 STOCKPILE METHODS

If temporary stockpiling of Site soils is determined to be necessary, all excavated materials beneath the soil cover will be required to be stockpiled on a temporary containment pad. The temporary containment pad will be of sufficient size to store a minimum of 110 percent of the maximum amount of soil that will be stockpiled prior to re-use or off-Site disposal. At a minimum, any soil containment pads will include the following:

- A sufficiently large area with accessibility for trucks and construction equipment. The area shall be relatively flat and away from drainage inlets.
- A 10-mil thick polyethylene sheeting liner with a minimum of two-foot wide overlaps between successive rows.
- A minimum of a one-foot high soil berm shall be constructed around the perimeter of each pad to control runoff/run-on to and from the stockpiles. Gravel/stone ramps with gentler slopes will be constructed at locations of ingress and egress for each pad.
- Soil stockpiles that will remain in place for more than one (1) week will also be continuously encircled with silt fence.
- Hay bales and other erosion and sediment controls will be installed as needed near catch basins and other discharge points.
- Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

- Stockpiles shall be maintained at a maximum height of 15 feet above surrounding surface subgrade elevation with a maximum slope of 1.5:1 to maintain stability. However, the appropriate slope may vary by material and the contractor performing stockpiling activities will be responsible for determining the safe allowable slopes for each material stockpiled on Site in accordance with all applicable regulations.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

7.4 MATERIAL EXCAVATION & LOAD OUT

A QEP or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material. The QEP will be identified in the notification to the NYSDEC. In some instances, an engineering consultant may serve as the QEP and in other cases it may be the contractor. If both an engineering consultant and contractor are part of the excavation work team, the roles of each party will be identified to the NYSDEC as part of the notification process.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site will be investigated by the QEP. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYS Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements).

A truck wash will be operated on-Site if the trucks come in contact with contaminated soils at the Site. The QEP will be responsible for ensuring that all outbound trucks which come into contact with remaining contamination will be washed at the truck wash before leaving the Site until the activities performed under this section are complete.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site soil tracking.

The QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

7.5 MATERIAL TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks which come into contact with remaining contamination will be washed prior to leaving the Site. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

Truck transport routes are as follows: All trucks shall utilize Howard Street or State Street to enter and exit the Site. Trucks shall then proceed to North Pearl Street for access to Interstate 787. All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive Sites; (b) use of city mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development.

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

7.6 MATERIAL DISPOSAL OFF-SITE

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including

6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated off-Site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, (i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc.). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

7.7 MATERIAL RE-USE ON-SITE

"Reuse on-Site" means reuse on-Site of material that originate from the Site and which does not leave the Site during the excavation. Soils excavated above the demarcation barrier and segregated from Site soils containing remaining contamination may be reutilized on-Site without restriction. Under no circumstances shall any materials such as large boulders, vegetation (e.g. trees, stumps, brush, lawn clippings, etc.), construction and demolition debris (e.g. brick, concrete foundations, or other building materials) or other waste materials be buried or reused on-Site. Any such materials must be disposed off-Site at a properly permitted facility. The following table summarizes the requirements for allowable reuse of material on-Site.

Table 7. Requirements for Reuse of Existing Materials On-Site

Original Location of Soil	Allowable Reuse
Above Demarcation Barrier	Reuse allowed without restriction provided that soils are properly segregated.
Below Demarcation Barrier or materials below impervious surfaces (e.g. concrete slabs, asphalt pavement, etc.)	Reuse allowed beneath the soil cover layer, provided that the soil exhibits no evidence of gross-contamination. As previously indicated, soils that exhibit gross-contamination will be properly stockpiled, characterized, and disposed off-site at a properly permitted facility.

All materials excavated from beneath the demarcation barrier or an impervious surface shall be placed onto temporary soil containment pads. In order for soil to be reused on-Site, the soil must be free of gross-contamination. Grossly-contaminated media is defined by the NYSDEC as "soil, sediment, surface water or groundwater which contains sources of substantial quantities of mobile contamination in the form of NAPL that is identifiable either visually, through strong odor, by elevated contaminant vapor levels, or is otherwise readily detectable without laboratory analysis."

The QEP will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-Site. On-Site material, including historic fill and contaminated soil, that is acceptable for re-use on-Site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-Site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-Site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-Site.

7.8 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including excavation dewatering and truck wash water, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, but will be managed off-Site.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

7.9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities, the cover system will be restored in a manner that complies with the Record of Decision. The demarcation layer, consisting of non-woven geotextile fabric will be replaced to provide a visual reference to the top of the 'Remaining Contamination Zone', the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by

asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the 'Remaining Contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

7.10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be approved by the QEP and will be in compliance with provisions in this SMP prior to receipt at the Site.
Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). All off-site borrow/imported fill soils will be from a documented source of "virgin" soil/rock or from off-site borrow soils that do not exceed the lower of the NYSDEC's Soil Cleanup Objectives (SCOs) for the protection of groundwater and the SCOs for the protection of public health for restricted residential (140 State Street only), commercial or industrial use as established in Table 375-6.8(b) of 6 NYCRR Subpart 375-6. The following documentation should be submitted to the NYSDEC to demonstrate compliance with these requirements and with the NYSDEC's DER-10:

1. **General documentation for <u>all</u> sources of fill:**
    a. The name of the person providing the documentation and relationship to the source of the fill.

    b. The location of where the fill is to be obtained.

    c. Identification of any state or local approvals as a fill source.

    d. A brief history of the use of the property for the proposed fill source.

2. **Imported soil for use as backfill or cover material:** All soil imported for use as soil cover material or as backfill must be:
    a. Free of extraneous debris and solid waste.

    b. Be recognizable soil or other unregulated material as set forth in 6 NYCRR Part 360 and materials for which the NYSDEC has issued a beneficial use determination (BUD). Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

c. Free of contaminant concentrations exceeding the lower of the NYSDEC's SCOs for the protection of groundwater and the SCOs for the protection of public health for residential (140 State Street only), commercial or industrial use as established in Table 375-6.8(b) of 6 NYCRR Subpart 375-6.

Sampling is also required for all imported soils, with a minimum of one (1) sample analyzed for every new source of material, at the following frequency:

a. Soil or sand imported from a "virgin" mine or pit, at least one round of characterization samples for the initial 1,000 cubic yards of material imported in accordance with Table 8 below. For material designated as "virgin," written documentation shall be provided to the Site owner or owner's representative and the NYSDEC to document that the soil is native material from areas not having supported any known prior industrial or commercial development or agricultural use and is not now, nor has ever been, identified as a suspected depository for chemical, toxic, hazardous, or radioactive wastes.

b. Material sources other than virgin mine/pit (e.g. a formerly developed Site) must be sampled in accordance with Table 9 below.

c. The sampling frequency can be reduced from those specified in Table 10 below for projects involved large amounts of cover material and/or backfill, once a trend of compliance is established and the NYSDEC provides written authorization to reduce the sampling frequency.

Table 8. Sampling Frequency Requirements for Imported Soils

Analysis Required	**VOCs**	**SVOCs, PCBs, Pesticides & Inorganics**	
Soil Quantity (Cubic Yards)	**Discrete Samples**	**Composite Samples**	**Requirements for Preparation of Composite Samples**
0-50	1	1	Five (5) discrete samples from different locations within the fill being provided will comprise a composite sample for analysis. Additional requirements for composite sampling are described previously in this SMP.
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1,000	7	2	

Analysis Required	VOCs	SVOCs, PCBs, Pesticides & Inorganics	
Soil Quantity (Cubic Yards)	**Discrete Samples**	**Composite Samples**	**Requirements for Preparation of Composite Samples**
>1,000	Add an additional two (2) VOC grab samples and one (1) composite sample for each additional 1,000 cubic yards of material required, unless otherwise approved in writing by the NYSDEC.		

As indicated in Table 8, VOC analysis must be performed on discrete samples only, while all other testing parameters will be analyzed for from composite samples. The following analyses will be performed on the imported fill characterization samples:

- TCL VOCs by EPA Method 8260 (grab samples only).
- TCL SVOCs by EPA Method 8270.
- TCL PCBs by EPA Method 8082.
- Pesticides by EPA Method 8081.
- TAL metals and cyanide by EPA Methods 6010 and 7471.

The results of this chemical testing will be compared to the lower of the NYSDEC's SCOs for the protection of groundwater and protection of public health for residential (140 State Street only), commercial or industrial use as established in Table 375-6.8(b) of 6 NYCRR Subpart 375-6 as well as the supplemental soil cleanup objectives in the NYSDEC's *CP-51: Soil Cleanup* Guidance dated October 2010 and/or any future pertinent soil cleanup guidance document. The source shall be rejected if any of these SCO's are exceeded.

3. **Non-soil Material Imported to the Site:** Gravel, rock or stone, consisting of virgin material from a permitted mine or quarry may be imported without chemical testing, to be used as backfill beneath paved surfaces, buildings, or as part of the final soil cover layer, provided that it contains less than ten (10) percent by weight material which would pass through a size No. 80 sieve.

   For material designated as "virgin," written documentation shall be provided to the Site owner or owner's representative and the NYSDEC to document that the soil is native material from areas not having supported any known prior industrial or commercial development or agricultural use and is not now, nor has ever been, identified as a suspected depository for chemical, toxic, hazardous, or radioactive wastes.

The environmental professional and/or engineer will be responsible for determining the need for additional material testing, such as particle size analysis, maximum dry density determination, moisture content, Atterberg limits, etc. for geotechnical purposes.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases. Stockpiles will be limited to a maximum size of 500 cubic yards. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Bill of ladings should be provided to the Site owner or owner's representative to document that the fill was delivered from a NYSDEC approved source. The bill of ladings will be included with Periodic Review Reports.

7.11 STORMWATER POLLUTION PREVENTION

Prior to beginning any intrusive activities, appropriate erosion and sediment controls (ESCs) will be installed. This section is intended to provide general guidelines for installing and maintaining ESCs; however, the appropriate ESCs need to be selected on a case-by-case basis given the location of the activity, the size on the disturbance, the proximity of the activity to discharge points, etc. All erosion and sediment controls should be designed and installed in accordance with the NYSDEC's Standards and Specifications for Erosion and Sediment Control, dated August 2005 or later.

Proven soil conservation practices will be incorporated in future work plans involving intrusive activities to mitigate soil erosion, off-Site sediment migration, and water pollution from erosion. These practices may combine both vegetative and structural measures. Some measures will be permanent in nature and become part of the completed project (design features such as drainage channels and grading). Other measures will be temporary and serve only during the construction stage. The contractor will remove temporary measures at the completion of construction and stabilization of the Site. The selection of ESC measures will be based on several general principles, including:

- The minimization of erosion through project design (maximum slopes, phased construction, etc.).
- The incorporation of temporary and permanent erosion control measures.
- The removal of sediment from sediment-laden storm water before it leaves the Site.

The use of appropriate temporary erosion control measures such as silt fencing and/or hay bales will be required around all soil/fill stockpiles and un-vegetated soil surfaces during construction activities. These methods are described below. Stockpiles shall be graded and compacted as necessary to provide positive surface water runoff and dust control. Stockpiles of soil/fill will be placed a minimum of twenty feet from the Site boundaries and as far away from discharge points as practical.

7.12 TEMPORARY EROSION CONTROL MEASURES

Prior to any intrusive activity, temporary ESC measures shall be installed and maintained until such time that permanent erosion control measures are installed and effective. Additional sediment control measures may also be necessary. Structural measures, such as those described below, will be designed and installed to provide the required ESC:

- Silt fencing.
- Straw bales.
- Temporary vegetation/mulching.

Re-grading and cover activities may result in sheet flow to various areas of the Site, and therefore, silt fencing will be used as the primary sediment control measure for disturbed areas. Prior to extensive clearing, grading, excavation, and placement of cover soils, silt fences will be installed along all construction perimeter areas to prevent sedimentation in low areas and drainage areas. The location and orientation of silt fencing will be determined based upon the planned intrusive activities, drainage pathways, etc. Breaks and overlaps in the silt fencing may be required to allow construction vehicles access to the construction areas, but will be minimized. Intermediate silt fencing will be used upslope of perimeter areas where phased construction activities are occurring. This measure will effectively lower sheet flow velocities and reduce sediment loads to perimeter fencing. In addition, silt fencing around soil stockpiles will be required. The perimeter silt fences will remain in place until construction activities in the area are completed and vegetative cover or other erosion control measures are adequately established.

Straw bales will be used to intercept sediment-laden runoff from storm water channels as needed during various phases of intrusive activities. Additional straw bale dikes may be necessary in some areas during some phases of construction. Use of straw bales will be limited to swales and/or diversion ditches where the anticipated flow velocity will not be greater than five (5)

feet per second (FPS). Where flows may eventually exceed five (5) FPS along a swale or diversion ditch, an intermediate straw bale barrier will be installed up-gradient of the final bale barrier. The intermediate bale barrier will effectively reduce flow velocities and sediment load to the final barrier. Straw bale barriers will remain in place until construction activities contributing sediment to the barrier are complete and vegetative cover or other erosion control measures are adequately established.

In areas where activities will not resume for a period in excess of two weeks, the disturbed areas will be seeded with a quick germinating variety of grass or covered with a layer of straw mulch. The temporary cover will act to stabilize the soil and reduce erosion. As construction progresses, areas containing temporary vegetation or straw mulch can be covered without removal of the temporary vegetation or mulch.

The following minimal checks will be made throughout the duration of intrusive activities to ensure the continued performance of the ESCs:

- Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

- Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Accumulated sediment will be removed when fifty (50) percent of the storage capacity of the straw bale barrier has been reached in order to maintain performance of the barrier and prevent overtopping or failure of the straw bale barrier.

- All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Accumulated sediment on the up-gradient side of the silt fence will be removed whenever fifty (50) percent of the storage capacity of the fence has been reached in order to maintain performance of the fence and reduce the likelihood of a structural failure of the fence.

- Removed sediment and sediment laden straw bales will be stockpiled, dewatered and disposed beneath the demarcation barrier or be disposed of off-Site as a solid waste.

- Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

- ESC measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

- Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

7.13 PERMANENT EROSION CONTROL MEASURES

Permanent erosion control measures and facilities will be incorporated into the Site as part of all future intrusive activities as appropriate. Permanent ESCs and facilities will be installed as early as possible during construction phases. Preventing erosion and scour of the final soil cover system will be a critical component of all future intrusive activities.

Final soil cover system requirements are detailed in Section 2.2.1.1.

7.14 COMMUNITYAIR MONITORING PLAN

Air monitoring will be performed at the Site during all intrusive activities conducted below the demarcation barrier in accordance with the New York State Department of Health (NYSDOH) *Generic Community Air Monitoring Plan (CAMP),* and Appendix 1A and 1B of DER-10. All air monitoring will be conducted on a real-time basis using both hand-held field instruments and perimeter air monitoring stations. All air monitoring readings will be recorded in a logbook and/or recorded by data loggers, and made available for review by both the NYSDEC and NYSDOH. The CAMP developed for the Site consists of two primary components, fugitive dust control plan and vapor control plan. The potential presence of volatile organic compounds (VOCs) at the Site necessitates the need for vapor monitoring. Air monitoring will be conducted both upwind and downwind of the intrusive activities and will be compared to assess if the activities are causing potential airborne migration of particulates and/or gases.

The CAMP is not intended for use in establishing action levels for worker respiratory protection that are otherwise described in Site-specific HASPs prepared for the intrusive Site activities. Rather, its intent is to provide a measure of protection for the downwind community (i.e. off-Site receptors including residences and businesses and on-Site workers not directly involved with the subject work activities) from potential airborne releases as a direct result of the proposed work activities. Reliance on the CAMP should not preclude simple, common-sense measures to keep dust and odors at a minimum around the work areas, and supplements to the CAMP may be required depending on the nature of the planned intrusive activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

7.15 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-Site and on-Site. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, the following specific odor control measures will be used on a routine basis:

1. Limiting the area of open excavations and size of soil stockpiles.
2. Reducing the speed of excavation activities.
3. Shrouding open excavations with tarps and other covers.
4. Considering weather factors when planning daily activities.
5. Using foams to cover exposed odorous soils.
6. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include:
    a. Direct load-out of soils to trucks for off-Site disposal.
    b. Use of chemical odorants via spray or misting systems.
    c. Use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

7.16 DUST CONTROL PLAN

Dust emissions may occur at the project Site during intrusive activities, including but not limited to, excavation activities. Therefore, fugitive dust control measures will be implemented during intrusive excavation activities conducted below the demarcation barrier.

Appendix 1B – Fugitive Dust Suppression and Particulate Monitoring as provided in the NYSDEC's DER-10 provides guidance for monitoring particulate matter at impacted Sites and suppressing fugitive dust that will be implemented for intrusive activities performed at this Site.

7.17 EXCEEDANCES

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

8.0 HEALTH & SAFETY PLAN REQUIREMENTS

All contractors and/or consultants performing intrusive activities where it may be possible to come in contact with remaining contamination at the Site will be required to prepare and implement a Site-specific and activity-specific Health and Safety Plan (HASP). The activities that may require a HASP include, but are not limited to: redevelopment, improvement, maintenance, monitoring, or other intrusive activities on the Site. The HASP must be prepared by a qualified person in accordance with the most recently adopted and applicable general industry (29 CFR 1910) and construction (29 CFR 1926) standard of the federal Occupational Safety and Health Administration (OSHA), U.S. Department of Labor (DOL), as well as any other federal, state or local applicable statutes and regulations.

Because it is impossible to prepare a HASP that is inclusive of all possible activities that may occur on the Site, a separate HASP will prepared for each project. The persons performing the annual Site wide inspection and monitoring activities will be responsible for preparing a HASP to cover such activities.

Contractor's performing work at the Site will be responsible for preparing their own task-specific HASP. While much of the information contained in this SMP may be sufficient, the need for additional hazard analyses is expected to change based upon the type of work to be performed (e.g. hot work permits, confined space entry, etc.) and the equipment (e.g. heavy machinery, ladders, scaffolding, etc.) that is to be used. Additionally, some of the emergency contact info may change, Material Safety Data Sheets (MSDSs) may need to be added, etc. The contractors' HASP must be submitted to the Site owner and/or the Site representative prior to the commencement of intrusive activities for review.

This section provides only the minimum requirements for a HASP, but should not be construed as the HASP, as it is not activity specific, nor hazard specific. The Contractor will not be permitted to commence with construction/intrusive activities until the HASP has been received by the NYSDEC and Site owner's representative.

Acceptance of the Plan does not waive any responsibility of the Contractor to ensure that the HASP is adequate to comply with all regulations or compliance by personnel. Neither the Site owner, nor the NYSDEC, assume, in any manner, the control or responsibility of the Contractor to provide safe working conditions of the contractor's employees or subcontractors in requiring the Contractor to

follow general safety requirements. The contractors shall maintain the following items on the Site, at a minimum, when conducting intrusive Site activities below the demarcation barrier:

- A copy of the HASP
- First aid kit
- Fire extinguisher(s)
- Personal protective equipment (PPE)
- Air monitoring equipment and calibration equipment
- Spill containment equipment and cleanup materials

8.1 COMPLIANCE

Disregard for the provisions of the HASP by the remedial Contractor and/or his subcontractors or employees shall be deemed just and sufficient to cause for stoppage of work by the Owner and/or NYSDEC. Furthermore, compliance with the minimum requirements in this document does not relieve the Contractor from the responsibility for implementing proper health and safety procedures during unanticipated conditions throughout the duration of the work at the Site covered by this SMP.

All on-Site workers must comply with the requirements of the HASP. The Contractor's HASP must comply with all applicable federal (including 29 CFR 1910.120 and 29 CRF 1926) and state regulations protecting human health and the environment from the hazards posed by activities during intrusive Site activities.

8.2 RESPONSIBILITIES

The Contractor shall:

1. Be responsible and liable for the health and safety of all on-Site personnel and off-Site community impacted by the Site redevelopment activities.
2. Ensure all OSHA health and safety requirements are met (29 CFR 1910 – General Industry Safety and Health Standards and 29 CFR 1926 – Construction Industry Safety and Health Standards) and be responsible for compliance with all federal and state regulations.

3. Ensure that all project personnel have been trained in accordance with 29 CFR 1910.120.

4. Perform all work in a safe and environmentally acceptable manner. The Contractor will provide for the safety of all project personnel and make all reasonable efforts to protect the environment and community during the remedial activities. Barricades, warning lights, roped-off areas, and proper signs shall be furnished in sufficient amounts and locations to safeguard the project personnel and public at all times.

5. Employ a Safety Officer (SO) who shall be assigned full-time responsibility for all tasks herein described under this HASP and be on-Site during all remedial activities. In the event the SO cannot meet his responsibilities, the Contractor shall be responsible for obtaining the services of an "alternate" SO meeting the minimum requirements and qualifications. No work will proceed on this project in the absence of an approved SO.

6. Ensure that all project personnel have obtained the required physical examination prior to and at the termination of work covered by the contract.

7. Be responsible for the pre-job indoctrination of all project personnel with regard to the HASP and other safety requirements to be observed during work, including but not limited to (a) potential hazards, (b) personal hygiene principles, (c) personal protection equipment, (d) respiratory protection equipment usage and fit testing, and (e) emergency procedures dealing with fire and medical situations.

8. Be responsible for the implementation of this HASP and the Emergency Contingency and Response Plan.

9. Provide and ensure that all project personnel are properly clothed and equipped and that all equipment is kept clean and properly maintained in accordance with the manufacturer's recommendations or replaced as necessary.

10. Will perform all Site redevelopment work in a safe and environmentally acceptable manner. The Contractor will provide for the safety of all project personnel and the community for the duration of the redevelopment activities.

11. Have sole and complete responsibility for safety conditions for the project, including safety of all persons (including employees).

12. Maintain a chronological log of all persons entering the project Site. It will include organization, date, and time of entry and exit. Each person must sign in and out.

13. Maintain and keep available safety records, up-to-date copies of all pertinent safety rules and regulations, material safety data sheets, the Contractor's Site-specific HASP, and the emergency response plan.

14. Hold safety meetings, including routine on-Site safety meetings.

15. Stop work whenever a work procedure or a condition at the work Site is deemed unsafe by the SO.

8.3 ELEMENTS OF A HEALTH AND SAFETY PLAN

A Site-specific HASP will be prepared in accordance with OSHA regulations and 29 CFR 1910.120. The HASP will contain the following elements at a minimum:

- All items identified in OSHA regulations 29 CFR 1910.120(b)(4).
- Organization and responsibilities of the project/health and safety team along with emergency phone numbers.
- Characterization of the chemical, biological, and physical hazards present at the Site.
- Identification and evaluation of all Site hazards/risks (task specific).
- A description of the medical monitoring program for on-Site personnel.
- A summary of the real-time air-monitoring program or Community Air Monitoring Program (CAMP) to be conducted during intrusive activities. The CAMP requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e. dust) and the downwind perimeter of each designated work area when intrusive activities are in progress. It is intended to provide a measure of protection for the downwind community rather than for use in establishing action levels for worker respiratory protection.
- Site control measures.
- Instructions on the selection and use of personal protective equipment (PPE) and action levels for upgrading or downgrading PPE.
- Proper delineation of work zones.
- Decontamination procedures for both equipment and on-Site personnel.
- An accident prevention and contingency plan.
- Other applicable procedures relative to Hazard Communication (Right-to-Know) Program, first aid procedures, cold/heat stress, confined space entry, hot work permits, lockout/tagout, spill containment program, etc. and material safety data sheets for all chemicals brought onto the project Site.

8.4 POTENTIAL SITE HAZARDS

8.4.1 Physical Hazards

Physical hazards such as the following may be encountered on Site:

- Slip/Trip/Fall (e.g. from animal burrows, debris, steep topography, ice, etc.)
- Ultraviolet rays
- Lifting strains (e.g., equipment)
- Heavy machinery and vehicles (e.g. excavator)
- Flying debris (e.g. debris from excavation equipment)
- Noise (e.g. elevated noise levels associated with excavation equipment)
- Heat/cold stress

8.4.2 Biological Hazards

Biological hazards such as the following may be encountered on Site:

- Poisonous plants – poison ivy, poison oak, poison sumac
- Insects/animals – deer ticks, mosquitoes, rabid animals, snakes, turkeys, stray animals

8.4.3 Chemical Hazards

Based upon past environmental investigations completed at the landfill, Site personnel may be exposed to the following chemical hazards during intrusive activities.

Table 9. Possible Chemical Hazard Exposures

Chemical	Target Organ
Benzo(a)anthracene	Kidneys and liver
Benzo(a)pyrene	Skin, respiratory system, bladder, kidneys
Benzo(b)fluoranthene	Eyes, heart, liver, kidneys, CNS
Tetrachloroethene	Eyes, skin, respiratory system, liver, kidneys, CNS
Trichloroethene	Eyes, skin, respiratory system, heart, liver, kidneys, CNS
Dichloroethene	Eyes, respiratory system, CNS
Mercury	Eyes, skin, respiratory system, CNS, kidneys

The potential exposure mechanism that can transport particulates from the areas of the inspection and monitoring to other areas of the Site as well as beyond the boundaries of the Site are:

- Soil from intrusive activities projected by air currents
- Contact with the soil

TABLES

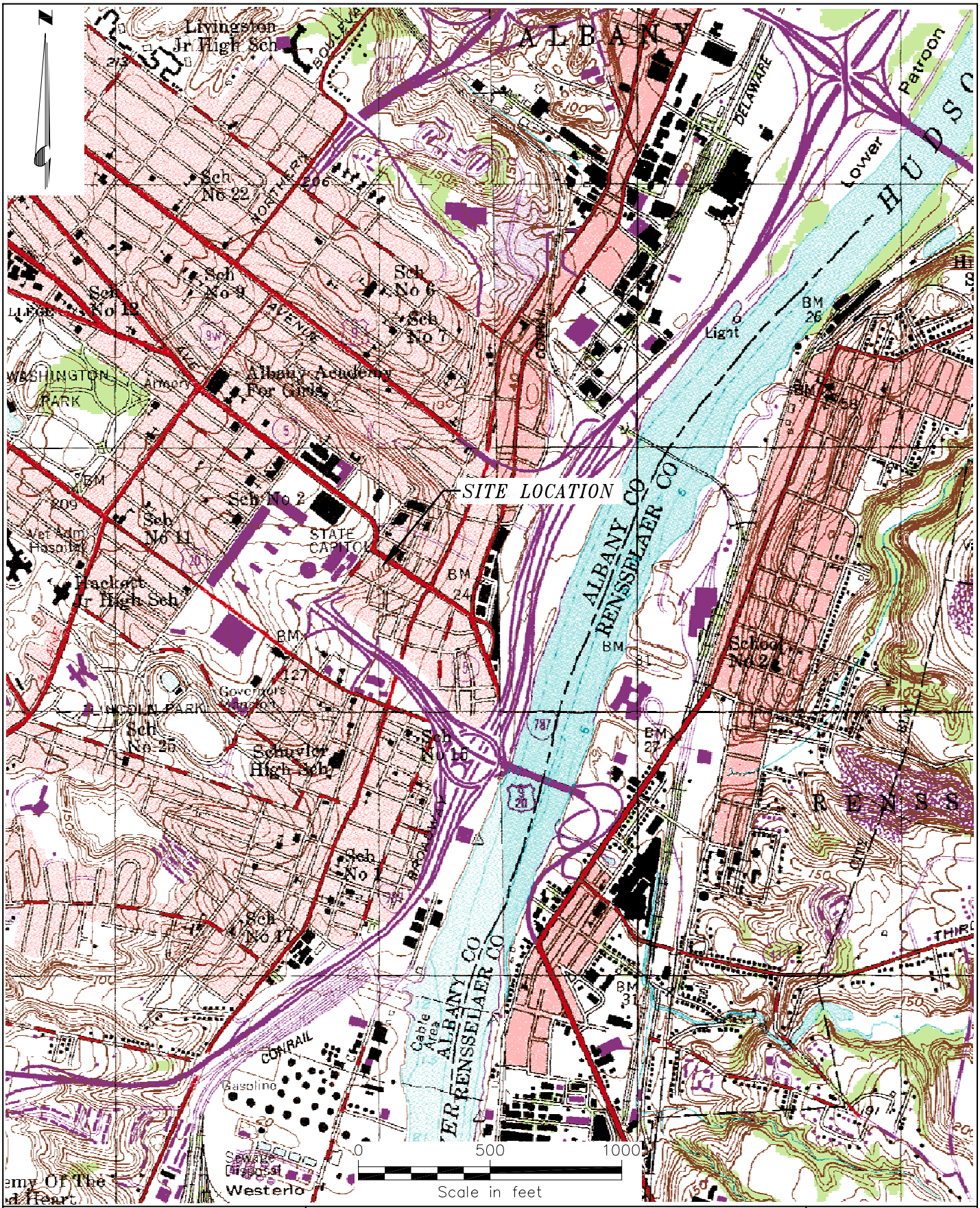
Table 1
Confirmatory and Documentation Sample Summary
Former Albany Laboratories Site
Albany, New York

	sample_name	S001BJH012611	S002BJH012611	S003WJH012711	S004WJH013111	S005BJH013111	S006WJH013111	S007BJH013111	S008WJH013111	S009WJH02111	S099WJH02111	S010BJH02111	S011WJH02111	S012WJH02311	S013WJH02311
	sample_date	1/26/2011	1/26/2011	1/27/2011	1/31/2011	1/31/2011	1/31/2011	1/31/2011	1/31/2011	2/1/2011	2/1/2011	2/1/2011	2/1/2011	2/3/2011	2/3/2011
Chemical Name	***Part 375 Unrestricted***	Units										(Duplicate to S009)			(Samples for over excavation at Sample S004)	
1,1,1,2-Tetrachloroethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
1,1,1-Trichloroethane	680	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
1,1,2,2-Tetrachloroethane	NA	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
1,1,2-Trichloroethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
1,1-Dichloroethane	270	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
1,1-Dichloroethene	330	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
1,1-Dichloropropene	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
1,2,3 Trichloropropane	NA	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
1,2,3-TRICHLOROBENZENE	NA	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
1,2,4-Trichlorobenzene	NA	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
1,2: Dibromo-3-Chloropropane	NA	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
1,2-Dibromoethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
1,2-Dichlorobenzene	1,100	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	272	511	16.6 J	28.3 J	14.2 J	17.8 J
1,2-Dichloroethane	**20**	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	**18.5**	**19.9**	16.6 U	28.3 U	14.2 U	17.8 U
1,2-Dichloropropane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 J	17.8 J
1,3-Dichlorobenzene	2,400	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
1,3-Dichloropropane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 U	17.8 U
1,4-Dichlorobenzene	1,800	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	41.7	57.4	16.6 J	28.3 J	14.2 J	17.8 J
2,2-Dichloropropane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
2-Butanone	120	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
2-Chloroethyl Vinyl Ether	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
2-Chlorotoluene	NA	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
2-Hexanone	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
4-Methyl-2-Pentanone	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
Acetone	**50**	ug/kg	**248 J**	139 U	82.8 U	3270 U	73 U	119 U	158 U	60.7 U	83 U	70.6 U	81.1 U	141 U	71.1 U	88.8 U
Benzene	60	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Benzene, (1-methylethyl)-	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Benzene, 1,2,4-trimethyl-	3,600	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
Benzene, 1,3,5-trimethyl-	8,400	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 U	28.3 J	14.2 J	17.8 J
Benzene, 1-methyl-4-(1-methylethy	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Benzene, propyl-	3,900	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 U	28.3 J	14.2 U	17.8 U
Bromochloromethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Bromodichloromethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Bromoform	NA	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
Bromomethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Carbon Disulfide	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Carbon Tetrachloride	760	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Chlorobenzene	1,100	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
Chloroethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Chloroform	370	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Chloromethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Chlorotoluene	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 U	17.8 U
Cis-1,2-Dichloroethene	**250**	ug/kg	23.3 U	27.9 U	16.6 U	**2290**	14.6 U	23.8 U	31.7 U	12.1 U	**1440**	**1380**	16.6 U	28.3 U	14.2 U	17.8 U
Cis-1,3-Dichloropropene	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Dibromomethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Dichlorobromomethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Dichlorodifluoromethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Ethylbenzene	1,000	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
Hexachlorobutadiene	NA	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
Methyl T-Butyl Ether (MTBE)	930	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Methylene Chloride	50	ug/kg	117 U	139 U	82.8 U	655 U	73 U	119 U	158 U	60.7 U	83 U	70.6 U	81.1 U	141 U	71.1 U	88.8 U
Monobromobenzene	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Naphthalene	12,000	ug/kg	23.3 J	27.9 U	16.6 U	1590	22.5 J	23.8 J	34.9 J	12.1 J	16.6 U	14.1 U	17.2 J	28.3 J	14.2 J	17.8 J
n-Butylbenzene	12,000	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
sec-Butylebenzene	11,000	ug/kg	23.3 J	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
Styrene	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
tert-Butylbenzene	5,900	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 J	23.8 J	31.7 J	12.1 J	16.6 U	14.1 U	16.6 J	28.3 J	14.2 J	17.8 J
Tetrachloroethene	**1,300**	ug/kg	23.3 U	27.9 U	16.6 U	**3430**	14.6 U	34.6 J	31.7 U	12.1 U	22.5	46.7	16.6 J	28.3 U	14.2 J	17.8 J
Toluene	700	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
Trans-1,2-Dichloroethene	**190**	ug/kg	23.3 U	27.9 U	16.6 U	**1920**	14.6 U	23.8 U	31.7 U	12.1 U	58.6	70.4	16.6 U	28.3 U	14.2 U	17.8 U
Trans-1,3-Dichloropropene	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
Trichloroethylene	**470**	ug/kg	23.3 U	27.9 U	25.6 J	**5920 J**	14.6 U	23.8 U	31.7 U	12.1 U	**727**	**1350**	16.6 U	28.3 U	14.2 U	17.8 U
Trichlorofluoromethane	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Vinyl Acetate	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Vinyl Chloride	20	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 U	28.3 U	14.2 U	17.8 U
Xylene, O-	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J
Xylenes (M and P)	NA	ug/kg	23.3 U	27.9 U	16.6 U	655 U	14.6 U	23.8 U	31.7 U	12.1 U	16.6 U	14.1 U	16.6 J	28.3 U	14.2 J	17.8 J

Table 1
Confirmatory and Documentation Sample Summary
Former Albany Laboratories Site
Albany, New York

	sample_name sample_date	S014BJH02311 2/3/2011	S015WJH02311 2/3/2011	S016WJH02311 2/3/2011	S017WJH02311 2/3/2011
Chemical Name	***Part 375 Unrestricted***	(Samples for over excavation at Sample S009)			
1,1,1,2-Tetrachloroethane	NA	20.2 J	13.2 J	25.2 J	24.6 J
1,1,1-Trichloroethane	680	20.2 U	13.2 U	25.2 U	24.6 U
1,1,2,2-Tetrachloroethane	NA	20.2 J	13.2 J	25.2 J	24.6 J
1,1,2-Trichloroethane	NA	20.2 J	13.2 J	25.2 J	24.6 J
1,1-Dichloroethane	270	20.2 U	13.2 U	25.2 U	24.6 U
1,1-Dichloroethene	330	20.2 U	13.2 U	25.2 U	24.6 U
1,1-Dichloropropene	NA	20.2 U	13.2 U	25.2 U	24.6 U
1,2,3 Trichloropropane	NA	20.2 J	13.2 J	25.2 J	24.6 J
1,2,3-TRICHLOROBENZENE	NA	20.2 J	13.2 J	25.2 J	24.6 J
1,2,4-Trichlorobenzene	NA	20.2 J	13.2 J	25.2 J	24.6 J
1,2: Dibromo-3-Chloropropane	NA	20.2 J	13.2 J	25.2 J	24.6 J
1,2-Dibromoethane	NA	20.2 J	13.2 J	25.2 J	24.6 J
1,2-Dichlorobenzene	1,100	20.2 J	13.2 J	25.2 J	24.6 J
1,2-Dichloroethane	**20**	20.2 U	13.2 U	25.2 U	24.6 U
1,2-Dichloropropane	NA	20.2 J	13.2 J	25.2 J	24.6 J
1,3-Dichlorobenzene	2,400	20.2 J	13.2 J	25.2 J	24.6 J
1,3-Dichloropropane	NA	20.2 U	13.2 U	25.2 U	24.6 U
1,4-Dichlorobenzene	1,800	20.2 J	13.2 J	25.2 J	24.6 J
2,2-Dichloropropane	NA	20.2 U	13.2 U	25.2 U	24.6 U
2-Butanone	120	20.2 U	13.2 U	25.2 U	24.6 U
2-Chloroethyl Vinyl Ether	NA	20.2 U	13.2 U	25.2 U	24.6 U
2-Chlorotoluene	NA	20.2 J	13.2 J	25.2 J	24.6 J
2-Hexanone	NA	20.2 J	13.2 J	25.2 J	24.6 J
4-Methyl-2-Pentanone	NA	20.2 J	13.2 J	25.2 J	24.6 J
Acetone	**50**	101 U	66 U	126 U	123 U
Benzene	60	20.2 U	13.2 U	25.2 U	24.6 U
Benzene, (1-methylethyl)-	NA	20.2 U	13.2 U	25.2 U	24.6 U
Benzene, 1,2,4-trimethyl-	3,600	20.2 J	13.2 J	25.2 J	24.6 J
Benzene, 1,3,5-trimethyl-	8,400	20.2 J	13.2 J	25.2 J	24.6 J
Benzene, 1-methyl-4-(1-methylethy	NA	20.2 U	13.2 U	25.2 U	24.6 U
Benzene, propyl-	3,900	20.2 U	13.2 U	25.2 U	24.6 U
Bromochloromethane	NA	20.2 U	13.2 U	25.2 U	24.6 U
Bromodichloromethane	NA	20.2 U	13.2 U	25.2 U	24.6 U
Bromoform	NA	20.2 J	13.2 J	25.2 J	24.6 J
Bromomethane	NA	20.2 U	13.2 U	25.2 U	24.6 U
Carbon Disulfide	NA	20.2 U	13.2 U	25.2 U	24.6 U
Carbon Tetrachloride	760	20.2 U	13.2 U	25.2 U	24.6 U
Chlorobenzene	1,100	20.2 J	13.2 J	25.2 J	24.6 J
Chloroethane	NA	20.2 U	13.2 U	25.2 U	24.6 U
Chloroform	370	20.2 U	13.2 U	25.2 U	24.6 U
Chloromethane	NA	20.2 U	13.2 U	25.2 U	24.6 U
Chlorotoluene	NA	20.2 U	13.2 U	25.2 U	24.6 U
Cis-1,2-Dichloroethene	**250**	20.2 U	13.2 U	25.2 U	24.6 U
Cis-1,3-Dichloropropene	NA	20.2 U	13.2 U	25.2 U	24.6 U
Dibromomethane	NA	20.2 U	13.2 U	25.2 U	24.6 U
Dichlorobromomethane	NA	20.2 U	13.2 U	25.2 U	24.6 U
Dichlorodifluoromethane	NA	20.2 U	13.2 U	25.2 U	24.6 U
Ethylbenzene	1,000	20.2 J	13.2 J	25.2 J	24.6 J
Hexachlorobutadiene	NA	20.2 J	13.2 J	25.2 J	24.6 J
Methyl T-Butyl Ether (MTBE)	930	20.2 U	13.2 U	25.2 U	24.6 U
Methylene Chloride	50	101 U	66 U	126 U	123 U
Monobromobenzene	NA	20.2 U	13.2 U	25.2 U	24.6 U
Naphthalene	12,000	20.2 J	13.2 J	25.2 J	24.6 J
n-Butylbenzene	12,000	20.2 J	13.2 J	25.2 J	24.6 J
sec-Butylebenzene	11,000	20.2 J	13.2 J	25.2 J	24.6 J
Styrene	NA	20.2 J	13.2 J	25.2 J	24.6 J
tert-Butylbenzene	5,900	20.2 J	13.2 J	25.2 J	24.6 J
Tetrachloroethene	**1,300**	20.2 J	13.2 J	25.2 J	24.6 J
Toluene	700	20.2 J	13.2 J	25.2 J	24.6 J
Trans-1,2-Dichloroethene	**190**	20.2 U	13.2 U	25.2 U	24.6 U
Trans-1,3-Dichloropropene	NA	20.2 J	13.2 J	25.2 J	24.6 J
Trichloroethylene	**470**	20.2 U	13.2 U	25.2 U	24.6 U
Trichlorofluoromethane	NA	20.2 U	13.2 U	25.2 U	24.6 U
Vinyl Acetate	NA	20.2 U	13.2 U	25.2 U	24.6 U
Vinyl Chloride	20	20.2 U	13.2 U	25.2 U	24.6 U
Xylene, O-	NA	20.2 J	13.2 J	25.2 J	24.6 J
Xylenes (M and P)	NA	20.2 J	13.2 J	25.2 J	24.6 J

FIGURES



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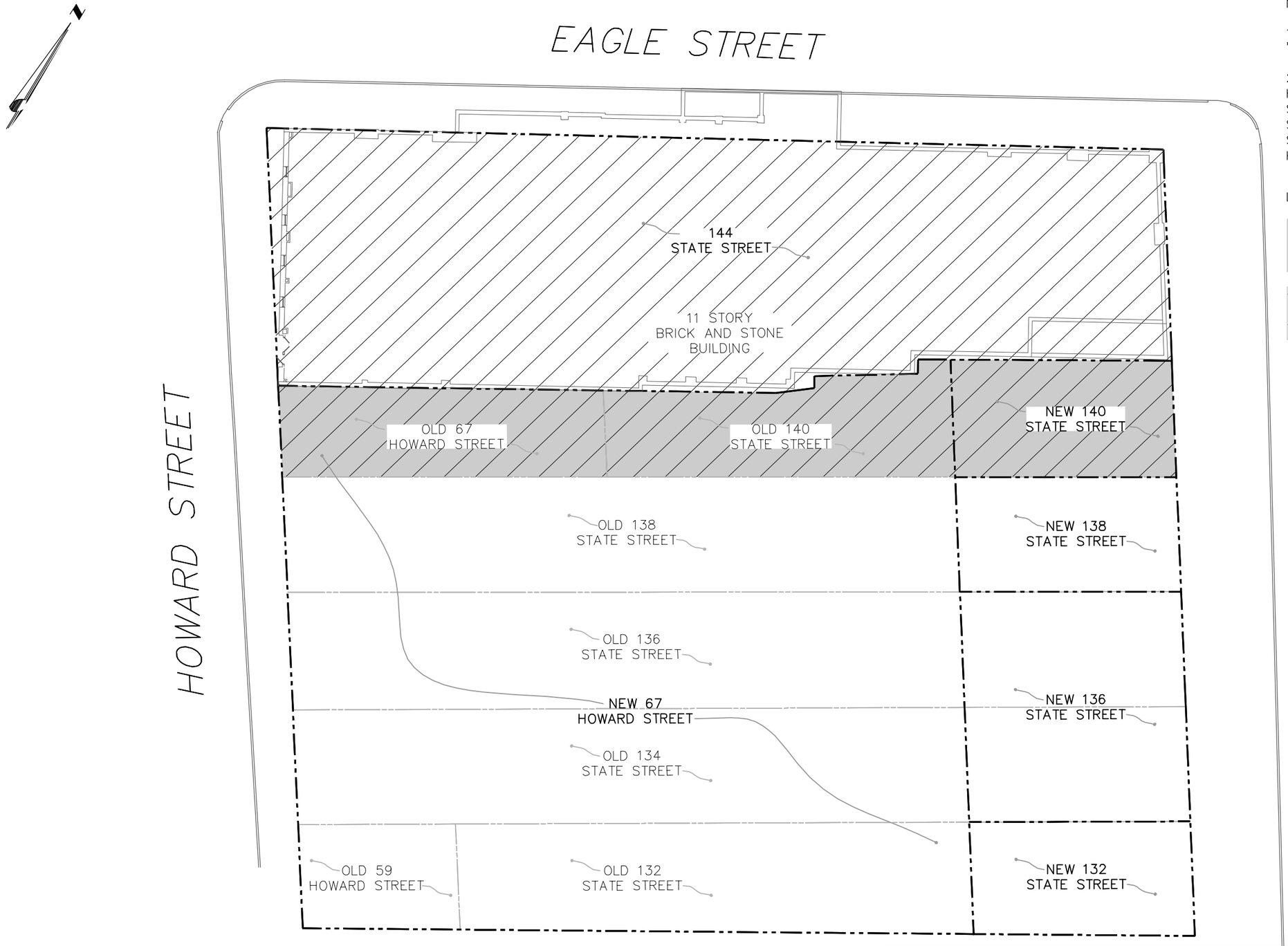
SITE LOCATION MAP

67 HOWARD STREET SITE
ALBANY, NEW YORK

PROJECT NO. 21645

DATE: 07/09/10

FIGURE 1



NOTES:

1. "144 STATE STREET" WAS PREVIOUSLY REFERRED TO AS "142 STATE STREET".

2. PARCELS OR PORTIONS OF PARCELS LABELED "OLD 67 HOWARD STREET", "OLD 138 HOWARD STREET", "OLD 140 STATE STREET", "OLD 136 STATE STREET", "OLD 59 HOWARD STREET", "OLD 132 STATE STREET" AND "OLD 134 STATE STREET" HAVE BEEN COMBINED TO BECOME "NEW 67 HOWARD STREET".

LEGEND:

SUBJECT SITE

MANAGED UNDER SITE MANGEMENT PLAN

0 30 60

Scale in feet
(APPROXIMATE)

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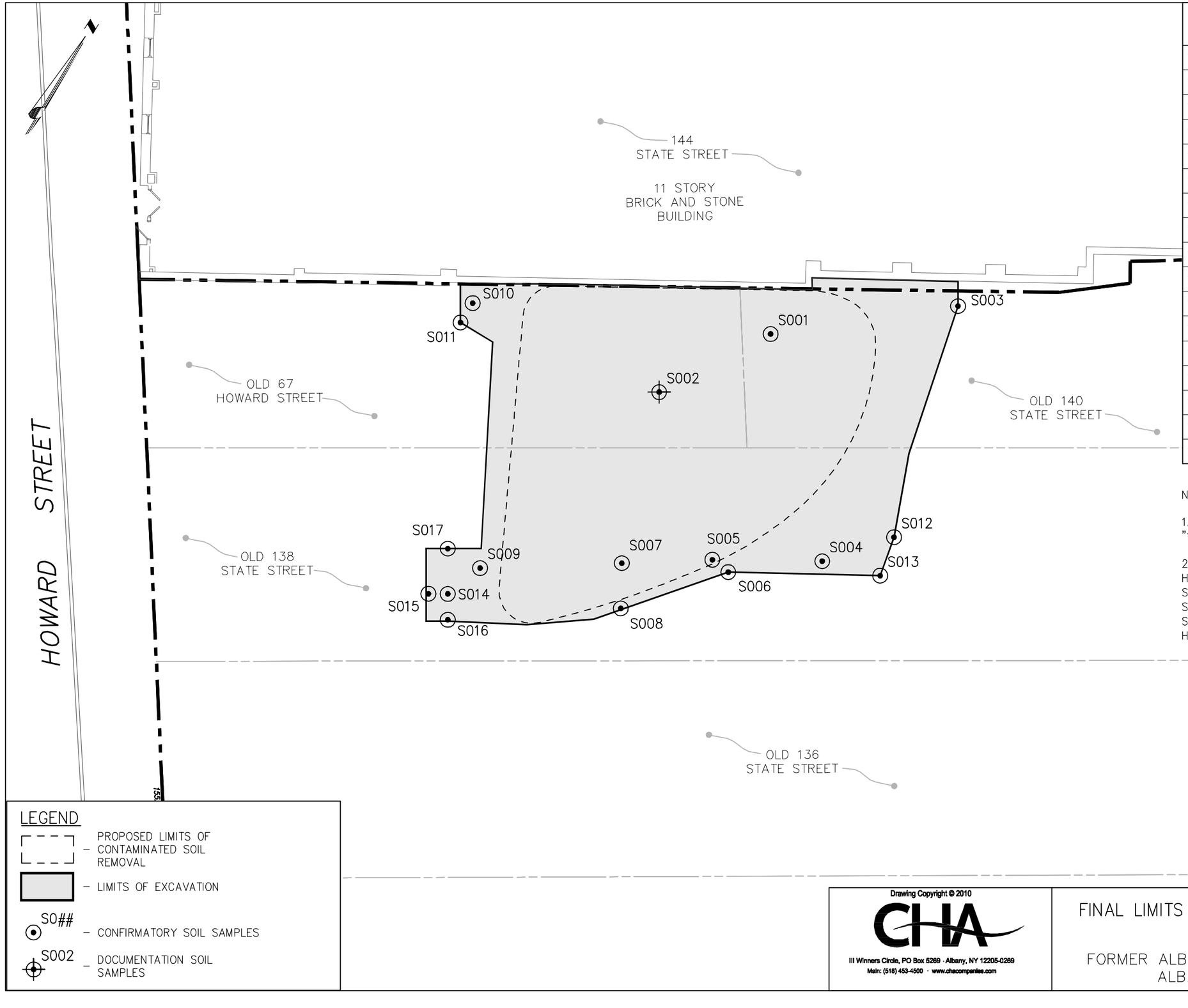
GENERAL SITE LAYOUT

FORMER ALBANY LABORATORIES SITE
ALBANY, NEW YORK

PROJECT NO. 21645

DATE: 03/14/14

FIGURE 2



SAMPLE I.D. #	SAMPLE TYPE	PID (ppm)	DEPTH (bgs)
S001-BJH012611	BOTTOM	0.5	11'-12'
S002-BJH012611	BOTTOM	0.5	11'-12'
S003-WJH012711	SIDEWALL	0.5	11'
S004-WJH013111	SIDEWALL	1.8	11'
S005-BJH03111	BOTTOM	0.0	15'
S006-WJH013111	SIDEWALL	0.0	11'-12'
S007-BJH013111	BOTTOM	0.6	15'
S008-WJH013111	SIDEWALL	0.4	11'-12'
S009-WJH02111	SIDEWALL	0.5	12'
S010-BJH02111	BOTTOM	0.0	11'-12'
S011-WJH02111	SIDEWALL	0.0	11'
S012-WJH023111	SIDEWALL	0.2	11'-12'
S013-WJH02311	SIDEWALL	0.0	11'-12'
S014-BJH02311	BOTTOM	0.2	13'-14'
S015-WJH02311	SIDEWALL	0.2	10'-11'
S016-WJH02311	SIDEWALL	0.2	10'-11'
S017-WJH02311	SIDEWALL	0.4	11'-12'

NOTES:

1. "144 STATE STREET" WAS PREVIOUSLY REFERRED TO AS "142 STATE STREET".

2. PARCELS OR PORTIONS OF PARCELS LABELED "OLD 67 HOWARD STREET", "OLD 138 HOWARD STREET", "OLD 140 STATE STREET", "OLD 136 STATE STREET", "OLD 59 HOWARD STREET", "OLD 132 STATE STREET" AND "OLD 134 STATE STREET" HAVE BEEN COMBINED TO BECOME "NEW 67 HOWARD STREET".

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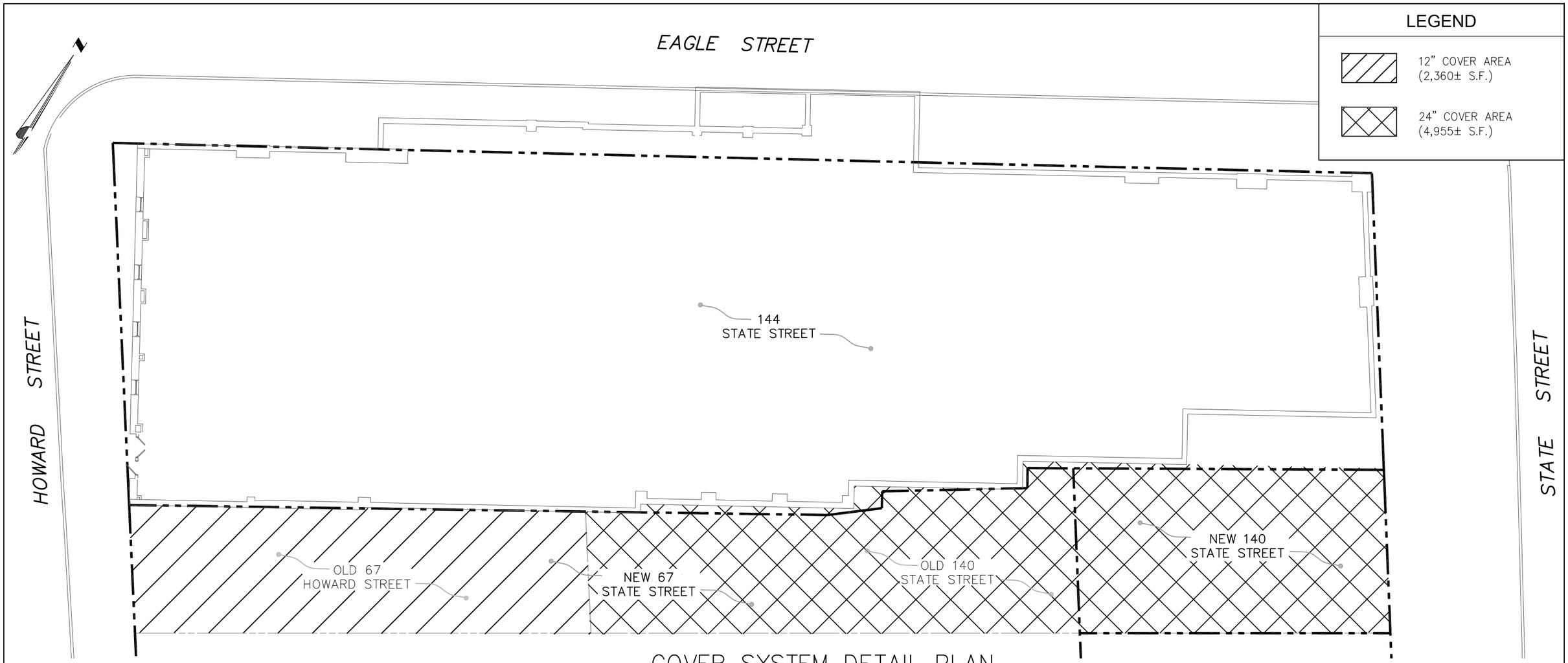
FINAL LIMITS OF CONTAMINATED SOIL REMOVAL

FORMER ALBANY LABORATORIES SITE
ALBANY, NEW YORK

PROJECT NO. 21645

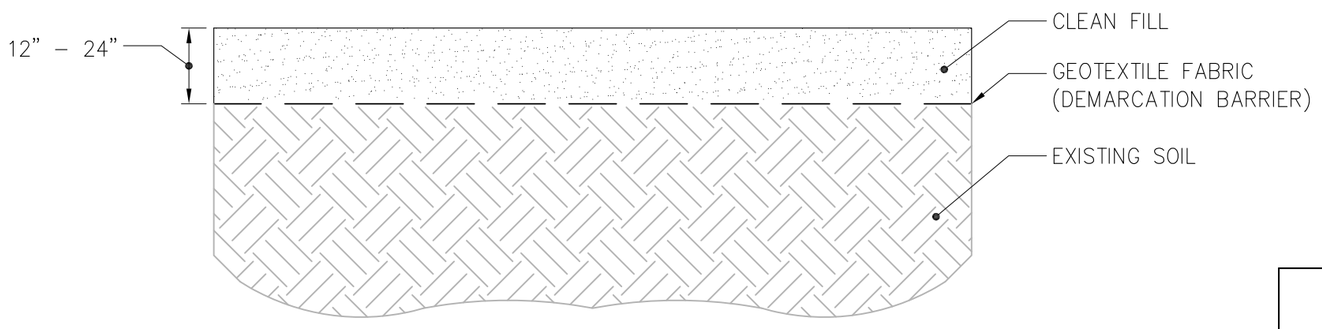
DATE: 03/14/14

FIGURE 3



COVER SYSTEM DETAIL PLAN

SCALE: 1" = 20'



1 COVER SYSTEM DETAIL

SCALE: N.T.S.

NOTES:

1. "144 STATE STREET" WAS PREVIOUSLY REFERRED TO AS "142 STATE STREET".

2. PARCELS LABELED "OLD 67 HOWARD STREET", "OLD 140 STATE STREET" AND OTHERS NOT SHOWN ON THIS MAP HAVE BEEN COMBINED TO BECOME "NEW 67 HOWARD STREET".

0 20 40

Scale in feet
(APPROXIMATE)

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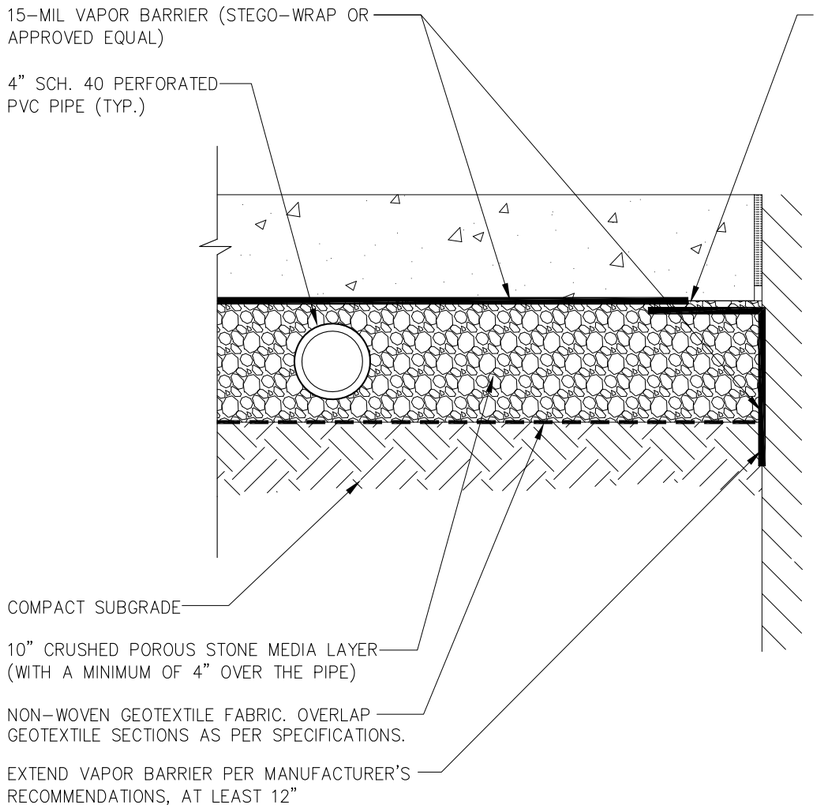
PROPOSED COVER SYSTEM

FORMER ALBANY LABORATORIES SITE
ALBANY, NEW YORK

PROJECT NO. 21645

DATE: 03/14/14

FIGURE 4



NOTES:

1. UPON CONTRACTOR ACCEPTING SUBGRADE BENEATH SLAB, PLACE A LAYER OF NON-WOVEN GEOTEXTILE OVER THE SUBGRADE. PLACE LAYER OF POROUS STONE MEDIA OVER THE GEOTEXTILE FABRIC AND INSTALL PERFORATED PVC PIPING. SET PVC PIPE AND CONTACT ENGINEER FOR REVIEW A MINIMUM OF 48 HOURS PRIOR TO BACKFILLING. ALL PIPE SHALL BE SET LEVEL TO AVOID COLLECTION POINTS FOR CONDENSATION.

2. AFTER THE PIPING NETWORK HAS BEEN REVIEWED, COMPLETE THE PLACEMENT OF THE 10-INCH THICK GAS VENTING LAYER AND COMPACT PER SPECIFICATIONS.

3. INSTALL 15-MIL VAPOR BARRIER PER SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS. SEAL ALL PIPE PENETRATIONS. CONTACT ENGINEER TO REVIEW VAPOR BARRIER A MINIMUM OF 48 HOURS PRIOR TO POURING CONCRETE SLAB.

4. ALL DRILLED HOLES/PENETRATIONS/JOINTS/GAPS IN THE SLAB SHOULD BE REPAIRED OR FILLED WITH A POLYURETHANE SEALANT AS FOLLOWS:

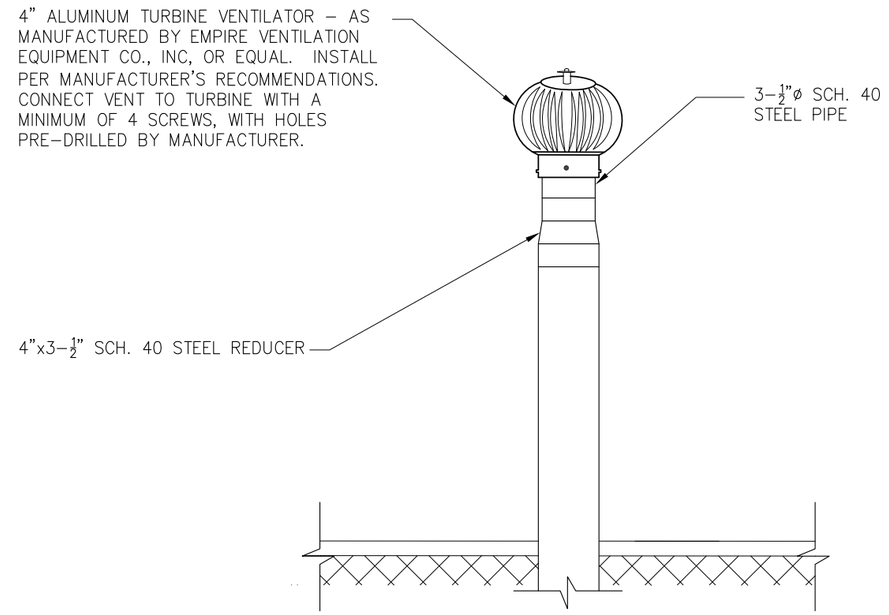
1. GAPS LESS THAN 5/8-INCH WIDE SHALL BE SEALED WITH POLYURETHANE SEALANT: SIKAFLEX LM15 AS MANUFACTURED BY SIKA OR APPROVED EQUAL.

2. GAPS BETWEEN 5/8-INCH AND 1 INCH WIDE SHALL BE SEALED WITH CLOSED-CELL FOAM BACKER ROD AND SELF-LEVELING POLYURETHANE SEALANT: SIKAFLEX SL AS MANUFACTURED BY SIKA OR APPROVED EQUAL.

3. GAPS OR PENETRATIONS GREATER THAN 1-INCH WIDE SHALL BE SEALED WITH HYDRAULIC CEMENT.

1 TYPICAL SLAB CROSS SECTION

SCALE: N.T.S.



NOTES:

1. COORDINATE SEALING OF ROOF PENETRATION WITH ARCHITECT.

2 TYPICAL TURBINE VENTILATOR

SCALE: N.T.S.

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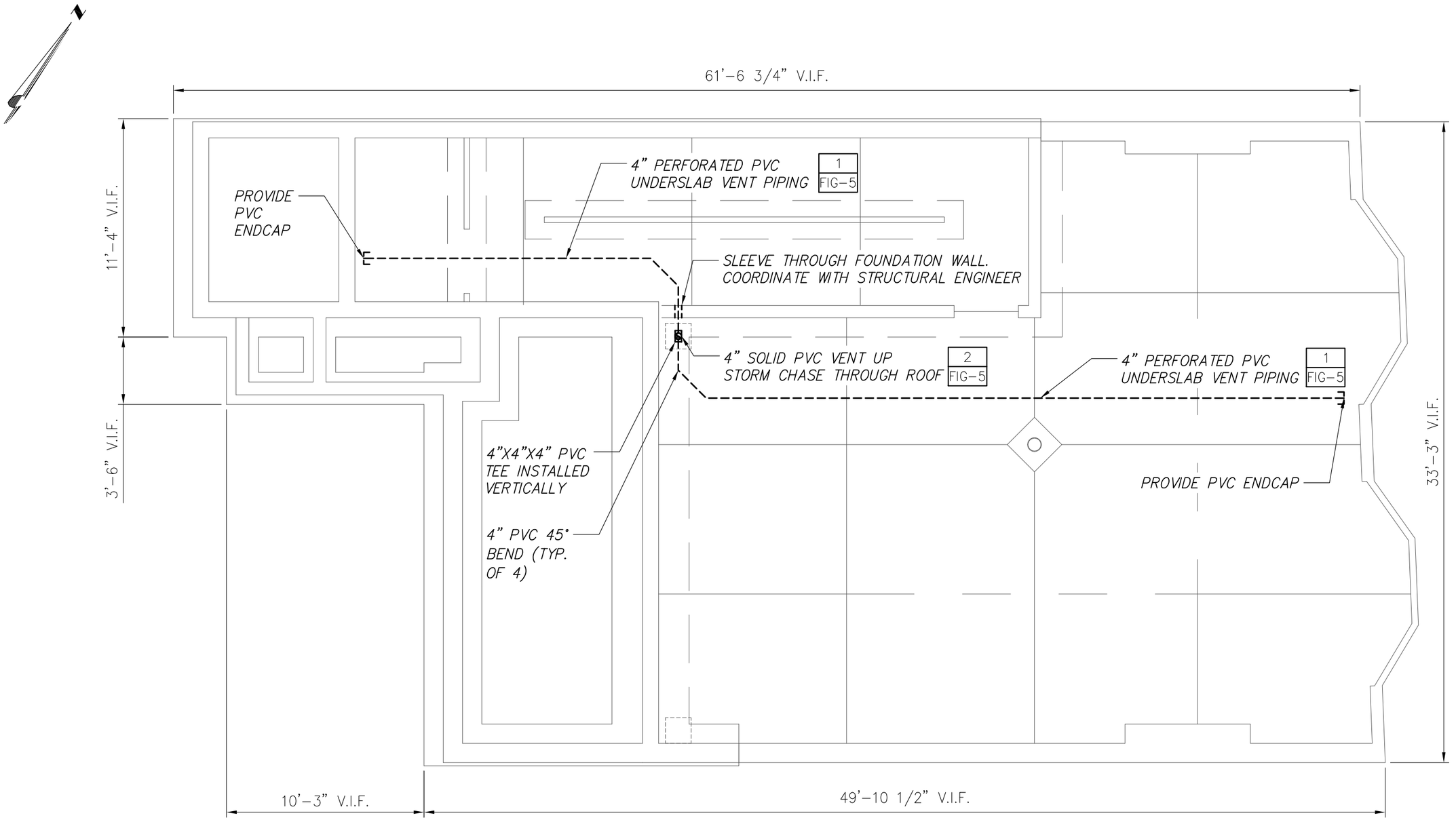
TYPICAL SUB-SLAB VENTILATION SYSTEM DETAILS

FORMER ALBANY LABORATORIES SITE
ALBANY, NEW YORK

PROJECT NO. 21645

DATE: 03/14/14

FIGURE 5



1 FOUNDATION PLAN

SCALE: 3/16" = 1'-0"

NOTES:

1. CONTRACTOR SHALL VERIFY ALL CONDITIONS IN FIELD (V.I.F.)
2. CONTRACTOR SHALL COORDINATE VENT STACK LOCATION WITH ARCHITECT.

CHA
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140 STATE STREET
SUB-SLAB VENTILATION SYSTEM

FORMER ALBANY LABORATORIES SITE
ALBANY, NEW YORK

PROJECT NO. 21645

DATE: 03/14/14

FIGURE 6

APPENDIX A

Environmental Easement

ENGINEERING/INSTITUTIONAL CONTROLS

- COVER SYSTEM – FOR THE FORMER LOT NO. 76.33-1-15 (FORMER 140 STATE STREET) THE COVER SYSTEM IS COMPRISED OF A MINIMUM OF TWO (2) FEET OF CLEAN SOILTHAT MEETS THE SCOs FOR COVER MATERIAL AS SET FORTH IN 6 NYCRR PART 375-6.7(d) FOR RESTRICTED RESIDENTIAL USE.
- PROCEDURES FOR THE INSPECTION AND MAINTENANCE OF COVER SYSTEMS ARE REFERRED TO IN THE SMP.
- FUTURE ACTIVITIES – ALL FUTURE ACTIVITIES THAT WILL INVOLVE EXCAVATION OF SITE SOILS AND/OR CONSTRUCTION OF BUILDINGS ON THE SITE MUST BE CONDUCTED IN ACCORDANCE WITH THE SMP.
- LAND USE –FOR THE FORMER LOT NO. 76.33-1-13 (FORMER 67 HOWARD STREET) MAY ONLY BE USED FOR COMMERCIAL OR INDUSTRIAL USE WHILE THE FORMER LOT NO. 76.33-1-15 (FORMER 140 STATE STREET) MAY ONLY BE USED FOR RESTRICTED RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL USES. THIS IS PROVIDED THAT THE LONG-TERM ENGINEERING AND INSTITUTIONAL CONTROLS INCLUDED IN THE SMP ARE EMPLOYED. THE SITE MAY NOT BE USED FOR A HIGHER LEVEL (LESS RESTRICTIVE), WITHOUT ADDITIONAL REMEDIATION AND AMENDMENT OF THE ENVIRONMENTAL DEED RESTRICTION, AS APPROVED BY THE NYSDEC.
- VAPOR INTRUSION MONITORING & MITIGATION – THE POTENTIAL FOR VAPOR INTRUSION MUST BE EVALUATED FOR ANY BUILDINGS DEVELOPED WITHIN IN THE ENVIRONMENTAL EASEMENT AREA, AND ANY POTENTIAL IMPACTS THAT ARE IDENTIFIED MUST BE MONITORED OR MITIGATED. REFER TO THE SMP FOR REQUIREMENTS AND APPROVED EVALUATION PROCEDURES.
- RESTRICTED RESIDENTIAL USE SHALL PROHIBIT , AT A MINIMUM, (1) ANY VEGETABLE GARDENS ON SITE, (2) USE AS SINGLE FAMILY HOUSING; AND (3) ACTIVE RECREATIONAL USES, WHICH ARE PUBLIC USES WITH A REASONABLE POTENTIAL FOR SOIL CONTACT.

ENVIRONMENTAL EASEMENT DESCRIPTION – NYSDEC SITE NO. 401061
PORTION OF 67 HOWARD STREET

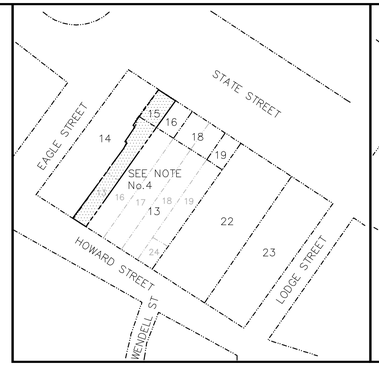
ALL THAT CERTAIN PIECE OR PARCEL OF LAND SITUATE AND LYING EASTERLY OF HOWARD STREET, SOUTHERLY OF EAGLE STREET, IN THE CITY OF ALBANY, COUNTY OF ALBANY AND STATE OF NEW YORK BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE EASTERLY STREET BOUNDARY OF HOWARD STREET AT ITS INTERSECTION WITH THE PROPERTY DIVISION LINE BETWEEN LANDS NOW OR FORMERLY OF SEE WHY GERARD LLC, AS DESCRIBED IN LIBER 2639 OF DEEDS AT PAGE 931 (KNOWN AS 144 STATE STREET), ON THE NORTH AND LANDS NOW OR FORMERLY OF COLUMBIA EAGLE LLC, AS DESCRIBED IN LIBER 2867OF DEEDS ON PAGE 52 (KNOWN AS 67 HOWARD STREET), ON THE SOUTH; THENCE ALONG SAID PROPERTY DIVISION LINE THE FOLLOWNG SIX (6) COURSES AND DISTANCES:
1. NORTH 59°–33'–22" EAST, A DISTANCE OF 142.42 FEET TO A POINT,
2. NORTH 51°–28'–22" EAST, A DISTANCE OF 11.08 FEET TO A POINT,
3. NORTH 30°–26'–38" WEST, A DISTANCE OF 3.42 FEET TO A POINT,
4. NORTH 57°–26'–55" EAST, A DISTANCE OF 29.62 FEET TO A POINT,
5. NORTH 30°–58'–53" WEST, A DISTANCE OF 4.08 FEET TO A POINT, AND
6. NORTH 59°–01'–07" EAST, A DISTANCE OF 9.31 FEET TO A POINT AT ITS INTERSECT WITH THE PROPERTY DIVISION LINE BETWEEN SAID LANDS OF COLUMBIA EAGLE LLC (KNOWN AS 67 HOWARD STREET), ON THE WEST AND OTHER LANDS OF COLUMBIA EAGLE LLC (KNOWN AS 140 STATE STREET) ON THE EAST; THENCE SOUTH 33°–34'–00" EAST, ALONG SAID PROPERTY DIVISION LINE, A DISTANCE OF 33.63 FEET TO A POINT; THENCE SOUTH 58°–46'–48" WEST, THROUGH SAID LANDS OF COLUMBIA EAGLE LLC (KNOWN AS 67 HOWARD STREET), A DISTANCE OF 192.56 FEET TO A POINT ON SAID EASTERLY STREET BOUNDARY OF HOWARD STREET; THENCE NORTH 33°–51'–23" WEST, ALONG SAID EASTERLY STREET BOUNDARY OF HOWARD STREET, A DISTANCE OF 26.00 FEET TO THE POINT OR PLACE OF BEGINNING AND CONTAINING 5,021 SQUARE FEET OR 0.12± ACRES OF LAND, MORE OR LESS.

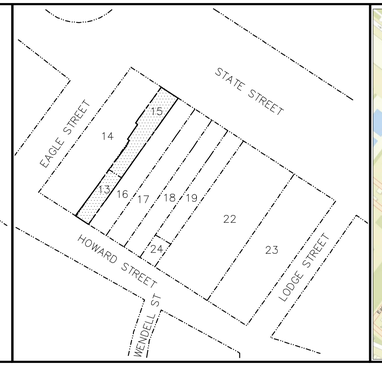
ENVIRONMENTAL EASEMENT DESCRIPTION – NYSDEC SITE NO. 401061
140 STATE STREET

ALL THAT CERTAIN PIECE OR PARCEL OF LAND SITUATE AND LYING WESTERLY OF STATE STREET, SOUTHERLY OF EAGLE STREET, IN THE CITY OF ALBANY, COUNTY OF ALBANY AND STATE OF NEW YORK BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

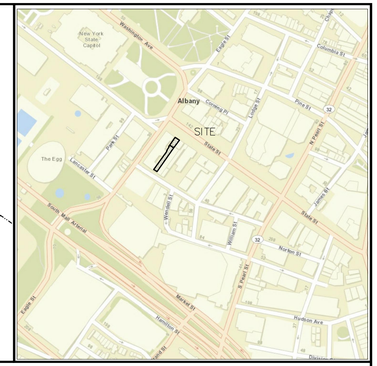
BEGINNING AT A POINT ON THE WESTERLY STREET BOUNDARY OF STATE STREET, AT ITS INTERSECTION WITH THE PROPERTY DIVISION LINE BETWEEN LANDS NOW OR FORMERLY OF SEE WHY GERARD LLC, AS DESCRIBED IN LIBER 2639 OF DEEDS AT PAGE 931 (KNOWN AS 144 STATE STREET), ON THE NORTH AND LANDS NOW OR FORMERLY OF COLUMBIA EAGLE LLC (KNOWN AS 140 STATE STREET), ON THE SOUTH; THENCE SOUTH 33°–34'–03" EAST, ALONG SAID WESTERLY STREET BOUNDARY OF STATE STREET, A DISTANCE OF 33.32 FEET TO A POINT AT ITS INTERSECTION WITH THE PROPERTY DIVISION LINE BETWEEN SAID LANDS OF COLUMBIA EAGLE LLC (KNOWN AS 140 STATE STREET), ON THE NORTH AND OTHER LANDS NOW OR FORMERLY OF COLUMBIA EAGLE LLC (KNOWN AS 138 STATE STREET) ON THE SOUTH; THENCE SOUTH 58°–50'–29" WEST, ALONG SAID PROPERTY DIVISION LINE, A DISTANCE OF 63.29 FEET TO THE POINT AT ITS INTERSECTION WITH THE PROPERTY DIVISION LINE BETWEEN SAID LANDS OF COLUMBIA EAGLE LLC (KNOWN AS 140 STATE STREET), ON THE EAST AND OTHER LANDS NOW OR FORMERLY OF COLUMBIA EAGLE LLC, AS DESCRIBED IN LIBER 2867 OF DEEDS AT PAGE 52 (KNOWN AS 67 HOWARD STREET), ON THE WEST; THENCE NORTH 33°–34'–00" WEST, ALONG SAID PROPERTY DIVISION LINE, A DISTANCE OF 63.30 FEET TO THE POINT OR PLACE OF BEGINNING AND CONTAINING 2,117 SQUARE FEET OR 0.05± ACRES OF LAND, MORE OR LESS.



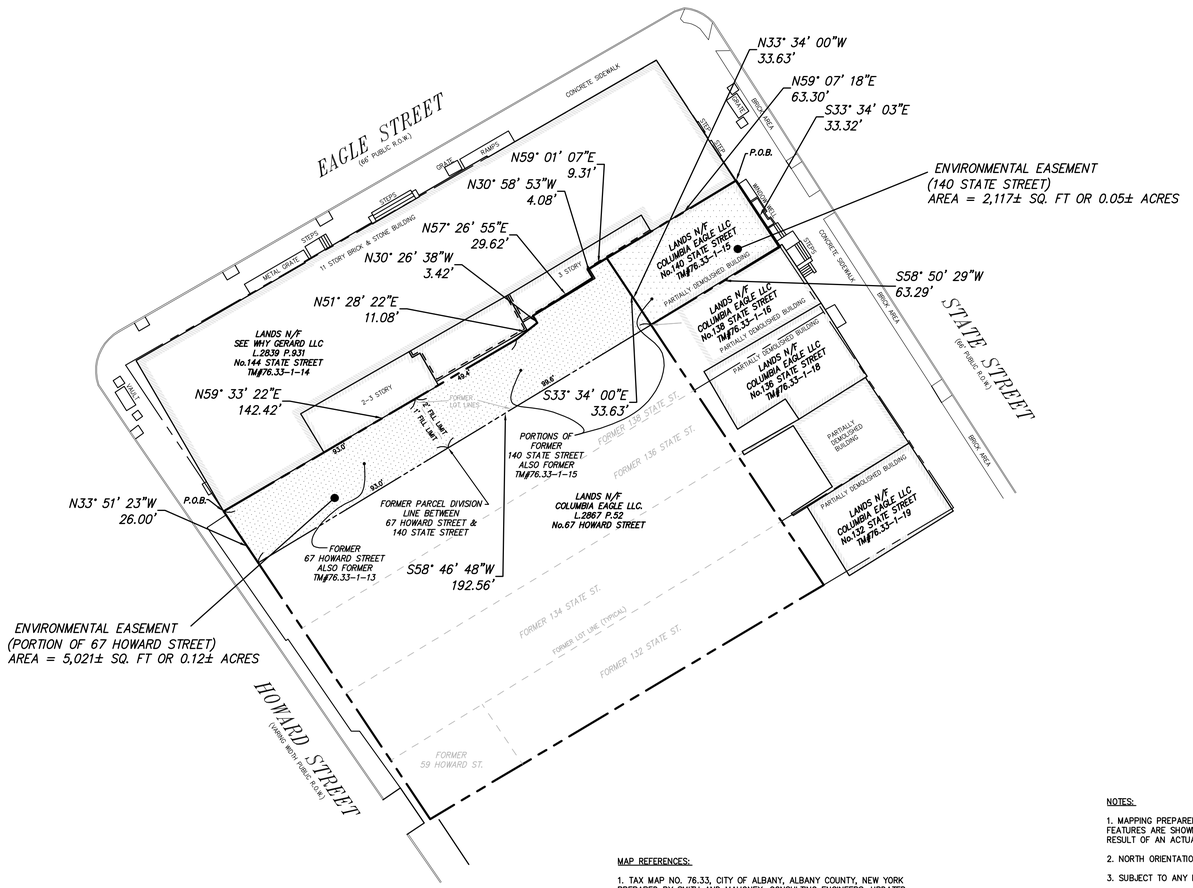
TAXMAP DETAIL–2014 UPDATED VERSION TM#76.33
(SCALE: NONE)



PRE–SUBDIVISION TAXMAP NO. 76.33 DETAIL
(SCALE: NONE)



SITE LOCATION
(SCALE: NONE)



LEGEND

- PROPERTY LINE
- FORMER LOT LINE
- ABUTTER PROPERTY LINE
- ENVIRONMENTAL EASEMENT (PORTION OF 67 HOWARD)
- ENVIRONMENTAL EASEMENT (140 STATE STREET)
- BUILDING

0 30 60
Scale in feet

MAP REFERENCES:

1. TAX MAP NO. 76.33, CITY OF ALBANY, ALBANY COUNTY, NEW YORK PREPARED BY SMITH AND MAHONEY, CONSULTING ENGINEERS, UPDATED THROUGH MARCH 1, 2013.

2. CITY OF ALBANY SUBDIVISION MAP "MAP OF SUBDIVISION OF PROPERTY AT: NO. 67 & 59 HOWARD STREET NO. 140, 138, 136, 134, & 132 STATE STREET", DATED 7/17/2013.

3. MAP ENTITLED "ALTA/ACSM LAND TITLE SURVEY– MAP SHOWING LOCATION OF BUILDINGS AND IMPROVEMENTS WITH REFERENCE TO THE PROPERTY LINES OF NO. 67 HOWARD STREET–MAP NO. 130131–M" AS PREPARED BY HERSHBERG AND HERSHBERG, CONSULTING ENGINEERS AND SURVEYORS, DATED 2/25/2014.

NOTES:

1. MAPPING PREPARED BY CHA BASED ON MAP REFERENCE 3. PLANIMETRIC FEATURES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT THE RESULT OF AN ACTUAL FIELD SURVEY PERFORMED BY CHA.

2. NORTH ORIENTATION IS BASED ON MAP REFERENCE NO. 3.

3. SUBJECT TO ANY FACTS THAT AN ACTUAL GROUND SURVEY WOULD PROVIDE.

4. A SUBDIVISION OF THE SUBJECT PARCEL OCCURRED DURING THE TIME OF THIS PROJECT (SEE MAP REFERENCE NO. 2). NEW STREET ADDRESS NUMBER HAVE BEEN ASSIGNED PER CITY OF ALBANY (PER MAP REFERENCE NO. 2) AND ARE SHOWN. NEW TAX MAP PARCEL NUMBERS FOR NEWLY CREATED LOTS HAVE NOT BEEN ASSIGNED AT THE TIME OF THE CREATION OF THIS PLAN.

5. SUBJECT TO ALL RIGHTS EASEMENT, COVENANTS AND RESTRICTIONS OF RECORD.

6. SUBJECT TO ANY FACTS THAT AN UP–TO–DATE ABSTRACT OF TITLE MAY DISCLOSE.

CERTIFICATION EXTENDS TO THE EXTENTS OF THE ENVIRONMENTAL EASEMENTS ONLY.

CERTIFIED TO:

1. THE PEOPLE OF THE STATE OF NEW YORK, ACTING THROUGH THEIR COMMISSIONER OF THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

2. COLUMBIA EAGLE LLC.

JOHN E. QUINN, JR., PLS — DATE
NYS LIC. NO. 50,269

THE DEC OR THEIR AGENT MAY ACCESS THE ENVIROMENTAL EASEMENT AREA, AS SHOWN HERE ON, THROUGH ANY EXISTING STREET ACCESS, EXISTING RIGHT OF WAY, OR BUILDING INGRESS/EGRESS ACCESS POINT.

THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW.

THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THE EASEMENT ARE SET FOURTH IN MORE DETAIL IN THE SITE MANAGEMENT PLAN ("SMP"). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP MAY BE OBTAINED FROM THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT DERWEB@GW.DEC.STATE.NY.US

Revisions:	Drawn By:	App'd. By:	Date:
MAP ISSUED	WTW	JEQ	05/20/14
DWG: EASE–21645			

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY MAP IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW. COPIES OF THIS SURVEY MAP NOT BEARING THE LAND SURVEYOR'S EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE VALID COPIES. CERTIFICATES INDICATED OR IMPLIED HEREON SHALL RUN ONLY TO THE PARTY FOR WHOM THE SURVEY IS PREPARED, AND ON THEIR BEHALF TO THE ADDITIONAL PARTIES LISTED HEREON. CERTIFICATES ARE NOT TRANSFERABLE TO ADDITIONAL PARTIES, OR SUBSEQUENT OWNERS, NOT LISTED HEREON.

JOHN E. QUINN, JR., PLS 50269

CHA
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Main: (518) 453-4500 · www.chacompanies.com

PROJECT: 21645

Survey Service Group

ENVIRONMENTAL EASEMENT OVER LANDS OF COLUMBIA EAGLE LLC FORMER ALBANY LABORTORIES SITE

NYSDEC SITE No. 401061

City of Albany — State of New York — County of Albany

SCALE: 1" = 30' | DATE: 05/20/14 | SHEET 1 OF 1

APPENDIX B

Remedial Action Work Plan for former 142 State Street

REMEDIAL ACTION WORK PLAN

Vapor Intrusion Mitigation
142 State Street
Albany, New York

NYSDEC Site No. 401061
CHA Project Number: 21645

Prepared for:
Columbia Eagle LLC
302 Washington Avenue Ext.
Albany, NY 12203

Prepared by:

III Winners Circle
Albany, New York 12205
Phone: (518) 453-4500
Fax: (518) 453-4773

June 5, 2013

V:\Projects\ANY\K2\21645\Reports\IRM\Vapor Mitigation\Remedial Action Work Plan_6-5-13.docx

CERTIFICATION

I, the undersigned, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

For CHA:

(Professional Seal)

John P. Sobiech, P.E.
Printed Name of Certifying Engineer

Signature of Certifying Engineer

06/07/13
Date of Certification

068973
Registration Number

New York
Registration State

CHA
Company

Partner
Title

TABLE OF CONTENTS

LIST OF FIGURES

APPENDICES

Appendix A: Health and Safety Plan (HASP)
Appendix B: Manufacturer Data Sheets

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) has been prepared to describe the proposed activities that will be implemented to mitigate vapor intrusion concerns at the property located at 142 State Street, in the City of Albany, NY (the Site). The 142 State Street property extends from State Street to Howard Street along the southeast side of Eagle Street and is currently developed with a largely vacant commercial high-rise building. This property is situated to the northwest of, and adjacent to, a previously documented New York State Department of Environmental Conservation (NYSDEC) designated Class 2 Inactive Hazardous Waste Disposal Site, identified as Former Albany Laboratories Site, NYSDEC Site No. 401061, at 67 Howard Street, Albany, NY.

Columbia Development Companies (Columbia), the owner of the Former Albany Laboratories Site, is currently in negotiations to acquire the property and building at 142 State Street, and renovation of the building is slated to occur in late 2013. To facilitate acquisition of the 142 State Street property, renovation of the building and progression of the Former Albany Laboratories Site toward the goal of NYSDEC's issuance of a Record of Decision (ROD) requiring no additional remedial action, Columbia intends to mitigate the identified SVI issues at the 142 State Street property via installation and operation of a sub-slab depressurization system (SSDS) within the basement level of the building. Issuance of such a ROD will enable reclassification of the Site by NYSDEC from Class 2 to Class 4.

The Former Albany Laboratories Site, which is currently a vacant lot, was previously investigated by CHA and subsequently was the subject of an Interim Remedial Measure (IRM) for the removal of contaminated soil impacted by volatile organic compounds (VOCs). The extent of contaminated soil was confirmed and delineated as presented in a *Site Characterization Report* completed by CHA in August of 2010. The IRM was performed in accordance with the NYSDEC-approved IRM Work Plan dated January 5, 2011. The remedial activities undertaken during the IRM included removal of impacted soils from the area delineated under previous investigations, off-site disposal of impacted soils, confirmatory soil sampling following excavation and backfilling of the excavation with clean imported soil. IRM activities and confirmatory soil sampling results were documented in CHA's *Construction Completion Report*, dated October 3, 2011.

Based on the findings of the previous investigations and the IRM which entailed source removal of impacted soils, a Remedial Investigation (RI) was completed which focused on the potential

for soil vapor intrusion (SVI) into the building on the adjacent, off-site property at 142 State Street, and provided the necessary field data to delineate the nature and extent of potential SVI impacts to the building. The RI was performed in accordance with CHA's *Remedial Investigation Work Plan*, dated June 13, 2011. The data derived from the RI were utilized to facilitate an evaluation of the potential migration or possible future migration of soil vapor into the building, and provided the data necessary to develop remedial recommendations. The findings of the RI indicated the presence of VOCs in sub-slab vapor beneath the eastern portion of the building at levels requiring mitigation in accordance with the New York State Department of Health's (NYSDOH) *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006*.

The following sections of this RAWP describe the proposed SSDS design and methods of installation.

2.0 INVESTIGATION AND TESTING RESULTS

2.1 DESIGN PROCESS

The sub-slab depressurization vapor mitigation system design involved collecting site-specific data to determine the most effective system components to be used, as well as installation and vapor extraction locations. This data was collected via on-site diagnostic pressure testing and building inspections conducted by CHA in conjunction with our subcontractor, Alpine Environmental Services Inc. (Alpine). Based on discussions with representatives of the NYSDEC and NYSDOH, the area to be influenced by the SSDS includes the entire building footprint.

The pressure diagnostic testing (also referred to as pressure field extension testing) allows for determination of the most appropriate in-line fan for the site-specific soil characteristics, as well as the sub-slab pressure gradient. On-site diagnostic testing is considered the most accurate way to determine the pressure field extension radius when retrofitting an existing building with a SSDS system, particularly when the gradation and consistency of the sub-slab materials is unknown. Additionally, placement locations of horizontal and vertical piping components were evaluated based on the collected site data and input of the owner/owner's representative (i.e. planned tenant usage, etc.).

The proposed SSDS layout has been prepared by Alpine and is included as Figures 2 through Figure 4 (attached), based on the results of sub-slab diagnostic pressure testing. The sub-slab depressurization vapor mitigation system was designed in accordance with applicable USEPA and American Society of Testing and Materials Guidance Documents.

2.2 PERFORMANCE CRITERIA

The sub-slab depressurization system for vapor mitigation is designed to create a constant and continuous negative pressure of the sub-slab air with respect to the room air in selected areas of the footprint of the building. The system is designed to achieve the performance criteria of sub-slab negative pressures of greater than or equal to 0.002 inches of water column. This result is demonstrated by testing the sub-slab to room pressure differential utilizing a digital micro-manometer and ½-inch diameter test holes at representative locations, as further described in

Section 4 of this document.

2.3 PRE-DESIGN DIAGNOSTIC TESTING

On May 2 and 3, 2013, sub-slab pressure gradient testing was performed to determine the appropriate fan type(s) and size(s) for effective system operation with the existing site conditions. The site-specific testing allows the technician to test the system with different fans and select a fan size that optimizes the pressure gradient with the fan flow rate and energy usage.

The data collection involved coring a total of five, 5-inch diameter and numerous ½-inch diameter holes through the concrete floor slab to run a series of pressure tests to characterize the permeability of the sub-slab material. The 5-inch diameter holes were utilized as vacuum extraction points with various commercially available fans. The ½-inch diameter holes were utilized as monitoring points to measure the pressure/vacuum at various distances away from the extraction point using a digital micro-manometer to verify acceptable pressure field extension for the specified fan.

2.4 RESULTS OF DIAGNOSTIC TESTING

Results of the diagnostic pressure testing and layout verification activities were utilized to determine the following:

- Fan/blower to be used in each system/sub-system.
- The size of system components (i.e. pipe diameter, etc.).
- Extraction point location; horizontal pipe run locations; fan/blower mounting positions.
- Monitoring panel locations.
- Identification of possible conflicts.

The results of sub-slab pressure diagnostic testing are presented in tabular format on Figure 4. Sub-slab conditions were observed to be variable. Each test location had different sub-slab fill materials at varying compaction levels. One of the extraction points, EP2, was located over a sub-slab cavity. Concrete slab thickness in the test areas varied greatly, from approximately 4 inches to 14 inches. In some areas, evidence was observed of backfill over an old concrete floor with a newer floor slab installed over the fill material.

The sub-slab testing at extraction point EP2 identified a cavity under the concrete floor, approximately 8 inches deep and extending out in all directions. Pipes (presumed to be sewer lines), one of which appears to have a portion removed (uncapped), were observed from the hole cored through the concrete slab. Based on observations made during the drilling of test points around EP2, it appears that several of these points are also located over the cavity. A pressure test performed on the cavity was successful in extending coverage an acceptable distance; however, a large flow rate was extracted from the cavity during the test and the discharge had strong sewer-type odors. It could not be determined if the pipes observed from the opening at EP2 were sewer lines, were active/inactive, or were the source of the sewer-type odors. Additional investigation is required to determine the nature of these pipes and the extent of the sub-slab cavity. Following testing, the extraction point EP2 was sealed with a plastic cover and silicone caulk to facilitate further investigation in the future.

Also of interest, pressure testing results in the area of extraction point EP5 were variable. A second concrete floor slab was observed below the existing floor slab, separated by a few inches of fill material. The second floor slab was penetrated as part of the testing process. In the area of extraction point EP5, the space between the two floor slabs was observed to vary between zero and several inches. This condition may require additional sub-slab drilling and diagnostic testing to fully delineate the area where this condition exists; however, the area where this condition was observed appears to be relatively small, so the SSDS for this area has been designed with a conservatively estimated pressure field extension. Minor changes in extraction point placement and number may be necessary during the installation, but the additional effort and materials for the adjustments are expected to be minimal.

3.0 SUB-SLAB DEPRESSURIZATION SYSTEM DESIGN

3.1 GENERAL

The SSDS is designed to be comprised of seven sub-systems, each of which will have a system fan and distinct exhaust stack. The system can be operated in its entirety or in any combination of sub-systems, thus enabling certain sub-systems to be shut down over time, as conditions allow.

Prior to the installation of the SSDS, the Owner will be consulted for the most recent planned layout of the basement. That layout will then be checked against the current SSDS layout design to determine and evaluate potential conflicts. Any identified conflicts will be resolved prior to installation of the system, and any changes made that actually impact the system layout/configuration as designed will be presented to NYSDEC/NYSDOH for approval prior to installation.

3.2 PIPING AND EXTRACTION POINTS

The vapor mitigation system piping and extraction points will be installed according to the following procedures:

- A 5-inch diameter hole will be cored through the concrete at each extraction point. The overall system design includes nineteen (19) extraction points to provide full pressure field extension across the building footprint (additional extraction points will be added, if needed, to address non-homogeneous conditions and to achieve the performance criteria identified in Section 2.2). Each extraction point sub-slab cavity will have soils removed up to 1/2 cubic foot (if practical).

- Piping entering extraction points will be sealed into the concrete floor slab with a floor flange and sealed air tight with polyurethane caulk or concrete.

- Piping and fittings for sub-systems 1, 2, 4, 5, 6, and 7 will be constructed of 3-inch diameter Schedule 40 polyvinyl chloride (PVC). Piping and fittings for sub-system 3 will be constructed of 4-inch diameter Schedule 40 PVC. All Schedule 40 PVC pipe will be manufactured from a Type I, Grade I PVC compound with a cell classification of 12454 per ASTM D1784. The pipe will be manufactured in compliance to ASTM D1785 and D2665. All hard PVC joined pipes will be solvent welded with heavy duty PVC cement.

- The fans will be connected to the suction and discharge piping using flexible rubber couplings (e.g. Fernco couplings).

- A hanger will secure horizontal pipe runs at least every 6 feet and vertical pipe runs at least every 8 feet.

- No water traps will be created in any vapor mitigation system pipe.

- All system piping will be installed to allow in-pipe condensation to drain back to an extraction point (sloped towards the extraction point).

- Fire collars and/or fire-rated putty will be used on all firewall penetrations.

- The existing building at the subject property is approximately 12 stories high. Fan mounting locations are to be at the roof level. Sub-system piping will rise to the roof area through an existing chase, indicated on Figure 2. The chase has been determined to be accessible on each floor of the building, but will require demolition of drywall covering the chase. The Owner/Owner's Representative will be consulted for determination of an acceptable pathway from the chase to the outside of the building where the fans will be mounted. Any suspect asbestos-containing materials (ACMs) identified in the chase will be tested and abated as necessary prior to the installation of the extraction piping by an appropriate certified contractor (not the SSDS installer).

- A PVC ball valve will be installed in each extraction point pipe to allow for system balancing, except where limiting factors prohibit the use of valves. Valves will be installed in a vertical position. System valves will be 3-inch or 4-inch PVC ball valves acceptable for airtight solvent weld to Schedule 40 PVC pipe. Valve diameter will not be smaller diameter than the extraction point it controls.

3.3 PATHWAY SEALING

During the sub-slab diagnostic pressure testing, significant air leakage into floor cracks (i.e. short circuiting) was not observed. During installation of the SSDS, any floor penetration observed to be significantly contributing to short circuiting will be sealed air tight with polyurethane caulk for penetrations 5/8-inch wide or less, and with backer rod and self-leveling polyurethane caulk for openings larger than 5/8-inch.

3.4 SYSTEM FANS

Each sub-system will include a fan which will be installed to induce a vacuum beneath the basement floor slab, and thus, induce a pressure gradient between the sub-slab of the building and the interior space. The fan specified for sub-systems 1, 2, 4, 5, 6 and 7 is model GBR76HO, manufactured by Obar Systems Inc. (or equivalent). The fan specified for sub-system 3 is model RP265, manufactured by RadonAway™, Inc. (or equivalent). Fans will include manufacturers' standard warranty of 18 months for Obar Systems GBR fans and 5 years for RadonAway RP series fans. Manufacturer cut sheets for the fans are included in Appendix B. Fans will be mounted either on the exterior wall of the penthouse or on the roof of the penthouse, as depicted

on Figure 3. All fans will be installed in accordance with the manufacturers' installation instructions.

It is currently anticipated that prior to installation of the SSDS, the floor slab in the area of extraction point EP2 will be cut out to investigate the sub-slab cavity and pipes identified in this area during pre-design testing. Following the abandonment and/or repair of any pipes beneath the concrete slab, the cavity will be backfilled using a combination of No.1 and No.2 crushed stone (50:50 mix) beneath the new section of floor slab, and sub-system 3 will utilize the same type of fan as the other sub-systems.

3.5 SYSTEM EXHAUST

Exhaust piping will be installed as follows:

- All exhaust pipes will be installed to a termination point no less than 12 inches above the main roof, if exhaust piping penetrates the roof, or a minimum of main roof height if exhaust piping is adjacent to the roof.
- All exhaust pipes will be fitted with a protective screen or cover to reduce the potential for water and vector intrusion.
- All system exhaust termination points will be at the roof level of the building and be a minimum of 20 feet away from any intakes or openings, or 10 feet away if the exhaust is a minimum of two feet above the opening.

3.6 SYSTEM MONITORING

Equipment/instrumentation will be installed as follows in order to monitor the function and performance of the SSDS:

- Monitoring panels will be installed to monitor the real time differential pressure in each sub-system.
- The post-installation static differential pressure reading of each sub-system will be recorded on the pressure panel using a real time mechanical Magnehelic® manometer, as manufactured by Dwyer Instruments, Inc., or equal. The instrument will have an operational range of 0 to 50 inches of water column. A cut sheet for the Dwyer Instruments, Inc. manometer has been included in Appendix B.
- A visual low pressure alarm will be installed at the monitoring panel. The alarm will be activated when the pressure in the SSDS falls to or below 0.25 inches of water column.

- An adjustable differential pressure switch (dry contact, double pole) will be installed on each sub-system and available for connection to the building alarm/monitoring system.

3.7 SYSTEM LABELING

Vapor mitigation system piping and components will be clearly labeled as follows to facilitate accurate identification for operation, maintenance and monitoring purposes:

- Extraction lines will be labeled with permanent stick-on labels. Labels will correspond to as-built drawing extraction point identification.

- Pressure meters, monitoring panel alarms and switches will be labeled with permanent labels indicating the system components being monitored, and corresponding to as-built drawing labels.

- Piping will be labeled at least once per room and at least once on every floor. Label will read "Vapor Mitigation System" and will be readable from a distance of 3 feet away.

- Electrical circuit breakers will be labeled "Vapor Mitigation Fan #" (# will be replaced by the corresponding sub-system, as shown on Figures 2).

3.8 ELECTRICAL SERVICE

Electrical service and connection work associated with the electrical components of the SSDS will be conducted as follows:

- Electrical connection of all electrical components will comply with local electrical code.

- Each fan will include an electrical disconnect within 6 feet of the fan mounting location. An electrical receptacle with a weather tight cover for a plug-in type fan is an acceptable disconnect to satisfy this requirement.

- A valid electrical permit will be obtained from the appropriate City of Albany and/or Albany County.

- All electrical connection work will be performed by a qualified electrician, licensed to perform electrical work in Albany County, New York and the local municipality (if applicable).

- Electrical inspection will be obtained by the SSDS installer and all necessary conditions will be met to obtain satisfactory inspection and permit closing.

- Fan electrical connection will comply with manufacturer requirements.

- System electric service will be connected to the existing building electric system.
- All electrical materials used in the installation of the vapor mitigation system will comply with local Electrical Code.

3.9 ENCLOSURES

Each fan will include a weather tight enclosure suitable for installation on top of the existing building. Enclosures around installed piping are not included in the design. It is anticipated that the SSDS will be installed prior to renovations of the building and any enclosure construction will be completed as part of the renovations.

4.0 POST INSTALLATION TESTING AND SYSTEM BALANCING

4.1 POST-INSTALLATION TESTING

Following the installation of the SSDS, the following testing will be performed to verify that the SSDS system is operating optimally:

- Verification that the system fans are operating within manufacturer's specifications (i.e. not exceeding maximum operating pressure, etc.). If not, the fan selection will be modified and a new fan will be installed.

- Verification that system switches and gauges are operating correctly by turning off system fans and observing results.

- Performance of sub-slab to room differential pressure testing using a digital micro-manometer to verify pressure field extension throughout the area of influence.

- Test locations will be selected in a manner sufficient to demonstrate sufficient negative pressure field extension.

- The SSDS will be considered to be operating effectively when the minimum sub-slab to room differential pressure of -0.002 inches of water column can be continuously demonstrated throughout the area requiring mitigation.

- All pressure test holes will be permanently sealed airtight (i.e. patching of the concrete slab) following demonstration of compliance with the performance criteria.

4.2 SYSTEM BALANCING

As previously indicated, ball valves will be installed on the sub-slab extraction piping. Sub-slab extraction line valves will be adjusted as necessary to balance sub-slab pressure field extension to cover the prescribed area of influence. Additional extraction points will be installed as needed to provide necessary pressure field extension to cover the prescribed area of influence.

5.0 MONITORING

Once the SSDS is in full operation, the system will be inspected annually to evaluate the condition of system components (and repair or replace as necessary) and to confirm proper operation of the system. Operations and maintenance procedures will be included as part of the Construction Completion Report, as described in Section 7.0 of this document.

In addition to the annual inspection as described above, sub-slab vapor and indoor air quality testing will be performed periodically to verify successful operation of the system as well as facilitate an evaluation for the potential future shutdown of one or more of the SSDS sub-systems. Such testing will be performed at the following times:

1. Approximately two weeks following system installation and startup.
2. At least one year following the system installation and during the heating season.
3. Once every five years following the post-installation sampling events, during heating season, to verify continued effectiveness of the vapor mitigation systems.
4. Prior to evaluating the potential shutdown of one or more of the SSDS systems.

Prior to each sampling event, CHA will notify the NYSDEC and NYSDOH of the event and the intended sampling locations. Sub-slab vapor and indoor air samples will be collected using Summa canisters and will be submitted to a NYSDOH-approved, Environmental Laboratory Approval Program (ELAP)-certified laboratory to be analyzed for volatile organic compounds by EPA Method TO-15. The existing network of three sub-slab monitoring points will be utilized for the sub-slab vapor samples.

6.0 HEALTH AND SAFETY PROTOCOL

The assignments associated with this project require CHA employees to perform tasks where personal safety could be compromised due to chemical, physical, and biological hazards. While conducting fieldwork, CHA employees may be exposed to chemical contaminants including a wide variety of organic compounds. Additionally, CHA employees may be exposed to physical hazards, including but not limited to, hammer drill use, bending/lifting, and trip/fall hazards.

A Site Health & Safety Plan (HASP) has been prepared for the use of CHA and its employees. The requirements and guidelines in the HASP are based on a review of available information and an evaluation of potential on-site hazards from previous studies and information available to date.

This HASP will be discussed with site personnel and will be available on-site for review while work is underway. All personnel conducting site activities must be familiar with the procedures, requirements and provision of this plan, and in the event of conflicting plans/requirements, personnel must implement those safety practices which afford the highest level of protection. CHA's Field Team Leader will also serve as CHA's Health and Safety Coordinator and is responsible for implementation of this HASP into daily site activities. A copy of the Site Health and Safety Plan is included in Appendix A.

The contractor installing the SSDS will prepare their own site-specific HASP for their work, which will address health and safety relative to the use of specific tools and equipment they will utilize to complete the installation of the SSDS systems as well as electrical safety when connecting the fans to a power source. Since the building being mitigated as part of this project is not a listed hazardous waste site and the project does not involve the handling of grossly-contaminated soils, on-site workers are not required to have 40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training in accordance with 29 CFR 1910.120.

7.0 CONSTRUCTION COMPLETION REPORT

Subsequent to the installation of the SSDS and post-installation system testing, CHA will prepare a Construction Completion Report. The report will include the following:

- A written description of the systems installed, including make/model of fans, fan serial numbers, system fan manufacturing dates.
- As-built drawing of the location of fans, system piping, gauges, valves, alarms, etc.
- A chart indicating the pressure, airflow and valve position in each sub-slab extraction line and the pressure and airflow in each exhaust stack.
- Manufacturer paperwork (including warranty paperwork, operational manuals, etc.) for all fans, meters, alarms, and switches installed.
- Photographs with description of system components.
- Post-installation sub-slab pressure test data on a drawing indicating test locations demonstrating that the system meets or exceeds the performance criteria.
- Operations and maintenance procedures, including criteria for evaluating the proper operation of the systems and a timeline for annual inspection of the systems.

8.0 SCHEDULE AND ESTIMATED COST

8.1 SCHEDULE

Remedial activities will commence within approximately two to three weeks following agency approval. Abatement of previously identified asbestos containing materials (ACM) in certain portions of the building will be required to facilitate installation of the SSDS. It is anticipated that installation of the SSDS will be completed within two to four weeks following completion of ACM abatement.

8.2 ESTIMATED COST

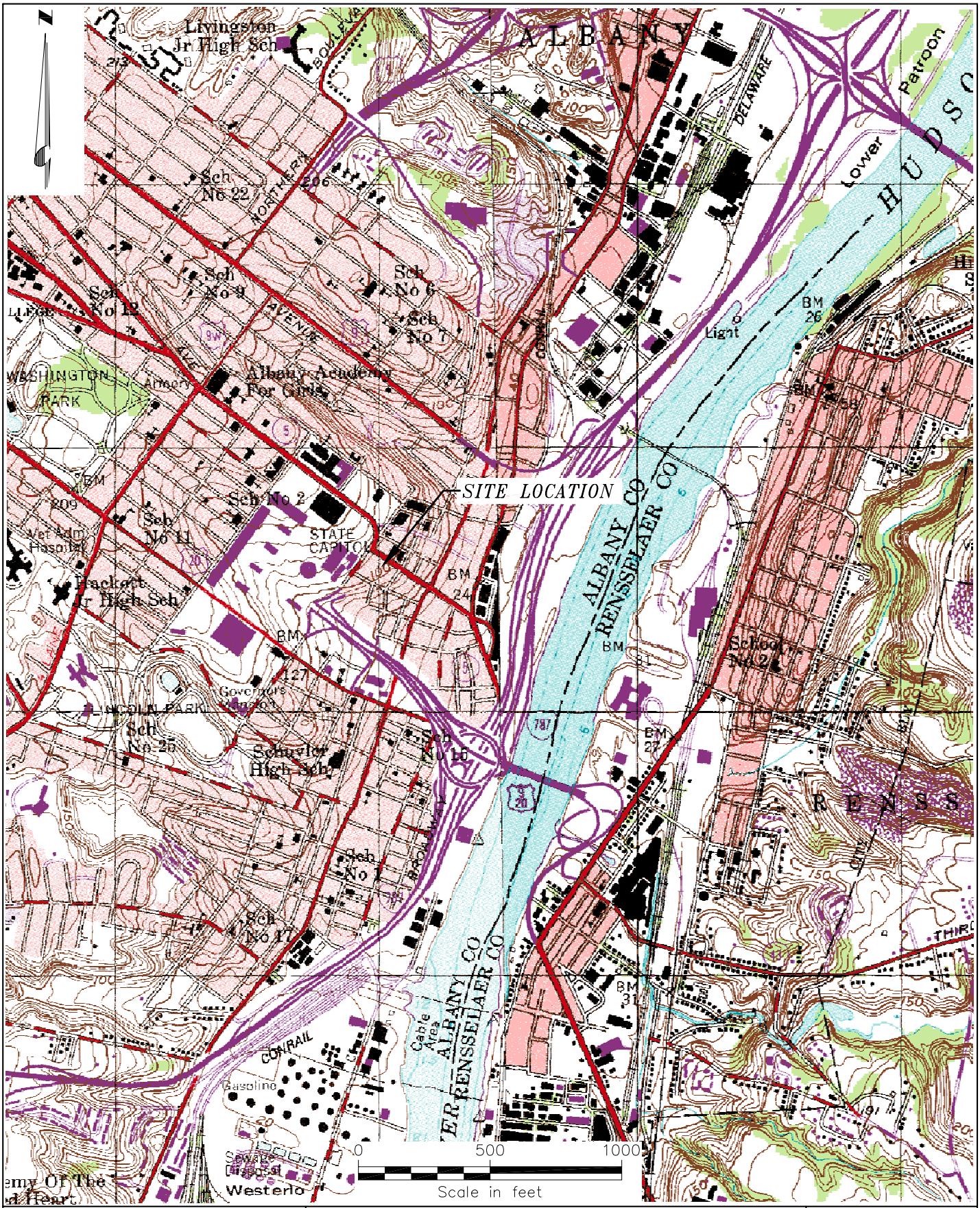
The cost for installation and initial start-up of the SSDS, as presented in this RAWP, is estimated to range from $150,000 to $200,000 and does not include the cost of asbestos removal necessary to install the SSDS.

9.0 FUTURE SITE DEVELOPMENT

In the event that renovations of the 142 State Street building include the removal and replacement of significant portions of the basement floor slab subsequent to installation of the SSDS as currently designed, the potential effects on system operation will be evaluated. Based on field conditions observed during the course of floor slab removal (e.g. presence of additional sub-slab cavities/voids, type of sub-slab material), modifications to the system may be made. These modifications may include, but not be limited to, altering of the fan model(s), and addition, relocation or elimination of vapor extraction points, particularly in the event that additional sub-slab cavities/voids are identified that require filling prior to installation of a new floor slab. Cavities/voids will be filled in using a mix of washed No.1 and No.2 crushed stone or imported material similar to observed surrounding sub-slab material. In addition, any foundation wall penetrations as a result of renovation activities will be thoroughly sealed. Field verification testing will be performed to confirm that the SSDS continues to meet the established performance criteria.

Based on the subsurface investigation and remedial activities which have been conducted at the Former Albany Laboratories Site (currently a vacant lot), and the current conditions which have raised concerns regarding vapor intrusion into the adjacent building at 142 State Street, it is anticipated that a vapor mitigation system will be incorporated into the design of any future habitable building to be constructed on the Former Albany Laboratories Site as well.

FIGURES



CHA
III Winners Circle, PO Box 5269 · Albany, NY 12205-0269
Main: (518) 453-4500 · www.chacompanies.com

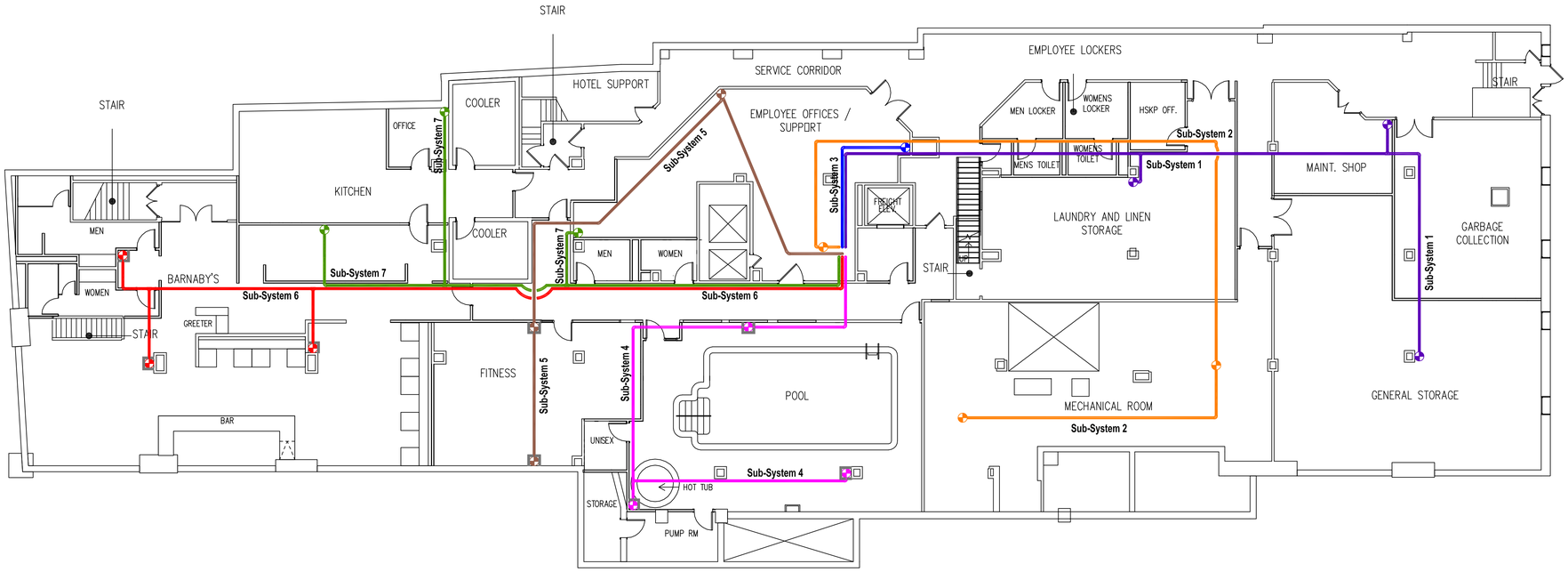
SITE LOCATION MAP

67 HOWARD STREET SITE
ALBANY, NEW YORK

PROJECT NO. 21645

DATE: 07/09/10

FIGURE 1



LEGEND

- Extraction Point
- Extraction Point in Enclosure
- Extraction Piping Riser to Fan on Roof
- **Sub-System 1** — Extraction Piping - Sub-System 1 3-Inch Schedule 40 PVC Pipe.
- **Sub-System 2** — Extraction Piping - Sub-System 2 3-Inch Schedule 40 PVC Pipe.
- **Sub-System 3** — Extraction Piping - Sub-System 3 4-Inch Schedule 40 PVC Pipe.
- **Sub-System 4** — Extraction Piping - Sub-System 4 3-Inch Schedule 40 PVC Pipe.
- **Sub-System 5** — Extraction Piping - Sub-System 5 3-Inch Schedule 40 PVC Pipe.
- **Sub-System 6** — Extraction Piping - Sub-System 6 3-Inch Schedule 40 PVC Pipe.
- **Sub-System 7** — Extraction Piping - Sub-System 7 3-Inch Schedule 40 PVC Pipe.

NOTES:

PIPING FOR SUB-SYSTEMS 1, 2, 4, 5, 6, 7 IS TO BE 3-INCH INNER DIAMETER SCHEDULE 40 PVC PIPING.

PIPING FOR SUB-SYSTEM 4 IS TO BE 4-INCH INNER DIAMETER SCHEDULE 40 PVC PIPING.

LAYOUT OF THE VAPOR EXTRACTION SUB-SYSTEMS IS BASED ON THE PLANNED NEW LAYOUT OF THE SPACE.

ELECTRICAL WIRING AND HOOKUP SHALL BE PERFORMED BY OTHERS.

SCALE IN FEET

0 5 10 20 25 30 40 50

PROJECT NORTH

Alpine ENVIRONMENTAL SERVICES
1146 CENTRAL AVENUE
ALBANY, NEW YORK 12205
(518) 453-0146

PROJECT TITLE

Former **ALBANY LABORATORIES** SITE

ALBANY, NY

SHEET TITLE

SYSTEM COMPONENTS SUB-SYSTEMS 1 - 7

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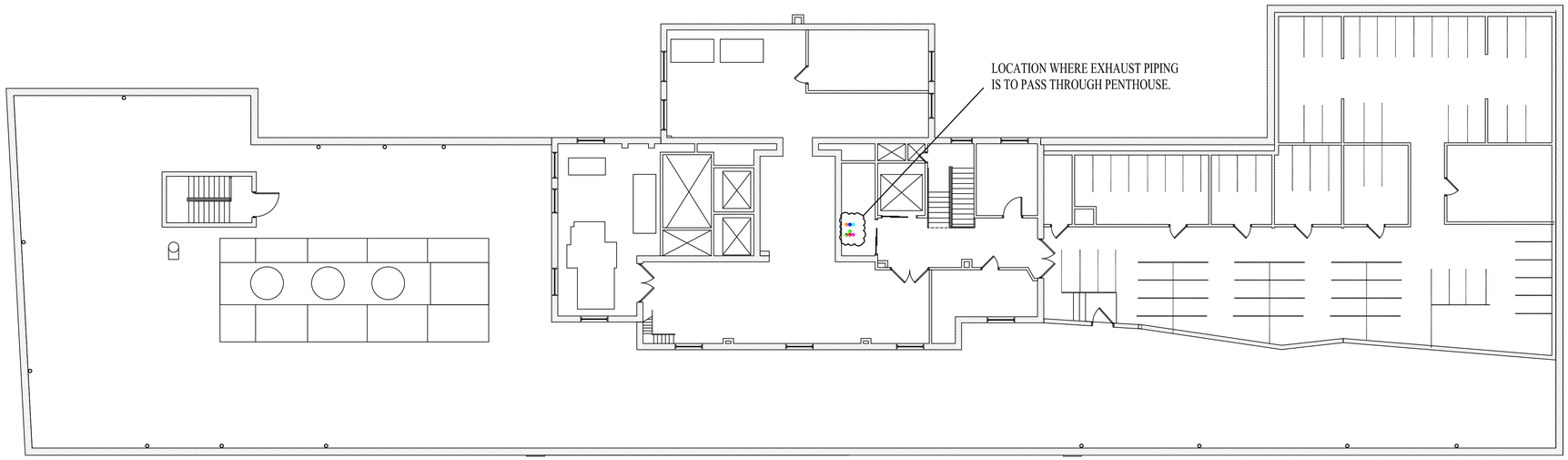
PROJECT NO.

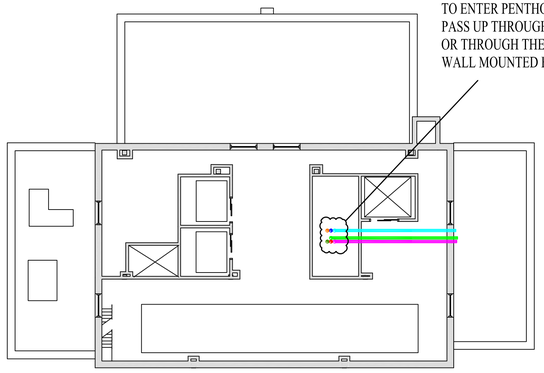
REVISIONS

SHEET NO.

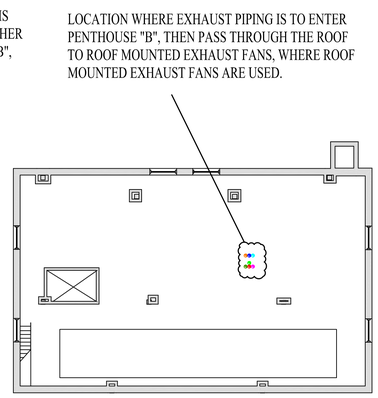
Figure 2



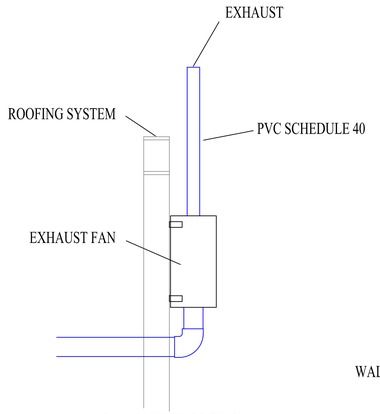
1 PENTHOUSE



2 PENTHOUSE A

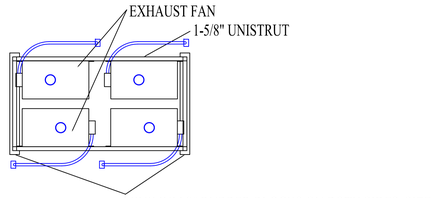


3 PENTHOUSE B

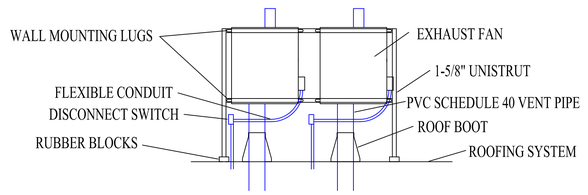


FAN MOUNTING DETAIL
WALL MOUNT - SIDE VIEW
NOT TO SCALE

NOTES:
1. CONFIGURE UNISTRUT ASSEMBLY AS NEEDED TO ACCOMMODATE INSTALLED EXHAUST VENT STACK LOCATION.



EXHAUST FAN ROOF MOUNTING DETAIL - TOP VIEW
NOT TO SCALE



EXHAUST FAN ROOF MOUNTING DETAIL - FRONT VIEW
NOT TO SCALE

SCALE IN FEET

0 5 10 20 25 30 40 50

PROJECT NORTH

Alpine ENVIRONMENTAL SERVICES
1146 CENTRAL AVENUE
ALBANY, NEW YORK 12205
(518) 453-0146

PROJECT TITLE

Former
ALBANY LABORATORIES
SITE

ALBANY, NY

SHEET TITLE

PENTHOUSE PIPING
AND
EXHAUST FAN
MOUNTING DETAILS

DRAWN BY | CHECKED BY

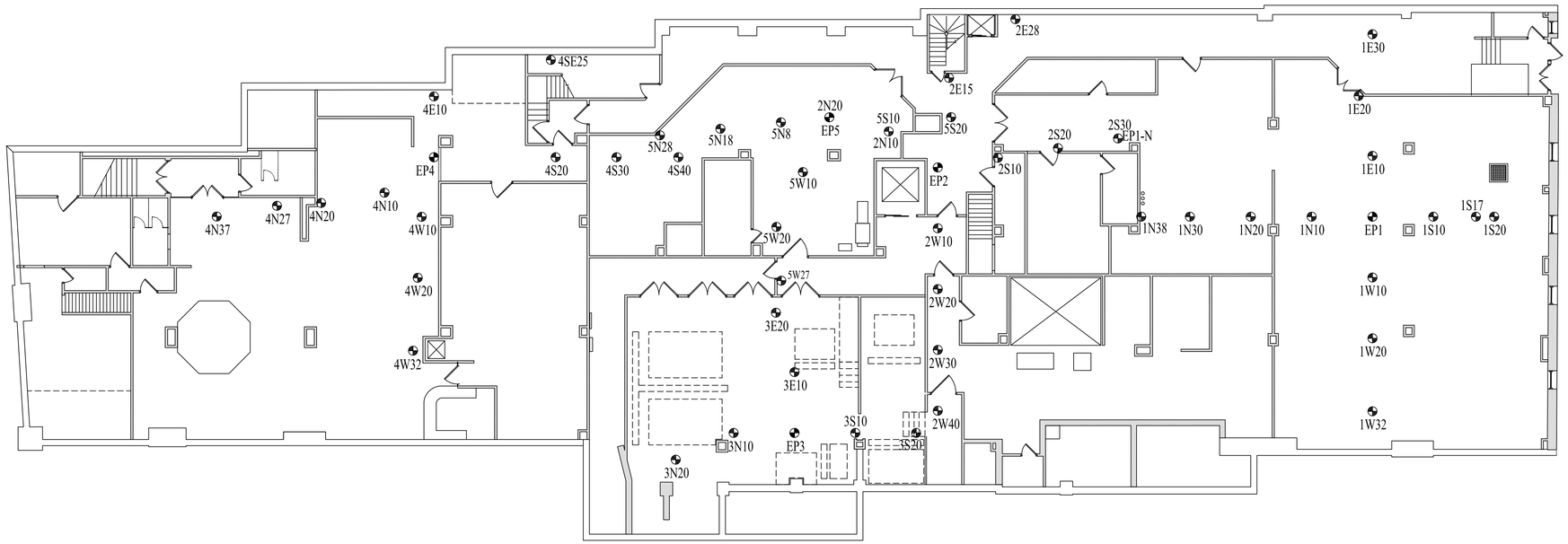
SUBMISSION DATE

PROJECT NO.

REVISIONS

SHEET NO.

Figure 3



EP-1

TEST POINT	FAN					
	GP 501	HS 2000	HS 5000	GBR HO	Vac 6HP	NO FAN
STATIC	4.0" wc	14.0" wc	17.0" wc	23.0" wc	26.0" wc	NA
1N10	-0.133" wc	-0.403" wc	-0.653" wc	-0.676" wc	-0.744" wc	0.0" wc
1N20	-0.004" wc	-0.014" wc	-0.024" wc	-0.025" wc	-0.028" wc	0.0" wc
1N30	-0.002" wc	-0.007" wc	-0.011" wc	-0.011" wc	-0.012" wc	0.0" wc
1N38	-0.001" wc	-0.003" wc	-0.005" wc	-0.006" wc	-0.006" wc	0.0" wc
EP1-N	0.0" wc	-0.003" wc	-0.006" wc	-0.006" wc	-0.007" wc	0.0" wc
1S10	-0.044" wc	-0.142" wc	-0.240" wc	-0.243" wc	-0.267" wc	-0.001" wc
1S17	-0.013" wc	-0.035" wc	-0.058" wc	-0.059" wc	-0.064" wc	-0.002" wc
1S20	-0.007" wc	-0.016" wc	-0.025" wc	-0.027" wc	-0.029" wc	-0.002" wc
1E10	-0.023" wc	-0.079" wc	-0.135" wc	-0.138" wc	-0.151" wc	0.0" wc
1E20	-0.014" wc	-0.045" wc	-0.077" wc	-0.079" wc	-0.085" wc	-0.002" wc
1E30	-0.009" wc	-0.024" wc	-0.038" wc	-0.040" wc	-0.043" wc	-0.003" wc
1W10	-0.082" wc	-0.250" wc	-0.417" wc	-0.424" wc	-0.462" wc	0.0" wc
1W20	-0.024" wc	-0.071" wc	-0.116" wc	-0.118" wc	-0.127" wc	-0.001" wc
1W32	-0.012" wc	-0.030" wc	-0.047" wc	-0.048" wc	-0.048" wc	-0.003" wc

EP-2

TEST POINT	FAN		
	GP 501	RP 265	NO FAN
STATIC	0.30" wc	2.0" wc	NA
2N10	0.0" wc	-0.004" wc	0.0" wc
2N20	0.0" wc	-0.003" wc	0.0" wc
2S10	-0.001" wc	-0.005" wc	+0.001" wc
2S20	0.0" wc	-0.005" wc	0.0" wc
2S30	0.0" wc	-0.002" wc	0.0" wc
2E15	0.0" wc	-0.005" wc	0.0" wc
2E28	0.0" wc	-0.005" wc	0.0" wc
2W10	0.0" wc	-0.005" wc	0.0" wc
2W20	0.0" wc	-0.003" wc	+0.001" wc
2W30	0.0" wc	0.0" wc	0.0" wc
2W40	0.0" wc	0.0" wc	0.0" wc

EP-3

TEST POINT	FAN						
	GP 501	GBR HO	GBR HO	GBR HO	GBR HO	HS 2000	NO FAN
STATIC	4.0" wc	30" wc	4.2" wc	32" wc	14.1" wc	14.1" wc	NA
3N10	-0.018" wc	-0.130" wc	-0.020" wc	-0.147" wc	-0.072" wc	-0.056" wc	0.0" wc
3N20	0.0" wc	-0.010" wc	0.0" wc	-0.012" wc	-0.005" wc	-0.002" wc	0.0" wc
3S10	-0.040" wc	-0.252" wc	-0.043" wc	-0.281" wc	-0.142" wc	-0.136" wc	0.0" wc
3S20	0.0" wc	-0.002" wc	0.0" wc	-0.002" wc	-0.001" wc	0.0" wc	0.0" wc
3E10	-0.068" wc	-0.554" wc	-0.073" wc	-0.627" wc	-0.290" wc	-0.284" wc	+0.001" wc
3E20	0.0" wc	-0.003" wc	0.0" wc	-0.004" wc	0.0" wc	0.0" wc	0.0" wc

EP-4

TEST POINT	FAN		
	GP 501	RP 265	GBR HO
STATIC	1.1" wc	2.06" wc	3.1" wc
4N10	-0.038" wc	-0.063" wc	-0.075" wc
4N20	-0.015" wc	-0.024" wc	-0.028" wc
4N27	-0.002" wc	-0.004" wc	-0.004" wc
4N37	0.0" wc	-0.001" wc	-0.001" wc
4S20	-0.002" wc	-0.002" wc	-0.002" wc
4SE25	-0.001" wc	-0.003" wc	-0.001" wc
4S30	0.0" wc	-0.001" wc	-0.001" wc
4S40	Not Tested	0.0" wc	-0.001" wc
4E10	-0.003" wc	-0.005" wc	-0.005" wc
4W10	-0.017" wc	-0.028" wc	-0.034" wc
4W20	-0.003" wc	-0.004" wc	-0.005" wc
4W32	+0.001" wc	-0.002" wc	-0.002" wc

EP-5

TEST POINT	FAN	
		GBR HO
STATIC	7.7" wc	6.2" wc
5N8	-0.324" wc	-0.279" wc
5N18	0.0" wc	0.0" wc
5N28	0.0" wc	Not Tested
5S10	-0.016" wc	-0.013" wc
CHA20	0.0" wc	0.0" wc
5W10	0.0" wc	0.0" wc
5W20	0.0" wc	0.0" wc
5W27	0.0" wc	Not Tested

SCALE IN FEET

0 5 10 20 25 30 40 50

PROJECT NORTH

Alpine Inc.
ENVIRONMENTAL SERVICES
1146 CENTRAL AVENUE
ALBANY, NEW YORK 12205
(518) 453-0146

PROJECT TITLE

Former
ALBANY LABORATORIES
SITE

ALBANY, NY

SHEET TITLE

DIAGNOSTIC DIFFERENTIAL PRESSURE TESTING RESULTS

DRAWN BY | CHECKED BY

SUBMISSION DATE

PROJECT NO.

REVISIONS

SHEET NO.

Figure 4

APPENDIX A

Health and Safety Plan

CLOUGH HARBOUR & ASSOCIATES LLP

SITE HEALTH AND SAFETY PLAN

PROJECT INFORMATION

Project Name: Former Albany Laboratories Site	**CHA Project No.** 21645
Project Start Date: 6/15/13 **Completion Date:** 9/30/13	**Weather:**
Project Location: 142 State Street, Albany, NY	**Project Task:** Install Sub-Slab Depressurization System *Complete a Site Health & Safety Plan per Task*

Description of Work: Installation of sub-slab depressurization system, including approximately 20 extraction points and associated PVC piping and exhaust fans.
Be Specific:

Key Personnel:	Seth Fowler	Seth Fowler	Scott Rosecrans
Responsibilities:	*Project Manager*	*Field Team Leader*	*Site Safety Officer*

Description of Hazards: The hazards associated with this work are largely limited to the installation of the extraction points which require coring/drilling of the floor slab. The hazards associated with this are electrical due to the electric core drill, mechanical due to the active drill bit and potential for flying debris, and the generation of dust.

TASK HAZARDS				TASK SAFETY MEASURES & PPE	
Eye	Chemical Exposure	Yes ☐	No ☒	☒ Safety Glasses	
	High Heat/Cold	Yes ☐	No ☒	☐ Safety Goggles	
	Dust/Flying Debris	Yes ☒	No ☐	☐ Face Shield	
	Impact	Yes ☐	No ☒	☐ Shaded Lenses	
	Light/Radiation	Yes ☐	No ☒		
Head	Impact	Yes ☐	No ☒	☐ Hard Hat: ☐ Orange or ☐ White or ☐ Blue	
	Electrical Shock	Yes ☐	No ☒	☐ Reflector Tape (Required for night operations)	
	Lack of Visibility	Yes ☐	No ☒		
Foot	Chemical Exposure	Yes ☐	No ☒	☒ Work Boots	☐ Steel Toed Boots
	High Heat/Cold	Yes ☐	No ☒	☐ Ankle Protection	☐ I/75 C/75 (Impact/Compression)
	Impact/Compression	Yes ☐	No ☒	☐ Rubber Boots	☐ Cd Type 1 or 2 (Conductive)
	Slips/Trips	Yes ☒	No ☐	☐ Insulated Boots	☐ PR (Puncture Resistant)
	Puncture	Yes ☒	No ☐	☐ Non-slip Soles	☐ Mt/70 or 50 or 30 (Metatarsal)
	Slippery/Wet Surface	Yes ☐	No ☒	☐ Chemical resistant	☐ EH (Electrical Hazard)
	Explosive/Flammable Atmospheres	Yes ☐	No ☒		☐ SD Type I or II (Static Dissipative)
	Electrical	Yes ☒	No ☐		
Hand	Chemical Exposure	Yes ☐	No ☒	☒ Work Gloves	☐ Rubber Gloves
	High Heat or Cold	Yes ☒	No ☐	☒ Leather Gloves	☐ Nitrile Gloves
	Cuts/Abrasion	Yes ☒	No ☐	☒ Latex Gloves	☐ Insulated Gloves
	Puncture	Yes ☒	No ☐	☐ Vinyl Gloves	☐ Metal Mesh Gloves
	Electrical Shock	Yes ☒	No ☐	☐ Neoprene Gloves	
	Bloodborne Pathogen	Yes ☐	No ☒	☐ Butyl Gloves	
Body/Torso	Chemical Exposure	Yes ☐	No ☒	☐ Tyvek Suits: ☐ White or ☐ Yellow	
	Extreme Heat/Cold	Yes ☐	No ☒	☐ UV Protection	☒ First Aid Kit
	Abrasion	Yes ☒	No ☐	☐ Coveralls	☐ Traffic Cones
	Impact	Yes ☐	No ☒	☐ Reflective Vest	☐ Signage
	Electrical Arc	Yes ☒	No ☐	☐ Insect Repellent	☐ 2- Way Radios
	Biological Hazards	Yes ☐	No ☒	☐ Tick Removal Kit	☒ Flashlight
Fall	Fall Hazard	Yes ☐	No ☒	☐ Harness	☐ Fall Protection Lanyard
Noise	Noise Hazard	Yes ☒	No ☐	☒ Ear Plugs	☐ Ear Muffs
Respiratory	Chemical Exposure	Yes ☐	No ☒	☐ Respirator: ☐ ½ Face or ☐ Full Face	
	Confined Spaces	Yes ☐	No ☒	☐ Cartridge: ☐ P or ☐ OV or ☐ C	
	Particulate Exposure	Yes ☐	No ☒		
	Welding Hazard	Yes ☐	No ☒		

SITE CONTROL		
Site Control/Site Security[1]: ***Describe Measures***	The work is within a controlled building, so access to the work areas is limited.	M & PT: ☐ Y ☒ N *If yes, sketch information on separate sheet*
Confined Space Entry: *If Yes, Attach Permit*	☐ Y ☒ N	
Decontamination: *If Yes, Describe Procedures*	☒ Y ☐ N Decontamination of equipment only, as necessary	
Site Monitoring[2]: *If Yes, Describe Procedures*	☐ Y ☒ N	

CONTINGENCY PLAN		
Emergency Contacts: *Provide Telephone Numbers*	Police: 911 Ambulance: 911 Fire: 911 Hospital: 518-262-1200	Client Contact: Michael Arcangel Client Phone #: 518-862-9133 CHA PM Phone #: 518-453-4547 Poison Control: 800 336-6997
Route to Hospital:	See Attached	
Communication:	☒ Cell Phone ☐ Nearest Pay Phone ☐ Pager	
Comments:		

PLAN SIGN-OFF			
Name:	Name:	Name:	Name:
X:	X:	X:	X:
Date:	Date:	Date:	Date:
Name:	Name:	Name:	Name:
X:	X:	X:	X:
Date:	Date:	Date:	Date:

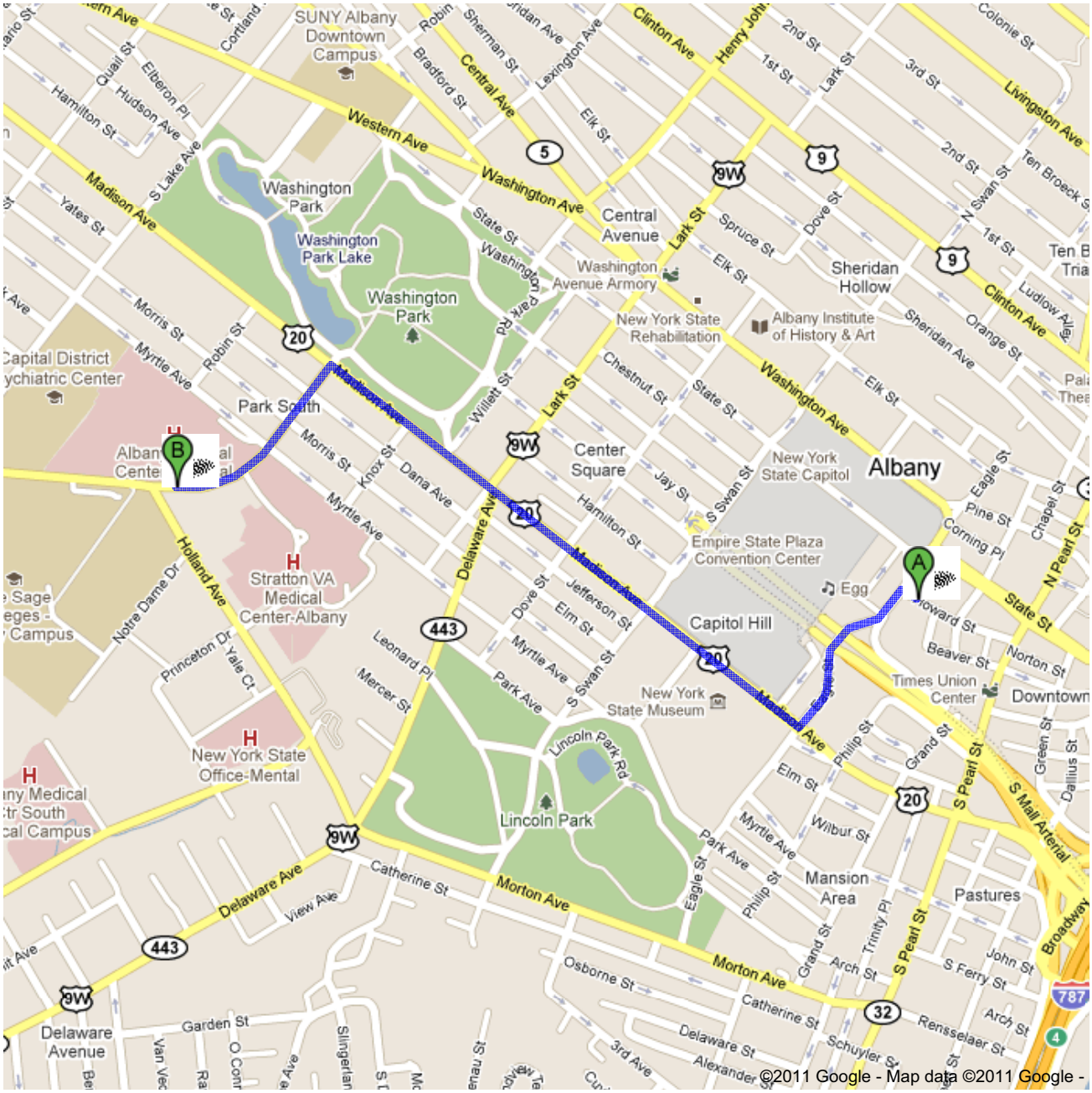
SAFETY TRAINING/MEDICAL MONITORING			
Type:	Type:	Type:	Type:
Date:	Date:	Date:	Date:
Type:	Type:	Type:	Type:
Date:	Date:	Date:	Date:

1 Who is providing site control/site security, if any, for this task? Examples of Site Control/Site Security include police, client representative(s), owner(s), CHA or client supervisors

2 What are you monitoring on site, if any, for this task? Examples of Site Monitoring include air monitoring, like carbon monoxide or oxygen levels or wet bulb temperatures

Google maps

Directions to Albany Medical Center Hospital
43 New Scotland Avenue, Albany, NY 12208 - (518) 262-3125
1.4 mi – about **5 mins**



67 Howard St, Albany, NY 12207

	1. Head **northwest** on **Howard St** toward **Eagle St**	go 135 ft total 135 ft
	2. Turn left at **Eagle St** About 1 min	go 0.3 mi total 0.3 mi
	3. Take the 2nd right onto **US-20 W/Madison Ave** Continue to follow US-20 W About 3 mins	go 0.8 mi total 1.1 mi
	4. Turn left at **New Scotland Ave** Destination will be on the right About 1 min	go 0.3 mi total 1.4 mi

Albany Medical Center Hospital
43 New Scotland Avenue, Albany, NY 12208 - (518) 262-3125

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

APPENDIX B

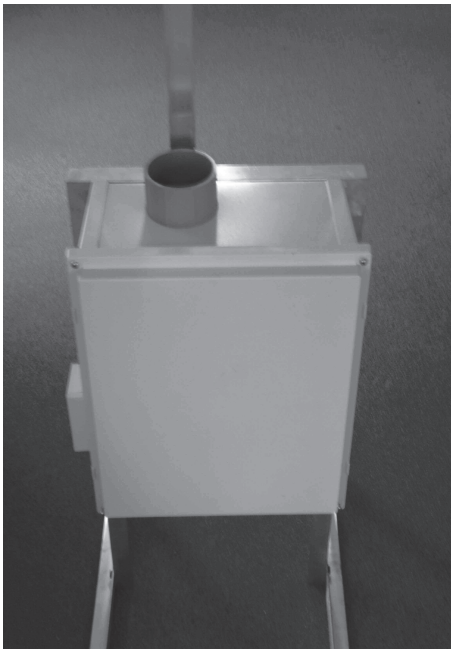
Manufacturer Data Sheets

THE OBAR GBR76

Attachment 1a

COMPACT RADIAL BLOWER

Based on 25 years of experience and 2 years of research and development, the patent pending GBR series of compact radial blowers provide the perfect combination of performance and design.



GBR76 WITH ROOF MOUNT

PERFORMANCE

- GBR76 HO 41" WC @ 0 Max flow 160 cfm.
- Built in speed control to customize performance.
- Condensate bypass built in.
- 18 month warranty 40,000 hr sealed bearings.

DESIGN

- Our modular design means the blower and manifold assembly can be removed and replaced as a unit. This makes repairs cost effective and easy and allows contractors to upgrade systems simply by swapping assemblies.
- The GBR series is based on a bypass blower designed to handle combustible materials.
- The housing is not required to be air tight so you can add gauges and alarms without compromising the system.
- Built in condensate bypass.
- Built in speed control.
- Quick disconnect electrical harness.
- All UL listed components including UL listed enclosure for outside use.
- Wall fastening lugs included.
- GBR series roof and wall mounts available to quickly configure the blowers for your installation while providing a custom built look.
- Compact design 16"x 14"x 8" weighing only 18 lbs.

OBAR SYSTEMS INC 117 POCANTECS ROAD HIGHLAND LAKES NJ 07422 800 949 6227

GBR76 HO	0”	10”	20”	30”	40”	Wattage
HO 40	155	110	72	40	10	400-575
HO 30	150	108	70	22	0	375-415
HO 20	141	99	20	0		200-350

Blower Specifications

Notes:

- **Input Voltage Range:** 108-132 Volts AC RMS, 50/60 Hz, single phase.
- **Input Current:** 6 amps AC RMS
- **Operating Temperature (Ambient Air and Working Air):** 0°C to 50°C
- **Storage Temperature:** -40°C to 85°C
- **Dielectric Testing:** 1500 Volts AC RMS 60 Hz applied for one second between input pins and ground, 3mA leakage maximum.
- **Speed Control Methods:** PWM (Pulse Width Modulation) (1 kHz to 10 kHz)
  0 to 10 VDC speed control.
  Mechanical: A potentiometer is available for speed control of the blower. The potentiometer can be preset for a specific speed. Access for speed adjustment located in motor housing.
- **Approximate Weight:** 4.8 Lbs. / 2.2 Kg
- **Regulatory Agency Certification:** Underwriters Laboratories Inc. UL507 Recognized under File E94403 and compliant under the CE Low Voltage Directive 2006/95/EC.
- **Design Features:** Designed to provide variable airflow for low NOx & CO emission in high efficiency gas fired combustion systems. Built with non-sparking materials. Blower housing assembly constructed of die cast aluminum. Impeller constructed from hardened aluminum. Rubber isolation mounts built into blower construction to dampen vibration within the motor. Two piece blower housing assembly sealed with O-ring gasket for combustion applications. Customer is responsible to check for any leakage once the blower is installed into the final application.
- **Miscellaneous:** Blower inlet, discharge, and all motor cooling inlet and discharge vents must not be obstructed. Motor ventilation air to be free of oils and other foreign particles, (i.e. breathing quality air). Blower is to be mounted so ventilation air cannot be re-circulated.
  POWER CONNECTION: Blower connector, AMP Universal MATE-N-LOK, part no. 1-350943-0.
  SPEED CONNECTION: Blower connector, Molex Mini-Fit Jr., part no. 39-30-3056.
  Mating harnesses available upon request.

Enclosure Specifications

Rating:

Ingress Protection (EN 60529): 66/67

Electrical insulation: Totally insulated

Halogen free (DIN/VDE 0472, Part 815): yes

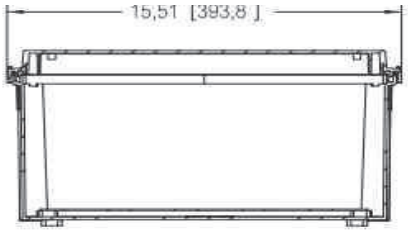
UV resistance: UL 508

Flammability Rating (UL 746 C 5): complies with UL 508

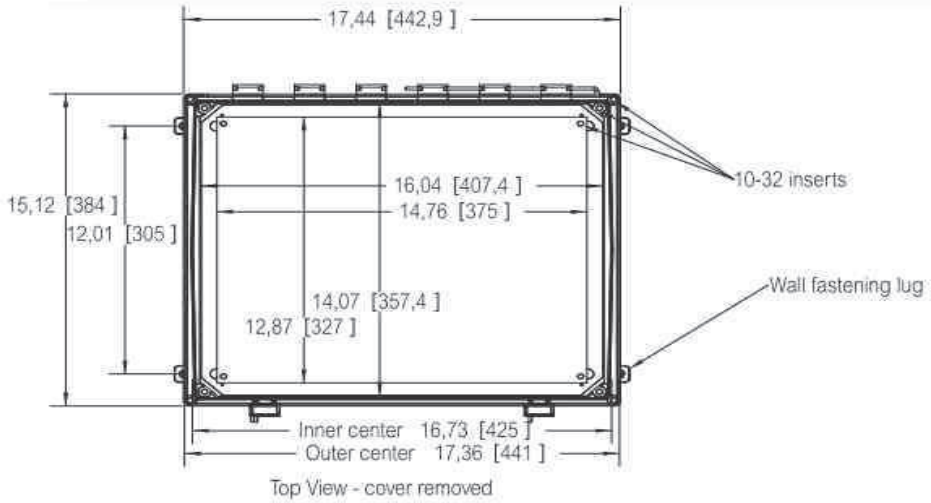
Glow Wire Test (IEC 695-2-1) °C: 960

NEMA Class: UL Type 4, 4X, 6, 6P, 12 and 13

Certificates: Underwriters Laboratories



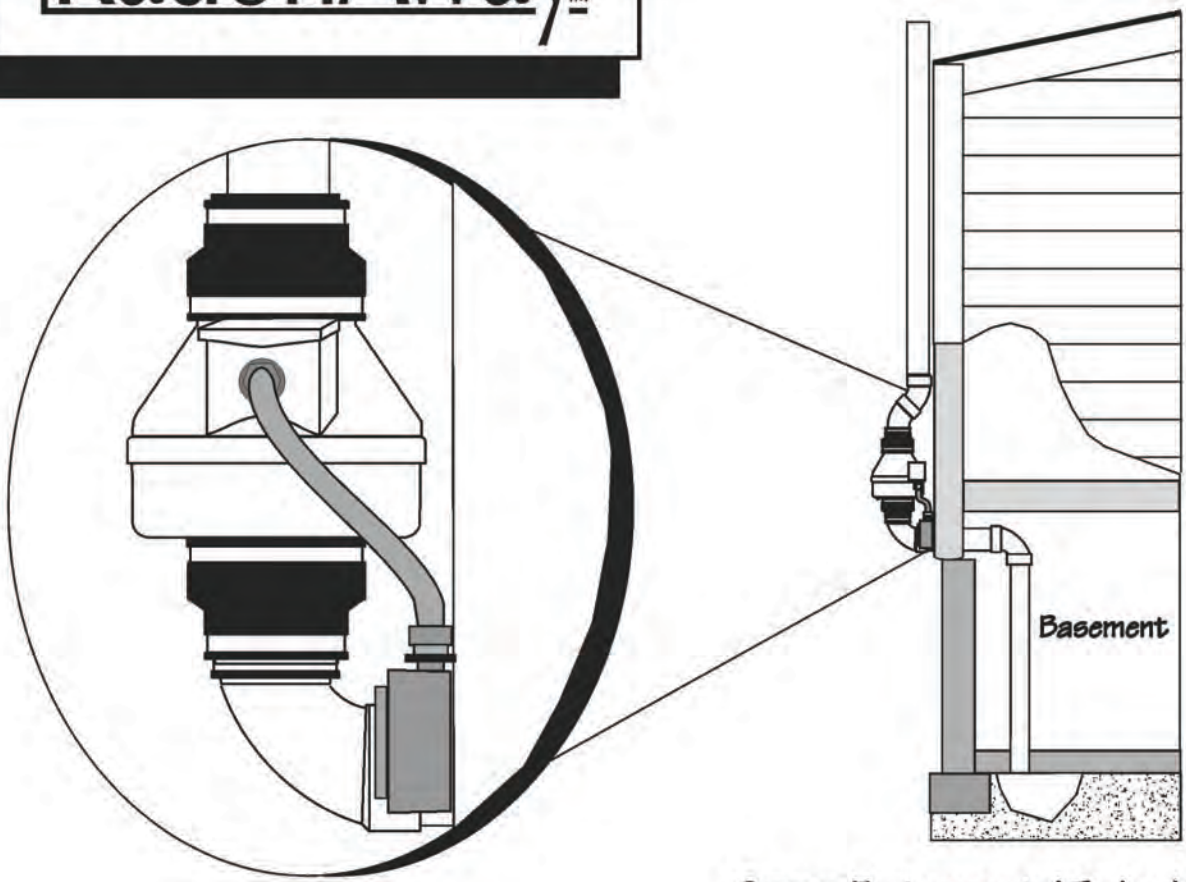
Screw cover



Top View - cover removed

RP Series Installation Instructions

By RadonAway™



Spruce Environmental Technologies, Inc.
Ward Hill, MA P/N IN020 Rev J

RadonAway™

Series Fan Installation Instructions

Please Read and Save These Instructions.

DO NOT CONNECT POWER SUPPLY UNTIL FAN IS COMPLETELY INSTALLED.
MAKE SURE ELECTRICAL SERVICE TO FAN IS LOCKED IN "OFF" POSITION.
DISCONNECT POWER BEFORE SERVICING FAN.

1. **WARNING!** Do not use fan in hazardous environments where fan electrical system could provide ignition to combustible or flammable materials.

2. **WARNING!** Do not use fan to pump explosive or corrosive gases.

3. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.

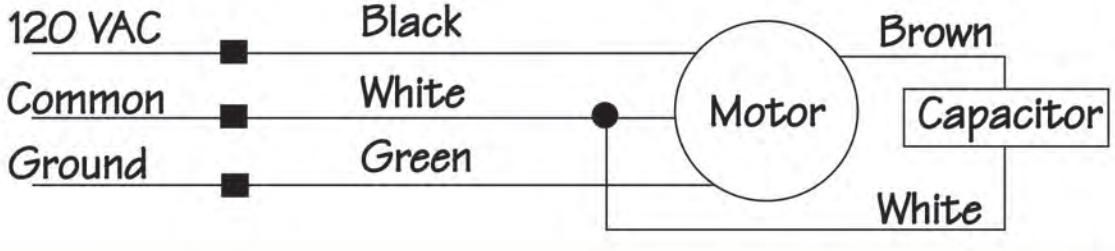
4. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.

5. **NOTICE!** There are no user serviceable parts located inside the fan unit.
Do NOT attempt to open. Return unit to the factory for service.

6. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician

7. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.

DynaVac RP Series Fan Wiring Diagram



INSTALLATION INSTRUCTIONS IN020 Rev I

DynaVac - RP Series
RP140 p/n 23029-1
RP145 p/n 23030-1
RP260 p/n 23032-1
RP265 p/n 23033-1
RP380 p/n 28208

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

The DynaVac RP Series Radon Fans are intended for use by trained, professional Radon mitigators. The purpose of this instruction is to provide additional guidance for the most effective use of a DynaVac Fan. This instruction should be considered as a supplement to EPA standard practices, state and local building codes and state regulations. In the event of a conflict, those codes, practices and regulations take precedence over this instruction.

1.2 ENVIRONMENTALS

The RP Series Fans are designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, please contact RadonAway for assistance. When not in operation, the fan should be stored in an area where the temperature is never less than 32 degrees F. or more than 100 degrees F.

1.3 ACOUSTICS

The RP Series Fan, when installed properly, operates with little or no noticeable noise to the building occupants. The velocity of the outgoing air should be considered in the overall system design. In some cases the "rushing" sound of the outlet air may be disturbing. In these instances, the use of a RadonAway Exhaust Muffler is recommended.

1.4 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes thus blocking air flow to the RP Series Fan. The lack of cooling air may result in the fan cycling on and off as the internal temperature rises above the thermal cutoff and falls upon shutoff. Should this condition arise, it is recommended that the fan be turned off until the water recedes allowing for return to normal operation.

1.5 SLAB COVERAGE

The RP Series Fan can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the RP Series Fan best suited for the sub-slab material can improve the slab coverage. The RP140/145/155 are best suited for general purpose use. The RP260 can be used where additional airflow is required and the RP265/380 is best suited for large slab, high airflow applications. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

1.6 CONDENSATION & DRAINAGE

Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a slab hole to remove the condensation. The RP Series Fan **MUST** be mounted vertically plumb and level, with the outlet pointing up for proper drainage through the fan. Avoid mounting the fan in any orientation that will allow water to accumulate inside the fan housing. The RP Series Fans are **NOT** suitable for underground burial.

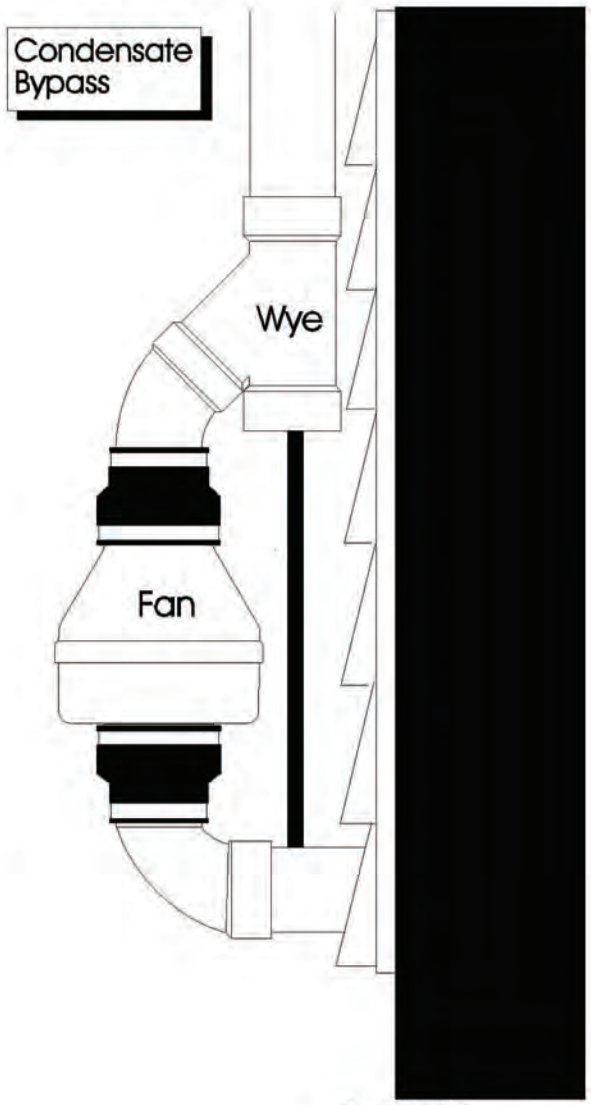
For RP Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

Pipe Dia.	Minimum Rise per Ft of Run*				
	@25 CFM	@50 CFM	@100 CFM	@200 CFM	@300 CFM
6"	-	3/16	1/4	3/8	3/4
4"	1/8	1/4	3/8	2 3/8	-
3"	1/4	3/8	1 1/2	-	-

*Typical RP1xx/2xx Series Fan operational flow rate is 25 - 90 CFM 0n 3" and 4" pipe. (For more precision, determine flow rate by measuring Static Pressure, in WC, and correlate pressure to flow in the performance chart in the addendum.)

Under some circumstances in an outdoor installation a condensate bypass should be installed in the outlet ducting as shown. This may be particularly true in cold climate installations which require long lengths of outlet ducting or where the outlet ducting is likely to produce large amounts of condensation because of high soil moisture or outlet duct material. Schedule 20 piping and other thin-walled plastic ducting and Aluminum downspout will normally produce much more condensation than Schedule 40 piping.

The bypass is constructed with a 45 degree Wye fitting at the bottom of the outlet stack. The bottom of the Wye is capped and fitted with a tube that connects to the inlet piping or other drain. The condensation produced in the outlet stack is collected in the Wye fitting and drained through the bypass tube. The bypass tubing may be insulated to prevent freezing.



1.7 "SYSTEM ON" INDICATOR

A properly designed system should incorporate a "System On" Indicator for affirmation of system operation. A manometer, such as a U-Tube, or a vacuum alarm is recommended for this purpose.

1.8 ELECTRICAL WIRING

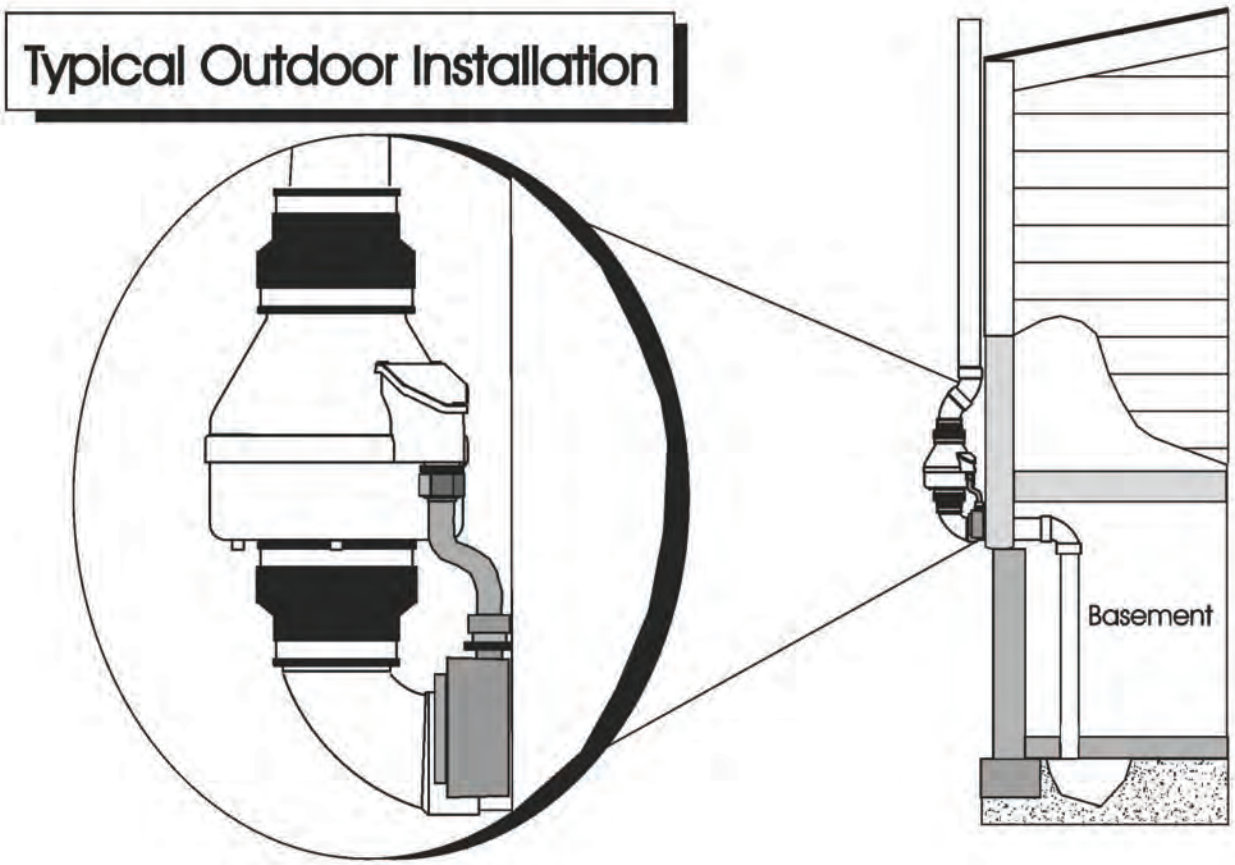
The RP Series Fans operate on standard 120V 60 Hz. AC. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician. Outdoor installations require the use of a U.L. listed watertight conduit. Ensure that all exterior electrical boxes are outdoor rated and properly sealed to prevent water penetration into the box. A means, such as a weep hole, is recommended to drain the box.

1.9 SPEED CONTROLS

The RP Series Fans are rated for use with electronic speed controls ,however , they are generally not recommended.

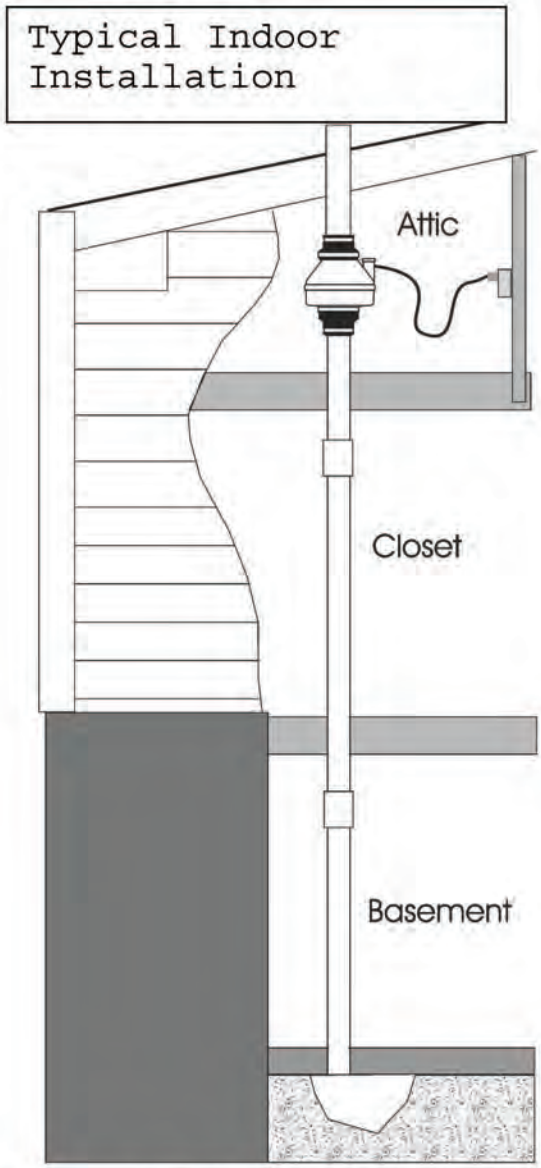
2.0 INSTALLATION

The RP Series Fan can be mounted indoors or outdoors. (It is suggested that EPA recommendations be followed in choosing the fan location.) The RP Series Fan may be mounted directly on the system piping or fastened to a supporting structure by means of optional mounting bracket.



2.1 MOUNTING

Mount the RP Series Fan vertically with outlet up. Insure the unit is plumb and level. When mounting directly on the system piping assure that the fan does not contact any building surface to avoid vibration noise.



2.2 MOUNTING BRACKET (optional)

The RP Series fan may be optionally secured with the RadonAway P/N 25007-2 (25033 for RP385) mounting bracket. Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

2.3 SYSTEM PIPING

Complete piping run, using flexible couplings as means of disconnect for servicing the unit and vibration isolation.

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections(See Section 1.8):

Fan Wire	Connection
Green	Ground
Black	AC Hot
White	AC Common

2.5 VENT MUFFLER (optional)

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed at the end of the vent pipe.

2.6 OPERATION CHECKS

_____ **Verify** all connections are tight and **leak-free**.

_____ **Insure** the RP Series Fan and all ducting is secure and vibration-free.

_____ **Verify** system vacuum pressure with manometer. **Insure** vacuum pressure is **less than** maximum recommended operating pressure

(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 Feet.)

(Further reduce Maximum Operating Pressure by 10% for High Temperature environments)

See Product Specifications. If this is exceeded, increase the number of suction points.

_____ **Verify Radon levels by testing to EPA protocol.**

RP SERIES PRODUCT SPECIFICATIONS

The following chart shows fan performance for the RP Series Fan:

Typical CFM Vs Static Pressure "WC									
	0"	.25"	.5"	.75"	1.0"	1.25"	1.5"	1.75"	2.0"
RP140	135	103	70	14	-	-	-	-	-
RP145	166	146	126	104	82	61	41	21	3
RP260	272	220	176	138	103	57	13	-	-
RP265	334	291	247	210	176	142	116	87	52
RP380*	497	401	353	281	220	176	130	80	38

* Tested with 6" inlet and discharge pipe.

Power Consumption 120 VAC, 60Hz 1.5 Amp Maximum		Maximum Recommended Operating Pressure* (Sea Level Operation)**	
RP140	17 - 21 watts	RP140	0.8" W.C.
RP145	41 - 72 watts	RP145	1.7" W.C.
RP260	52 - 72 watts	RP260	1.5" W.C.
RP265	91 - 129 watts	RP265	2.2" W.C.
RP380	95 - 152 watts	RP380	2.0" W.C.

**Reduce by 10% for High Temperature Operation*
***Reduce by 4% per 1000 feet of altitude*

	Size	Weight	Inlet/Outlet
RP140	8.5H" x 9.7" Dia.	5.5 lbs.	4.5" OD (4.0" PVC Sched 40 size compatible)
RP145	8.5H" x 9.7" Dia.	5.5 lbs.	4.5" OD (4.0" PVC Sched 40 size compatible)
RP155	8.5H" x 9.7" Dia.	5.5 lbs.	5.0" OD
RP260	8.6H" x 11.75" Dia.	5.5 lbs.	6.0" OD
RP265	8.6H" x 11.75" Dia.	6.5 lbs.	6.0" OD
RP380	10.53H" x 13.41" Dia.	11.5 lbs.	8.0" OD

Recommended ducting: 3" or 4" RP1xx/2xx, 6" RP380, Schedule 20/40 PVC Pipe

Mounting: Mount on the duct pipe or with optional mounting bracket.

Storage temperature range: 32 - 100 degrees F.

Normal operating temperature range: -20 - 120 degrees F.

Maximum inlet air temperature: 80 degrees F.

Continuous Duty

Class B Insulation

Thermally protected

3000 RPM

Rated for Indoor or Outdoor Use

LISTED Electric Fan ETL® 77728 Tested to UL Std. 507 ® 2100 HVI CERTIFIED

IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the GP/XP/XR/RP Series Fan for shipping damage within 15 days of receipt. Notify **RadonAway of any damages immediately**. Radonaway is not responsible for damages incurred during shipping. However, for your benefit, Radonaway does insure shipments.

There are no user serviceable parts inside the fan. **Do not attempt to open.** Return unit to factory for service.

Install the GP/XP/XR/RP Series Fan in accordance with all EPA standard practices, and state and local building codes and state regulations.

WARRANTY

Subject to any applicable consumer protection legislation, RadonAway warrants that the GPX01/XP/XR/RP Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of 90 days from the date of purchase (the "Warranty Term").

RadonAway will replace any Fan which fails due to defects in materials or workmanship. The Fan must be returned (at Owner's cost) to the RadonAway factory. Any Fan returned to the factory will be discarded unless the Owner provides specific instructions along with the Fan when it is returned regardless of whether or not the Fan is actually replaced under this warranty. Proof of purchase must be supplied upon request for service under this Warranty.

This Warranty is contingent on installation of the Fan in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not cover damage in shipment unless the damage is due to the negligence of RadonAway.

5 YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

RadonAway will extend the Warranty Term of the fan to 5 years from date of manufacture if the Fan is installed in a professionally designed and professionally installed radon system or installed as a replacement fan in a professionally designed and professionally installed radon system. Proof of purchase and/or proof of professional installation may be required for service under this warranty. Outside the Continental United States and Canada the extended Warranty Term is limited to one (1) year from the date of manufacture.

RadonAway is not responsible for installation, removal or delivery costs associated with this Warranty.

EXCEPT AS STATED ABOVE, THE GPx01/XP/XR/RP SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL RADONAWAY BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE FAN OR THE PERFORMANCE THEREOF. RADONAWAY'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH RADONAWAY'S WARRANTY AS PROVIDED ABOVE.

For service under this Warranty, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping cost to and from factory.

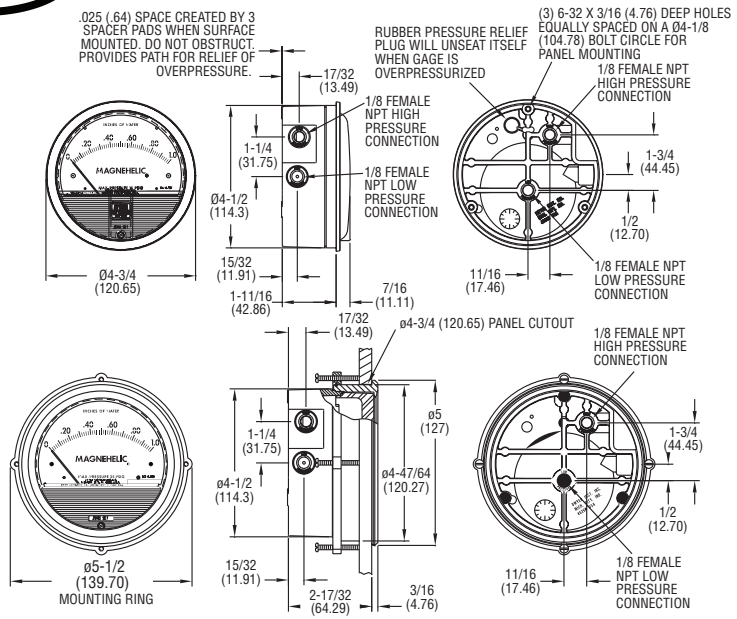
RadonAway
3 Saber Way
Ward Hill, MA 01835
TEL. (978) 521-3703
FAX (978) 521-3964

Record the following information for your records:

Serial No._____
Purchase Date_____

Bulletin A-27

Magnehelic® Differential Pressure Gage



**The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.*

STANDARD GAGE ACCESSORIES: Two 1/8″ NPT plugs for duplicate pressure taps, two 1/8″ pipe thread to rubber tubing adapters and three flush mounting adapters with screws.

MP AND HP GAGE ACCESSORIES: Mounting ring and snap ring retainer substituted for 3 adaptors, 1/4" compression fittings replace 1/8" pipe thread to rubber tubing adaptors.

OVERPRESSURE PROTECTION: Standard Magnehelic® Differential Pressure Gages are rated for a maximum pressure of 15 psig and should not be used where that limit could be exceeded. Models employ a rubber plug on the rear which functions as a relief valve by unseating and venting the gage interior when over pressure reaches approximately 25 psig (excludes MP and HP models). To provide a free path for pressure relief, there are four spacer pads which maintain .023″ clearance when gage is surface mounted. Do not obstruct the gap created by these pads.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases. (Natural Gas option available.)
Wetted Materials: Consult factory.
Housing: Die cast aluminum case and bezel, with acrylic cover. (MP model has polycarbonate cover).
Accuracy: ±2% of full scale (±3% on - 0, -100 Pa, -125 Pa, 10MM and ±4% on -00, - 00N, -60 Pa, -6MM ranges), throughout range at 70°F (21.1°C).
Pressure Limits: -20″ Hg to 15 psig.† (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).
Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only. The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.
Temperature Limits: 20 to 140°F (-6.67 to 60°C). *Low temperature models available as special option.
Size: 4″ (101.6 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: 1/8″ female NPT duplicate high and low pressure taps - one pair side and one pair back.
Weight: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).
Agency Approvals: RoHS.

†For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Medium and High pressure options.

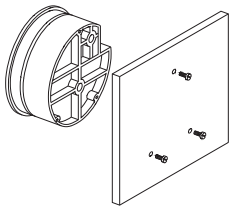
Note: May be used with hydrogen when ordering Buna-N diaphragm. Pressure must be less than 35 psi.

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360 U.S.A.
Phone: 219/879-8000
Fax: 219/872-9057
www.dwyer-inst.com
e-mail: info@dwyer-inst.com

INSTALLATION

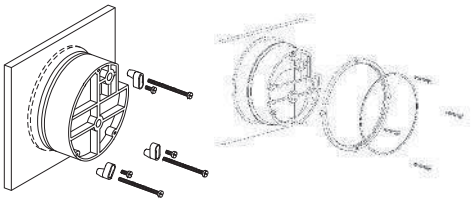
Select a location free from excessive vibration and where the ambient temperature will not exceed 140°F (60°C). Also, avoid direct sunlight which accelerates discoloration of the clear plastic cover. Sensing lines may be run any necessary distance. Long tubing lengths will not affect accuracy but will increase response time slightly. Do not restrict lines. If pulsating pressures or vibration cause excessive pointer oscillation, consult the factory for ways to provide additional damping.
All standard Magnehelic® Differential Pressure Gages are calibrated with the diaphragm vertical and should be used in that position for maximum accuracy. If gages are to be used in other than vertical position, this should be specified on the order. Many higher range gages will perform within tolerance in other positions with only rezeroing. Low range models of 0.5" w.c. plus 0.25" w.c. and metric equivalents must be used in the vertical position only.

SURFACE MOUNTING



Locate mounting holes, 120° apart on a 4-1/8" dia. circle. Use No. 6-32 machine screws of appropriate length.

FLUSH MOUNTING



Provide a 4-9/16" dia. (116 mm) opening in panel. Provide a 4-3/4" dia. (120 mm) opening for MP and HP models. Insert gage and secure in place with No. 6-32 machine screws of appropriate length, with adapters, firmly secured in place.

PIPE MOUNTING

To mount gage on 1-1/4" - 2" pipe, order optional A-610 pipe mounting kit.

TO ZERO GAGE AFTER INSTALLATION

Set the indicating pointer exactly on the zero mark, using the external zero adjust screw on the cover at the bottom. Note that the zero check or adjustment can only be made with the high and low pressure taps both open to atmosphere.

OPERATION

Positive Pressure: Connect tubing from source of pressure to either of the two high pressure ports. Plug the port not used. Vent one or both low pressure ports to atmosphere.
Negative Pressure: Connect tubing from source of vacuum or negative pressure to either of the two low pressure ports. Plug the port not used. Vent one or both high pressure ports to atmosphere.
Differential Pressure: Connect tubing from the greater of two pressure sources to either high pressure port and the lower to either low pressure port. Plug both unused ports.
When one side of the gage is vented in dirty, dusty atmosphere, we suggest an A-331 Filter Vent Plug be installed in the open port to keep inside of gage clean.

A. For portable use of temporary installation use 1/8" pipe thread to rubber tubing adapter and connect to source of pressure with flexible rubber or vinyl tubing.
B. For permanent installation, 1/4" O.D., or larger, copper or aluminum tubing is recommended.

MAINTENANCE

No lubrication or periodic servicing is required. Keep case exterior and cover clean. Occasionally disconnect pressure lines to vent both sides of gage to atmosphere and re-zero. Optional vent valves should be used in permanent installations. The Series 2000 is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

WARNING

Attempted field repair may void your warranty. Recalibration or repair by the user is not recommended.

TROUBLE SHOOTING TIPS

Gage won't indicate or is sluggish.

1. Duplicate pressure port not plugged.
2. Diaphragm ruptured due to overpressure.
3. Fittings or sensing lines blocked, pinched, or leaking.
4. Cover loose or "O"ring damaged, missing.
5. Pressure sensor, (static tips, Pitot tube, etc.) improperly located.
6. Ambient temperature too low. For operation below 20°F (-7°C), order gage with low temperature, (LT) option.

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P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360 U.S.A.
Phone: 219/879-8000
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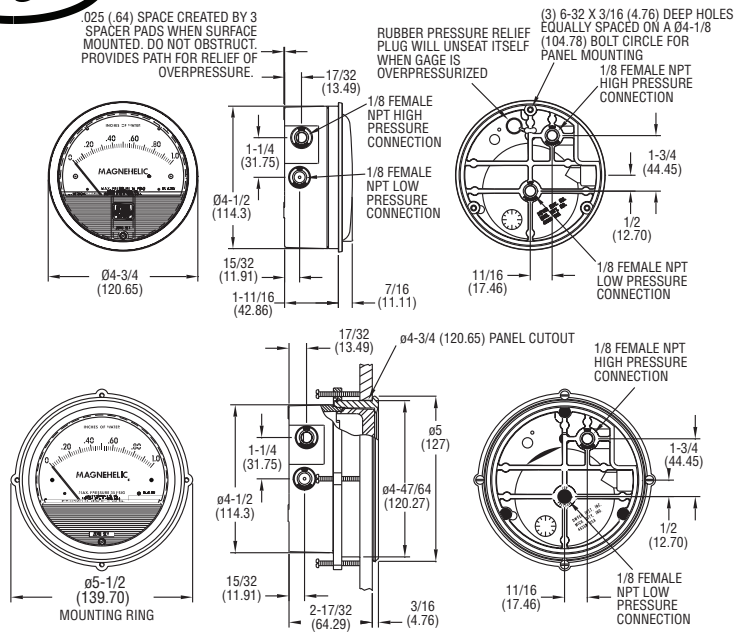
e-mail: info@dwyer-inst.com

Magnehelic® Differential Pressure Gage
INSTRUCCIONES Y LISTA DE PARTES



(El tapón de goma no es usado en los modelos sobre 180 pulgadas de presión de agua, modelos de presión media o alta, o en instrumentos que requieren un elastizado en cualquier otro material que no sea silicona para el diafragma.)

Accesorios: Tapones 1/8" NPT para las conexiones duplicadas, dos adaptadores de rosca 1/8" NPT a tubo de goma; y tres adaptadores para montaje al ras y tornillos.

Accesorios para Los Modelos MP y HP: El anillo de montaje y el retensor del anillo de presión son substituidos por 3 adaptadores, accesorios de compresión de 1/4" remplazan a los adaptadores de rosca 1/8" a tubo de goma.

Protección Para Sobrepresión: Los Manómetros Diferenciales Magnehelic Estándar están clasificados para una presión máxima de 15 psi y no se deberían de usar donde el límite puede excederse. Los modelos emplean un tapón de goma en el trasero que funciona como una válvula de alivio desmontándose y ventilando el interior del instrumento cuando la sobrepresión alcanza aproximadamente 25 psig. (Los modelos MP y HP son excluidos) Para proveer un camino libre para el alivio de presión, el instrumento viene con rodilleras que mantienen un espacio de .023" cuando el instrumento es montado en superficie. No bloque el espacio creado por estas rodilleras.

† Para aplicaciones con alto ciclo de velocidad dentro de la clasificación de presión total del instrumento, la próxima clasificación mas alta es recomendada. Vea las opciones de media y alta presión.

El instrumento puede ser usado con hidrogeno cuando se ordena con diafragma de Buna-N. La presion tiene que ser menos de 35 psi.

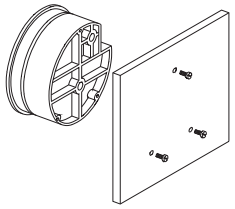
ESPECIFICACIONES

Servicio: aire y gases no combustibles, gases compatibles. (ópcion disponible para uso con gas natural).
Materiales Mojados: Consulte con la fábrica.
Carcasa: Caja y anillo de retención de aluminio fundido a presión con tapadera de acrílico. (El modelo MP tiene la tapadera de policarbonato.)
Exactitud: ±2% de fondo de escala a 21 °C
Mod. 2000-0 ±3%; Mod. 2000-00 ±4%
Límite de Presión: -20 Hg. a 15 psig. † (-0.677 bar a 1,034 bar); opción MP: 35 psig (2.41 bar), opción HP: 80 psig (5.52 bar).
Sobrepresión: El tapón de alivio se abre aproximadamente a los 25 psig, modelos estandard únicamente. El tapón de goma no es usado en los modelos sobre 180 pulgadas de presión de agua, modelos de presión media o alta, o en instrumentos que requieren un elastizado en cualquier otro material que no sea silicio para el diafragma.
Límite de Temperatura: -6.67 a 60ºC. * Modelos de baja temperatura disponibles como opción especial.
Dimensiones: diám. 120,65 mm x 55,6 prof.
Orientación de Montaje: El diafragma debe ser usado solo en posición vertical. Consulte con la fábrica para otras orientaciones de posición.
Conexiones: 1/8" NPT para alta y baja presión, duplicadas (atrás, a los lados).
Peso: 510 g, MP y HP 963 g.
Aprobación de la agencia: RoHS.

Instalacion

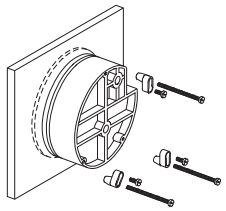
Seleccione un lugar libe de exceso de vibraciones, y donde la temperatura ambiente no supere los 60°C. Evite luz solar directa, para evitar decoloración de la cubierta plástica. Las conexiones de proceso pueden tener cualquier longitud sin afectar la exactitud, pero pueden extender el tiempo de respuesta del instrumento. Si hay pulsación de presión o vibración, consulte a fábrica sobre medios de amortiguación.
Los MAGNEHELIC han sido calibrados con el diafragma vertical, y deben ser usados en esas condiciones. Para otras posiciones, se debe especificar en la orden de provisión. Los de rango elevado pueden ser usados en diversas posiciones, pero se debe reajustar el cero. Los modelos de la serie 2000-00 y equivalentes métricos deben ser usados solo verticalmente.

Montaje en Superficie



Perfore tres orificios separados 120° sobre una circunferencia de 105 mm de diám. y sostenga el instrumento con tres tornillos 6-32 de long. apropiada.

Montaje alineado



Perfore un circulo de 115 mm de diám. en el panel, y sostenga el instrumento mediante los.

Montaje Sobre Pipa

Para montar el instrumento sobre pipas de 32 a 50 mm de diám., ordene el adaptador opcional A-610.

Puesta a Cero Después de Instalar

Deje las conexiones de presión abiertas a atmósfera y ajuste a cero desde tornillo del panel frontal.

Operacion

Presión Positiva: Conecte la tubería desde la fuente de presión a cualquiera de las dos conexiones de alta presión (HIGH), bloqueando la no usada; Las conexiones de baja (LOW) presión pueden dejarse uno o los dos abiertos a la atmósfera.
Presión Negativa: Repita el procedimiento anterior, conectado en este caso las conexiones de baja presión (LOW). Deje las otras conexiones abiertas.
Presión diferencial: Conecte el tubo correspondiente a la presión más positiva al cualquiera de los conectores de alta presión (HIGH) bloqueando el no usado, y la más baja presión o presión negativa (vacío) al conector de baja presión (LOW). Puede usarse cualquier conector de cada par, dejando siempre uno bloqueado. Si se deja una conexión abierta a la atmósfera, se recomienda el uso de un filtro tipo A-331 en el lugar correspondiente para mantener limpio el interior del instrumento. Para uso portable, o instalación temporaria, uso adapta dores para rosca de tubo de 1/89 a tubo flexible, y conecte a proceso mediante una tubería de goma, o equivalente. Para instalación permanente, se recomienda el uso de tubo de cobre o aluminio de por lo menos 1/4" de diám. exterior.

No se requiere mantenimiento específico alguno, ni lubricación. Periódicamente, desconecte el instrumento, ventee la presión acumulada, y reajuste el cero. Para instalaciones permanentes, se debe usar un juego de válvulas de montaje permanente para el venteo.
El instrumento de Serie 2000 no puede ser re parado en el campo y debería de ser regresado si reparos son necesarios (Reparos en el campo no deben de ser intentados y pueden cancelar la garantía.). Asegurarse de incluir una descripción breve del problema más cualquier notas pertinentes a la aplicación para devolución de productos antes de enviar el instrumento.

Cuidado! : La recalibración en campo puede invalidar la garantía. No se recomienda la recalibracion por parte del usuario. En caso necesario envie el instrumento con transporte pago a:

Localización De Fallas

• *El instrumento no indica, o es lento en reacción.*
1. Conexión duplicada abierta.
2. Diafragma roto por sobrepresión.
3. Tubería de conexión perforada, con pérdidas o pinchazos.
4. Anillo de retención flojo, u "O " ring dañado.
5. Conexión a proceso indebida o inadecuada.
6. Temperatura muy baja. Para este caso ordene tipos LT (baja temperatura).

 Printed in U.S.A. 12/11 FR# 12-440212-10 Rev. 4

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APPENDIX C

Specifications for the SSDS at 140 State Street

SPECIFICATIONS FOR PASSIVE SUB-SLAB DEPRESSURIZATION SYSTEM FOR:

67 HOWARD STREET
AND
140 STATE STREET
ALBANY NY

CONTENTS:

POROUS STONE MEDIA LAYER

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall provide all labor, materials, equipment, and services necessary for, and incidental to, furnishing, placing, compacting and testing the stone porous media layer as shown on the Contract Drawings and as specified herein.

B. The Contractor shall accept the site in the condition in which it exists at the time of the award of the Contract.

C. The Engineer will determine the suitability of materials that are to be used in the work and should any materials encountered be unsatisfactory for the purpose intended, they shall be removed from the site at the Contractor's expense.

1.2 QUALITY ASSURANCE

A. The latest edition of the following standards and regulations, as referenced herein, shall be applicable.

1. American Society for Testing and Materials (ASTM).

2. Standard Specification for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO).

B. The Contractor shall comply with the requirements for soil erosion and sedimentation control, and other requirements of governmental authorities having jurisdiction, including the State of New York.

C. The Contractor shall provide and pay for all costs in connection with an approved independent testing facility to determine conformance of soils with the specifications, in accordance with Section "Quality Control Services."

1.3 SUBMITTALS

A. The Contractor shall furnish representative earth materials to the testing laboratory for analysis and report, as directed by the Engineer or as outlined in the specifications.

B. Descriptive information on compaction equipment to be used for construction of the barrier layer, including equipment proposed for use in confined areas.

C. Plan detailing proposed borrow source, borrow source prequalification testing data, and estimated borrow source quantity.

D. Test reports for prequalification and construction quality control/quality assurance testing shall be submitted to both the Contractor and Engineer.

1.4 PRODUCT HANDLING

A. Soil materials shall be excavated from the borrow source, transported, conditioned, placed, and stockpiled in such a manner so as to prevent contamination, segregation, and excessive wetting. Materials that have become contaminated, excessively wet, or segregated shall not be used and shall be removed from the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Crushed stone: free from organic material, elongated particles or other deleterious materials, conforming to the requirements of NYSDOT Section 703--2 and meeting the following gradation requirements (Mixture of 50 percent NYSDOT, Size 1 and 50 percent NYSDOT, Size 2):

Sieve	**Percent Passing**
1-1/2"	100
1"	90 - 100
1/2"	40 – 70
1/4”	0 - 15

1. Particle size analysis shall show no gap grading.

2. The permeability of the stone media layer shall be greater than $1x10^{-3}$ centimeters per second when compacted to a minimum of 90 percent of standard Proctor maximum dry density.

3. All soil or stone particles shall be classified as rounded or subrounded (ASTM D 2488)

PART 3 - EXECUTION

3.1 BORROW SOIL PRECONSTRUCTION MATERIAL QUALIFICATION TESTING

A. A 100-pound minimum representative sample shall be obtained from each potential borrow source. If different material gradations are known to exist in the pit, samples shall be obtained for each material. Each sample shall be mixed thoroughly and reduced to test specimen size, in accordance with AASHTO T87. The tests shall be performed in the order shown. Failure to pass any test is grounds for disqualification and shall lead to cessation of the test program for that material.

1. Particle Size Analysis:

   a. Method: AASHTO D422.
   b. Number of Tests: One (1) per potential source.
   c. Acceptance Criteria: Gradation within specified limits.

2. Maximum Density Determination:

   a. Method: ASTM D698, Standard Proctor.
   b. Number of Tests: One (1) per potential source.

3. Permeability of Granular Soils:

   a. Method: ASTM D2434 - Constant Head Method
   b. Number of Tests: One (1) tests per potential source performed with sample compacted to a minimum of 95% maximum standard Proctor maximum dry density.
   c. Acceptance Criteria: Coefficient of permeability greater than $1x10^{-3}$ centimeters per second.

4. Re-establish gradation and maximum density of fill material if source is changed during construction.

3.2 PLACEMENT AND COMPACTION

A. General:

1. Notify the Engineer of any unexpected subsurface condition. Do not place fill material on surfaces that are muddy, frozen, or contain frost, ice, ponded water, gross contamination, or extraneous debris.

2. Provide protection of any underground utilities during earthwork operations. Repair any damaged utilities as acceptable to the Engineer, at no additional cost to the Owner.

3. Protect all nearby structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

4. Establish all required lines, levels, contours and datum. Maintain all benchmarks and other elevation control points.

5. After acceptance of the subgrade, the geotextile fabric shall be placed prior to the placement of the stone media layer. All joints shall be overlapped a minimum of twenty-four inches.

6. When work is suspended during periods of freezing weather, measures shall be taken to prevent fill already in place from freezing. Upon resumption of work after any inclement weather, prepare the exposed surface by proof rolling to identify any zones of soft/loose soils. Soft/loose materials or frozen soils shall be removed and replaced.

7. The distribution of materials throughout the stone media layer shall be such that the layer will be free from lenses, pockets, streaks, and layers of materials differing substantially from the surrounding materials.

8. The placing of material shall be done so as to obtain a layer of uniform thickness without spaces between successively deposited loads.

9. Compaction of each layer shall proceed in a systematic, orderly, and continuous manner so as to ensure the specified coverages by the compaction equipment.

10. Materials which cannot be compacted by the approved rolling compaction equipment because of interferences shall be compacted with smaller approved compactors to a density equivalent to the density achieved in adjacent areas by the rolling compaction equipment and methods. Single pad vibratory base plate compactors shall weigh not less than 200 lbs. and have a vibration frequency not less than 1600 cycles per minute. Heavy vibratory compactors or equipment shall not be operated within 4 feet of any structure.

11. No backfilling or compaction shall take place against any cast-in-place concrete footings, grade beams, or slabs prior to 7 days of initial concrete set, or against any cast-in-place concrete walls prior to achieving the desired design strength, f’c.

12. Should the fill surface become rutted or uneven subsequent to compaction, it shall be releveled and recompacted before placing the next layer of material.

13. Fill on landfill side slopes shall be placed in lifts parallel with the sloping surface.

B. Stone Media Layer Placement and Compaction:

1. Place fill materials in a layer not less than 8" in compacted depth. Lift height shall be

governed by the ability of the compaction equipment to obtain the required compaction. The moisture content of the material during compaction shall be between 3 percent wet and 3 percent dry of optimum moisture content as determined by ASTM D698 (standard Proctor)

2. All fill shall be thoroughly and satisfactorily compacted to at least 95 percent of the standard Proctor maximum dry density of the material used (ASTM D-698).

3. Where fill must be moisture conditioned before compaction, uniformly apply water to the surface of each layer of fill. Prevent ponding or other free water on the surface subsequent to, or during, compaction operations.

4. Remove and replace, or scarify and air dry, soil that is too wet to permit compaction to the specified density. Soil that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing, until moisture content is reduced to a value which will permit compaction to the percentage of maximum density specified.

5. Rolling compaction equipment shall be heavy smooth drum vibratory equipment capable of achieving the intended result. Compaction equipment used for the Work is subject to approval by the Engineer. Any equipment not originally manufactured for compaction purposes and equipment which is not in proper working order will not be approved. Furnish manufacturer's specifications covering data not obvious from a visual inspection of the equipment and necessary to determine its classification and performance characteristics.

6. Compaction equipment shall make a minimum of 4 complete passes over the entire area of each lift.

7. The Contractor shall grade partially completed fill areas for drainage and thoroughly compact and smooth the surface at the end of each workday.

8. For areas not accessible to heavy rolling compaction equipment, fill materials shall be placed in horizontal layers not to exceed 6 inches in loose thickness and compacted with smaller rolling compaction equipment or hand operated equipment, as approved by the Engineer.

9. The final surface of the layer shall be uniform and suitable for placement of the next subsequent layer.

3.3 FIELD QUALITY CONTROL

A. The Contractor's Testing Laboratory shall perform testing of stone media layer materials to insure compliance with these specifications.

B. In-place density and moisture content tests shall be performed on in- place fill material in accordance with ASTM D 1556, D 2167 or D 2922. In-place density shall be determined at a depth of 3 inches below grade. At least 9 tests shall be performed per acre per lift of material placed and at least one test shall be performed each day. Field test locations shall be subject to approval or relocation by the Engineer.

C. Tests for moisture content shall be performed on the in-place fill at a rate of nine tests per acre per lift. If nuclear methods or microwave methods are used to determine field moisture content, one oven-dry moisture content determination (ASTM D2216) shall be performed per acre per lift for calibration. Sample shall be obtained from a location immediately adjacent to an in-place density location.

D. The Engineer may direct additional tests to establish gradation, Atterberg limits, permeability, maximum density, and in-place density, and water content as required by working conditions, or changes in borrow source material at the Contractor's expense.

E. Acceptance Criteria:

1. Grain size analyses shall show gradation of the soil material placed to be within specified limits.

2. Minimum dry density for all fill shall be 95 percent of the standard Proctor maximum dry density. The in-place moisture content shall be within 3 percent dry or 3 percent wet of optimum as determined by the standard Proctor compaction method (ASTM D-698). If a test fails to qualify, the fill shall be further reworked, compacted and re-tested. Subsequent test failures shall be followed by removal and replacement of the material.

3.4 CLEAN UP

A. Provide and maintain protection of newly filled areas against damage. Upon completion or when directed, correct all damaged and deficient work by building up low spots and remove temporary protections, fencing, shoring and bracing, if any.

B. Remove all surplus excavated material not required for filling and backfilling and legally dispose of same away from premises.

C. Leave the premises and work in clean, satisfactory condition, ready to receive subsequent operations.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall provide all labor, materials, equipment, and services necessary for, and incidental to, furnishing and installing separation/stabilization fabric as shown on the Contract Drawings and as specified herein.

1.2 QUALITY ASSURANCE

A. The latest edition of the following standards, as referenced herein, shall be applicable.

1. American Society for Testing and Materials (ASTM).

1.3 SUBMITTALS

A. Product Data:

1. Submit Manufacturer's catalog cuts, specifications and installation instructions.

B. Samples:

1. Submit a one (1) square yard piece of each type of fabric.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver sufficient materials to the site to prevent interruption of the work.

2. All materials shall be inspected by Contractor upon delivery. Contractor shall notify Engineer of any damage. Products received at the site torn, with holes, deteriorated, or otherwise damaged will not be approved and shall be returned and replaced at no expense to the Owner.

B. Storage:

1. All material shall be stored in strict accordance with the manufacturer's recommendations and as approved by the Engineer.

2. All material shall be stored so as to be protected from wind, rain, excess moisture, or sunlight. Material shall be wrapped in an opaque, protective cover until ready for use.

C. Handling:

1. All material shall be handled in strict accordance with the manufacturer's recommendations and as approved by the Engineer.

PART 2 - PRODUCTS

2.1 GENERAL

A. For material separation/filtration, fabric shall be Mirafi 160N or an approved equal.

2.2 MATERIAL PROPERTIES

A. Separation/Filtration Fabric: (To be used between soil subgrade and venting stone layer).

Property	**Design Value**	**Test Method**
Weight	6 (oz./yd^2)	ASTM D5261
Tensile Strength	140 lbs (min)	ASTM D4632
Elongation	50% (max)	ASTM D4632
Burst Strength	290 psi (min)	ASTM D3786
Puncture Strength	95 lbs (min)	ASTM D4833
A.O.S.	100	ASTM D4751
Permittivity	1.2 sec^{-1} (min)	ASTM D4491

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall be responsible for the storage, handling, installation, and seaming of geotextile fabric in accordance with the specifications and the manufacturer's recommendations, as approved by the Engineer.

3.2 SUBBASE PREPARATION

A. Surfaces to be covered with geotextile fabric shall be smooth and free of rocks, sticks, roots, sharp objects, and all debris that may damage the fabric. The surface to be covered shall be firm and unyielding, with no sudden changes or breaks in grade. There shall be no standing water or excessive moisture on the surface when the fabric is placed.

B. The compacted subbase shall be maintained in a smooth, uniform and compacted condition during installation of the fabric.

3.3 GEOTEXTILE INSTALLATION

A. The fabric shall be cleaned of all debris or other materials that may negatively affect the fabric's performance.

B. Mechanical equipment shall not be permitted to operate directly on the fabric unless authorized to do so by the manufacturer and approved by the Engineer.

C. Geotextile Placement

1. Fabric shall be placed as recommended by the manufacturer and approved by the Engineer on surfaces which have been prepared to conform with these Specifications and found acceptable for fabric installation.

2. The fabric shall be placed as smooth and wrinkle-free as possible. All laps shall be at least thirty-six inches in width without tension, stress, folds, or creases.

3. In areas where wind is prevalent, fabric installation shall be started at the upwind side of the project and proceed downwind. The leading edge of the fabric shall be secured at all times with sandbags or other means sufficient to hold it down during high winds.

4. Smoking shall not be permitted by personnel working on the fabric.

5. All areas of fabric damaged during installation as determined by the Engineer shall be repaired by the Contractor as specified at no additional cost to the Owner.

6. At time of installation, fabric will be rejected if it has defects, ribs, holes, flaws, deterioration, or damage incurred during manufacture, transportation, handling, or storage. Damaged materials shall be removed and replaced at no additional cost to the Owner.

D. Seams and Overlaps of Geotextile:

1. All overlaps shall be a minimum of twenty-four inches.

2. Joints shall be sewn or bonded unless otherwise noted. Securing pins shall not be used.

3. For the gas venting system, joints need not be heatbonded.

3.4 GEOTEXTILE REPAIR

A. Should the fabric be damaged during any step of the installation, the damaged section shall be repaired by covering it with a piece of fabric which extends at least thirty-six inches in all directions beyond the damaged area. The fabric shall be secured by sewing or bonding methods approved by the Engineer.

3.5 COVER MATERIALS OVER GEOTEXTILES

A. Granular materials shall be placed on geotextiles as shown on the Contract Drawings. During backdumping and spreading, a minimum depth of 6 inches of granular material shall be maintained at all times between the fabric and wheels of trucks or spreading equipment. All equipment used in spreading or traveling on the cover layer for any reason shall exert low ground pressures and shall be approved by the manufacturer and Engineer. Dozer blades, etc. shall not make direct contact with the fabric; however, if tears occur in the fabric during the spreading operation, the granular material shall be cleared from the fabric and the damaged area repaired as previously described.

B. The granular material shall be spread in the direction of fabric overlap. Large fabric wrinkles which may develop during the spreading operations shall be folded and flattened in the direction of the spreading. Occasionally, large folds may reduce the fabric overlap width. Special care shall be given to maintain proper overlap and fabric continuity.

C. All equipment spreading cover material or traveling on the cover layer shall avoid making sharp turns, quick stops or quick starts.

D. Fabric shall be covered as soon as possible after placement to minimize exposure to sunlight. Fabric shall not be exposed for more than 7 days.

3.6 DISPOSAL OF SCRAP MATERIALS

A. On completion of installation, the Contractor shall dispose of all trash and scrap material off-site or in a location approved by the Owner and Engineer, remove equipment used in connection with the work herein, and shall leave the premises in a neat acceptable manner.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section includes the installation of polyvinyl chloride piping systems.

B. All piping, fittings, and appurtenances shall be new, clean and in accordance with material specifications. In no instance will second-hand or damaged materials be acceptable.

1.2 REFERENCES

A. American Water Works Association (AWWA).

B. American Society of Testing and Materials (ASTM).

1.3 QUALITY ASSURANCE

A. Product Markings: Plainly and permanently mark each pipe length with the following information:

1. Nominal pipe size.
2. Plastic pipe material designation.
3. Standard thermoplastic pipe dimension ratio.
4. Pressure rating.
5. ASTM designation.
6. Manufacturers name or trademark and date of manufacture.
7. Potable water pipe marking or seal, if applicable.

1.4 SUBMITTALS

A. Product Data:

1. Submit manufacturer's catalog cuts, specifications and installation instructions for both pipe and pipe appurtenances.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage:

1. Deliver and store pipe, fittings, specials, appurtenances and accessories and within the work limits as shown on the Drawings.

2. Exercise special care during delivery and storage to avoid damage to the products.

3. Store products in locations where unnecessary handling is avoided and where they will not interfere with the Owner's operations, construction operations or public travel.

B. Handling:

1. Handle pipe, fittings, specials appurtenances and accessories carefully with approved handling devices in strict conformance with the manufacturer's recommendations.

2. Do not drop or roll products off trucks, or otherwise drag, roll or skid products.

C. Products cracked, gouged, chipped, dented or otherwise damaged will not be approved and are to be

removed and replaced at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe and Fittings:

1. PVC pipe shall be four-inch diameter Schedule 40 belled end type pipe for solvent welded joints conforming to ASTM D2467, using solvent as specified in ASTM D2564. When required, all blower discharge piping shall be resistant to ultraviolet radiation as specified in ASTM D1785 for Type II, Grade I, Schedule 40 PVC piping.

2. Pipe will be perforated underneath slab as shown on the Contract Drawings. Perforations will be ½-inch in diameter, spaced six-inches on center, and located in rows spaced 60 degrees apart (i.e. 6 rows of perforation).

3. Pipe shall be of the dimensions shown on the Contract Drawings.

B. Joints:

1. All pipe and pipe appurtenances shall be joined by solvent welding. Solvent welded joints shall be made in accordance with manufacturer's recommendations and procedures.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect all pipe and fittings prior to laying in the trench. Remove defective pipe and fittings from the site.

B. Do not backfill until inspection by the Engineer, unless otherwise approved by the Engineer.

3.2 INSTALLATION

A. Lay pipe with bell end upstream.

B. Do not lay piping in water. Ensure that the water level in the excavation is at least 12 inches below the bottom of piping.

C. Present all conflicts between piping systems and equipment, structures or facilities to Engineer for determination of corrective measures before proceeding.

D. Completely clean all jointing surfaces and adjacent areas prior to making joint.

E. Field cut pipe for shorter than standard pipe lengths. Cut ends square and perpendicular to the pipe axis. Remove and smoothly bevel ends.

F. All pipe and pipe appurtenances shall be joined by solvent welding.

G. Provide all necessary adapters, specials and connection pieces required when connecting different types and sizes of pipe or connecting pipe made by different manufacturers.

H. No piping shall be brought into position until the preceding length, valve, fitting, or special has been bedded and secured in place.

I. Whenever pipe laying is not actively in progress, the open ends of the piping shall be closed by a temporary plug or cap to prevent soil, water and other foreign matter from entering the piping.

3.3 TESTING

A. None required.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall provide all labor, materials, equipment, and services necessary for, and incidental to, furnishing, installing and testing the vapor barrier system as shown on the Contract Drawings and as specified herein.

1.2 QUALITY ASSURANCE

A. Codes and Standards: Perform all work in compliance with applicable requirements of governing authorities having jurisdiction.

B. The latest edition of the following standards, as referenced herein, shall be applicable.

1. American Society for Testing and Materials (ASTM).
   a. ASTM E1745Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
   b. ASTM E154 Standard Test Methods For Water Vapor Transmission of Materials.
   c. ASTM E96Standard Test Methods for Water Vapor Transmission of Materials.
   d. ASTM E1643Standard Practice of Installation of Water Vapor Retarders Used in Contact with Soil of Granular Fill Under Concrete Slabs.

2. American Concrete Institute (ACI)
   a. ACI 302.1 R-04 Vapor Barrier Component.

1.3 SUBMITTALS

A. The Contractor shall submit to the Engineer product data, samples, schedules, and shop drawings describing the work to be performed. Work covered by these submittals shall not proceed until they have been approved by the Engineer.

B. Required submittals include:

1. Product data and specifications for vapor barrier components.

2. Manufacturer’s installation instructions for placement, seaming, and pipe boot installation.

3. Independent laboratory test results showing compliance with ASTM & ACI Standards. All samples should be obtained from a single production roll of material. Samples should be representative of the specific material batch to be used for project.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store and handle vapor barrier components in accordance with the manufacturer’s recommendations.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Vapor Barrier

1. Class A, 15-mil or greater, polyethylene resin vapor barrier meeting or exceeding all requirements of ASTM 1745 (Maximum water vapor transmission rate of 0.01 grains/ft^2/hour). Vapor barrier shall be Perminator™ 15-mil Underslab Vapor Barrier manufactured by W.R. Meadows, Inc., Stego-Wrap Vapor Barrier 15-mil manufactured by Stego Industries LLC, or approved equal.

2.2 ACCESSORIES

A. Seam Tape

1. High density polyethylene tape with pressure sensitive adhesive, suitable for cold weather installation. Shall be Stego® Cold Weather Tape, as manufactured by Stego Industries, LLC, or approved equal.

2. The seam tape shall have the following physical properties:

a. Minimum width of 4 inches.
b. Maximum Water Vapor Transmission Rate of 0.3 perms, ASTM E96.
c. Maximum Permeance Rate of 0.09 perms ASTM E96. .

B. Vapor Proofing Mastic

1. Medium-viscosity, water-based, polymer-modified anionic bituminous/asphalt emulsion. Shall be Stego® Mastic as manufactured by Stego Industries, LLC, or approved equal.

2. The mastic shall have the following physical properties:

a. Maximum Water Vapor Transmission Rate of 0.3 perms.
b. Low Temperature Flexibility – No cracking at -20ºC, ASTM C836
c. Maximum Permeance Rate of 0.17 perms, ASTM E96.

C. Pipe Boots/Collars:

1. Construct pipe boots from vapor barrier material and pressure sensitive taper per manufacture's recommendations.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall be responsible for the storage, handling, installation, and seaming of the vapor barrier in accordance with the specifications and the conditions of the manufacturer's warranty and in accordance with ASTM E1643.

3.2 SUBBASE PREPARATION

A. Surfaces to be lined with the vapor barrier shall be smooth and free of rocks, sticks, roots, sharp objects, and all debris that may puncture the barrier. The surface to be lined shall be firm and

unyielding, with no sudden changes or breaks in grade. There shall be no standing water or excessive moisture on the surface when the vapor barrier is placed. The installation Contractor shall certify daily in writing that the subgrade surface on which the vapor barrier is to be installed is acceptable.

B. Moisture Content:

1. Allow no standing water or excessive moisture within construction area.

2. Maintain moisture content of the surface soils to receive vapor barrier within three percent of the optimum moisture until covered by the vapor barrier.

3. Cover all surfaces where moisture content is critical promptly after they have been accepted for vapor barrier installation.

C. The compacted subbase shall be maintained in a smooth, uniform and compacted condition during installation of the vapor barrier.

3.3 VAPOR BARRIER INSTALLATION

A. The vapor barrier shall be cleaned of all debris or other materials that may negatively affect the membrane system.

B. Sheet Placement:

1. Sheets shall be placed as directed by the manufacturer's representative on surfaces which have been prepared to conform with these specifications and found acceptable for membrane installation.

2. Unroll the vapor barrier with the longest dimension parallel with the direction of the concrete pour for the concrete slab above the vapor barrier.

3. Lap the vapor barrier over footings and seal to foundations in accordance with the the manufacturer's recommendation.

4. Overlap all joints/seams (lateral and butt) a minimum of 6 inches and seal with the manufacturer's pressure sensitive tape. All areas of adhesion must be free of dust, dirt, moisture, and frost prior to placement of seam tape.

5. No penetrations in the vapor barrier are permitted, except for permanent utilities and reinforcing steel. Seal all penetrations per manufacturer's recommendations using 15-mil Class vapor barrier material and seam tape. Pipe penetrations shall be sealed using a pipe boot constructed of the vapor material and seam tape. The boot shall extend a minimum of 6 inches beyond the pipe in all directions.

6. Repair damaged areas by cutting patches of the vapor barrier material, overlapping the damaged area by a minimum of 6 inches in all directions and taping the patch to the barrier on all four sides with a seam tape.

7. In areas where wind is prevalent, vapor barrier installation shall be started at the upwind side of the project and proceed downwind. The leading edge of the vapor barrier shall be secured at all times with sandbags or other means sufficient to hold it down during high winds.

8. Sandbags or rubber tires may be used as required to hold the vapor barrier in position during installation. Tires shall not have exposed steel cords or other sharp edges which may snag or cut the vapor barrier. Materials, equipment or other items shall not be dragged across the surface of the vapor barrier or be allowed to slide down slopes on the vapor barrier. All

parties walking or working upon the vapor barrier material shall wear soft-sole shoes.

9. Smoking shall not be permitted by personnel working on the vapor barrier.

10. All areas of the vapor barrier damaged during installation as determined by the Engineer shall be repaired by the Contractor as specified at no additional expense to the Owner.

3.4 FIELD QUALITY CONTROL

A. Installation Contractor shall notify the Engineer a minimum of five (5) days prior to the installation of every vapor barrier.

B. The Engineer will conduct a visual inspection of each vapor barrier prior the placement of the concrete slab or other material over the barrier. The Contractor must request the Engineer's inspection of the vapor barrier a minimum of 48 hours prior to covering the vapor barrier.

3.5 DISPOSAL OF SCRAP MATERIALS

A. On completion of installation, the Contractor shall dispose of all trash and scrap material off site or in a location approved by the Owner and Engineer, remove equipment used in connection with the work herein, and shall leave the premises in a neat acceptable manner.

END OF SECTION

APPENDIX D

Soil Cover and Site Wide Inspection Checklist

SITE-WIDE /SOIL COVER ANNUAL INSPECTION CHECKLIST

Report No.	
Page 1 of 3	
Date:	Time:

Site Name: Former Albany Laboratories	Project No.
Address: 140 State and 67 Howard Streets, Albany, NY	Weather:
Inspector(s):	
Type of Inspection: ☐ Routine ☐ Post Severe Condition	Temp.: Hi Low

SITE ACCESSIBILITY INSPECTION

ITEM/CONDITION	YES	NO	N/A	COMMENTS
Site accessible and passable.	☐	☐	☐	

SITE RECORDS INSPECTION

ITEM/CONDITION	YES	NO	N/A	COMMENTS
Site Records are up to date with latest revisions or changes to SMP	☐	☐	☐	

INSTITUTIONAL CONTROL INSPECTION

ITEM/CONDITION	YES	NO	N/A	COMMENTS
The Site continues to be utilized for commercial, industrial or restricted residential (140 State Street) uses only.	☐	☐	☐	

SIGNAGE AND GATE INSPECTION

ITEM/CONDITION	YES	NO	NA	COMMENTS
Is a sign posted at entrance?	☐	☐	☐	
Is a gate present at the entrance?	☐	☐	☐	
Is the gate locked and secured?	☐	☐	☐	

SOIL COVER SYSTEM INSPECTION

ITEM/CONDITION	YES	NO	NA	COMMENTS
Evidence of erosion of cover soils?	☐	☐	☐	
Evidence of cracks or depressions in cover soils?	☐	☐	☐	
Evidence of exposed or damaged subgrade soils?	☐	☐	☐	

ASHPALT/CONCRETE COVER SYSTEM INSPECTION

ITEM/CONDITION	YES	NO	NA	COMMENTS
Evidence of damaged asphalt or concrete?	☐	☐	☐	
Evidence of pitting, rutting, cracks or depressions in asphalt or concrete cover?	☐	☐	☐	

DRAINAGE SYSTEM INSPECTION

ITEM/CONDITION	YES	NO	NA	COMMENTS
Evidence of erosion in drainage structures?	☐	☐	☐	
Presence of siltation in drainage structures?	☐	☐	☐	
Evidence of settlement in drainage structures?	☐	☐	☐	

Evidence of restrictions of water flow in drainage ditches and structures?	☐	☐	☐	

VECTOR INSPECTION				
ITEM/CONDITION	**YES**	**NO**	**NA**	**COMMENTS**
Were any vectors observed?	☐	☐	☐	
Evidence of vector activity (tracks, droppings, dens, etc.)	☐	☐	☐	
Evidence of damage due to vector activity?	☐	☐	☐	

VEGETATIVE INSPECTION (if appliciable)				
ITEM/CONDITION	**TRUE**	**FALSE**	**N/A**	**COMMENTS**
Vegetation is well established over greenspace areas.	☐	☐	☐	
There is no evidence of stressed vegetation.	☐	☐	☐	
There is no evidence of bare or thin vegetative cover.	☐	☐	☐	
There is no evidence of overgrowth or areas that need to be mowed.	☐	☐	☐	
There is no evidence of recent areas of excavation or disturbed areas.	☐	☐	☐	

ADDITIONAL NOTES & OBSERVATIONS

Signature:	Time Charged:	Mileage Charged:

APPENDIX E

Active SSDS Inspection Checklist

SUB-SLAB DEPRESSURIZATION SYSTEM CHECKLIST - ACTIVE

Report No.	
Date:	Time:

Inspector(s):	Project No.
	Weather:
Type of Inspection: ☐ Routine ☐ Post Severe Condition	Temp.: Hi Low

FAN/BLOWER SYSTEM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
The blower unit is operational.	☐	☐	☐	
There is no excessive noise emanating from the blower.	☐	☐	☐	
There is no excessive vibration emanating from the blower.	☐	☐	☐	
The blower unit is not excessively hot to the touch.	☐	☐	☐	
The blower unit housing is clean and in good condition.	☐	☐	☐	

SYSTEM PRESSURE INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
Vacuum gauge on inlet piping in good condition and shows negative pressure is being applied to sub-slab.	☐	☐	☐	
Pressure gauge on discharge piping is in good condition and shows positive pressure being exhausted from blower.	☐	☐	☐	
Pressures are within acceptable normal range for system.	☐	☐	☐	Pressure Reading: ____ inches H_2O
When required, pressure field extension testing demonstrates continued sub-slab communication.	☐	☐	☐	

ELECTRICAL/ALARM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
No observable electrical component damage.	☐	☐	☐	
All electrical disconnects/switches tested and functional.	☐	☐	☐	
Alarm sounds when blower power disconnected and pressure falls below alarm set point.	☐	☐	☐	

PIPING SYSTEM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
All above-grade piping in good condition and free of cracks or other damage.	☐	☐	☐	
All pipe supports undamaged and functional.	☐	☐	☐	
In-line mufflers/silencers installed and functioning properly.	☐	☐	☐	
Discharge piping above roof undamaged and free of obstructions.	☐	☐	☐	
All labels are present and legible.	☐	☐	☐	

SUB-SLAB DEPRESSURIZATION SYSTEM CHECKLIST - ACTIVE

Report No.	
Date:	Time:

CONCRETE SLAB/PIPING SYSTEM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
All visible pipe penetrations appear properly sealed (e.g. no air leak noise).	☐	☐	☐	
There are no new significant, observable floor cracks or penetrations that may breach the floor tightness and effectiveness of the system.	☐	☐	☐	

ADDITIONAL NOTES & OBSERVATIONS

Signature:	Total Inspection Time:

APPENDIX F

Passive Sub-Slab Ventilation System Inspection Checklist

SUB-SLAB VENTILATION SYSTEM CHECKLIST - PASSIVE

Report No.	
Date:	Time:

Inspector(s):	Project No.
	Weather:
Type of Inspection: ☐ Routine ☐ Post Severe Condition	Temp.: Hi Low

TURBINE VENTILATOR/ROOF PIPING

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
No observable turbine ventilator damage.	☐	☐	☐	
Turbine Ventilator is functional.	☐	☐	☐	
Discharge piping above roof undamaged and free of obstructions.	☐	☐	☐	

PIPING SYSTEM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
All above-grade piping in good condition and free of cracks or other damage.	☐	☐	☐	
All pipe supports undamaged and functional.	☐	☐	☐	
All labels present and legible	☐	☐	☐	

CONCRETE SLAB/PIPING SYSTEM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
All visible pipe penetrations appear properly sealed (e.g. no air leak noise).	☐	☐	☐	
There are no new significant, observable floor cracks or penetrations that may breach the floor tightness and effectiveness of the system.	☐	☐	☐	

ADDITIONAL NOTES & OBSERVATIONS

Signature:	Total Inspection Time: