Former Mimi Cleaners

WESTCHESTER COUNTY, NEW YORK

Site Management Plan

NYSDEC Voluntary Site Number: V00306-3

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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

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LIST OF ACRONYMS

CAMP-	Community Air Monitoring Plan
COC-	Certificate of Compliance
CPB-	Christie Place Building
CVOCs	chlorinated volatile organic compounds
DCB	DeCicco Market Building
DPSP-	differential pressure sample ports
EC-	Engineering Controls
EPB-	East Parkway Building
EWP-	Excavation Work Plan
FER-	Final Engineering Report
IC-	Institutional Controls
ISCO-	In situ chemical oxidation
HDR-	Henningson, Durham & Richardson Architecture and Engineering, P.C.
HP-	horse power
HWB-	Harwood Building
NYS-	New York State
NYSDEC-	New York State Department of Environmental Conservation
NYSDOH-	New York State Department of Health
PCE-	perchloroethene
PVC-	polyvinyl chloride
QAPP-	Quality Assurance Project Plan
QA/QC-	Quality Assurance/ Quality Control
RAWP-	Remedial Action Work Plan
RI-	Remedial Investigation
SMP-	site management plan
SPB-	Spencer Place Building
SPOB-	Scarsdale Post Office Building
SSDS-	sub-slab depressurization system
SVE-	soil vapor extraction
SVI-	soil vapor intrusion
TCE-	trichloroethene

USEPA- United States Environmental Protection Agency

VCA- Voluntary Cleanup Agreement

VCP- Voluntary Cleanup Program

SITE MANAGEMENT PLAN

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at Former Mimi Cleaners, which operated at 58 Christie Place, Scarsdale, NY (hereinafter referred to as the "site") under the New York State (NYS) Voluntary Cleanup Program (VCP) administered by New York State Department of Environmental Conservation (NYSDEC). The Mimi Cleaners business was located, along with other tenants, in the Christie Place Building (CPB), which then and now houses several other tenants. The Former Mimi Cleaners and impacted areas were remediated by the former ground lease-holder (long-term ground lease terminated at the end of 2012), Hausman Realty Co., Inc. (the "Remedial Party"), in accordance with a Voluntary Cleanup Agreement (VCA) which was executed on June 26, 2000 and last amended on May 17, 2002. The Remedial Party continues to operate a mitigation system beneath the CPB, as described by this Site Management Plan (SMP) and as required by a Deed Restriction, which is attached as Appendix A. In that the Remedial Party was not and is not the owner of the CPB property, Appendix B clarifies responsibilities of the owner versus the Remedial Party.

1.1.1 GENERAL

The Remedial Party entered into the VCA with the NYSDEC to remediate the Former Mimi Cleaners site, a 0.06 acre parcel, located in the Village of Scarsdale, County of Westchester, New York. This VCA required the Remedial Party to investigate and remediate contaminated media at the site; Figure 1 shows the site and the Christie Place Building (CPB) in which it is located.

The boundaries of the Christie Place Building (CPB) parcel are more fully described in the metes and bounds description that is part of the Deed Restriction (Appendix A to this SMP).

After completion of the remedial work, some contamination was left in the

subsurface, which is hereafter referred to as "remaining contamination." This SMP was prepared to manage remaining contamination until the Deed Restriction is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the site and other impacted locations can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

1.1.2 PURPOSE

This SMP was prepared by HDR, on behalf of the Remedial Party, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation 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 Deed Restriction for the site, and for inspecting, monitoring, sampling, operation and maintenance activities at down-gradient locations to ensure protection of public health and the environment.

A Deed Restriction for the Christie Place Building is recorded with the Westchester County Clerk Division of Land Records; it requires 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. It also prescribes how any future excavations that may encounter contamination should be planned, executed and approved by NYSDEC, as detailed in Appendix C. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Deed Restriction for contamination that remains. This plan has been approved by the NYSDEC, and compliance with this plan is required. This SMP may only be revised with the approval of the NYSDEC. Beyond the Christie Place Building, access agreements currently in place allow for inspection and monitoring of other buildings.

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 the CPB sub-slab depressurization system (SSDS); (4) performance of periodic inspections, certification of results, and

submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; and (3) an Operation and Maintenance Plan for Implementation of the active EC.

It is important to note that:

- The SMP details the site-specific implementation procedures that are required. Failure to properly implement the SMP is a violation of the Deed Restriction, which is grounds for revocation of the Certificate of Completion (COC).

1.1.3 REVISIONS

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. NYSDEC will provide a notice of any approved changes to the SMP to the Remedial Party and the property owner, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

1.2.1 SITE LOCATION AND DESCRIPTION

The site is located in the Village of Scarsdale, Westchester County, New York and is identified in the VCA as the northeast corner of Christie Place Building (CPB). The CPB is designated as Section 2, Block 5, Lots 11 and 12 on the Tax Map, covering approximately 0.3098 acres, of which the site comprises approximately 0.06 acres. CPB is bounded by Christie Place to the north, Spencer Place to the south, the Scarsdale Post Office to the east, and a parking lot and the Spencer Place Building to the west (see Figure 2). The boundaries of the CPB site are more fully described in Appendix A.

1.2.2 SITE HISTORY

The CPB was reportedly constructed in the early 1950s; a dry cleaners had reportedly operated in the space since approximately 1955. Mimi Cleaners, which sub-

leased the space from the Remedial Party until 1999, used PCE as its cleaning fluid (at least in the last years of its operation). Figure 1 shows the CPB layout and Figure 2 shows an aerial photograph of the area with the CPB and the former Mimi Cleaners locations highlighted. This building is a slab-on-grade structure with a center hallway. The southern portion of the building floor slab is about 4 ft. lower than the northern portion with the center hallway at the same grade as the northern portion of the building. It appears that the two sections of the building may have been constructed at different times. The two sections of the building are each divided into tenant spaces; currently there are four tenant spaces in the southern portion and five tenant spaces in the northern portion of the building. Figure 1 shows the location of the site.

In the late 1990s news articles appeared expressing concerns regarding dry cleaners releasing waste cleaner fluids to the environment. The Remedial Party, ground lease holder for the Christie Place Building at that time, had a consultant, Chazen Associates, investigate the site in early 1999; high concentrations of sub-slab soil contamination by perchloroethene (PCE, also referred to as tetrachloroethene) were discovered. The Remedial Party then retained Lawler, Matusky and Skelly Engineers (which was subsequently acquired by HDR) to evaluate conditions and plan a response action. The Remedial Party applied to NYSDEC to enter the Voluntary Cleanup Program (VCP) on 17 September 1999, and signed the agreement (VCA) on 26 June 2000.

In July 2000, contaminated soil and concrete were removed from beneath the CPB; a soil vapor extraction (SVE) system was installed and operated for several years. Down-gradient investigations revealed that groundwater was contaminated and that contaminant vapors were present beneath adjacent buildings, as described in more detail in the following section.

1.2.3 GEOLOGIC CONDITIONS

The site is located in the business district of Scarsdale. Topography is gently sloping to the southwest, towards the Bronx River, which runs from north to south about 100 yards west of the site. Prior to remediation, the site was underlain by 2-7 ft. of construction fill. Where contaminated materials were removed during remediation, the

site was backfilled with pea gravel. Underlying bedrock is comprised of metamorphic mica schist of the Manhattan Formation, which tends to slope southwest from the site.

Groundwater has been encountered during site investigations near the top of bedrock. The area is served by municipal water and use of groundwater is prohibited by Westchester County regulations. Two groundwater monitoring wells have been installed into the top of bedrock near the site. Groundwater flows to the southwest, as would be expected from the topography and nearby Bronx River.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

Remedial Investigation (RI) tasks were performed to characterize the nature and extent of contamination at the site in 1999, and in surrounding areas from 2004 through 2010. The results of the investigations are described in detail in the documents listed in Appendix D.

Below is a summary of site conditions when various RI tasks were performed.

1.3.1 SOIL

Site borings advanced in 1999 determined that PCE from the Former Mimi Cleaners had contaminated soil and the top of bedrock beneath the dry cleaners rental space, and extended beneath the adjacent shops in the CPB. Traces of PCE degradation products (trichloroethene [TCE] and 1,2 dichloroethene [12-DCE]) have been found occasionally. The primary contaminant (PCE) migrated southwest, east and west at the top of bedrock, and in groundwater flowing southwest. Surrounding soils, underlying bedrock and shallow groundwater retain residual levels of PCE.

1.3.2 SITE-RELATED GROUNDWATER

Ground water monitoring wells were first installed near the site in 2003; locations are shown on Figures 1 and 5. Initial results from the two wells revealed PCE concentrations of 50-1300 microgram per liter (mcg/l) and TCE concentrations of 3.1-42 mcg/l. Groundwater is classified GA (suitable for water supply), with a standard of 5 mcg/l for PCE and for TCE.

1.3.3 SITE-RELATED SOIL VAPOR INTRUSION

Soil vapor testing has been performed under the CPB and later under surrounding and down-gradient buildings. Sub-slab vapor testing has revealed concentrations of PCE under the CPB above 1,000 mcg/m^3, the level at which NYSDOH guidance recommends mitigation to minimize potential indoor air exposure, and above 250 mcg/m^3 for TCE, the level at which NYSDOH guidance recommends mitigation. Indoor air concentrations do not exceed concentrations deemed acceptable under NYSDOH guidance.

Sub-slab testing beneath nearby buildings and indoor air testing, down-gradient of CPB progressed from 2004 through 2010. The buildings tested as part of the offsite investigation activities for the site are those named on Figure 2. The building at 2 Spencer Place is occupied by a dry cleaner. The owner is reportedly investigating conditions at that location after initial sampling by HDR in this building revealed indoor air PCE concentrations above NYSDOH guidance values; that building is not addressed further by this SMP.

The five offsite buildings where sub-slab PCE concentrations exceeded 1,000 mcg PCE/m^3, and at which NYSDEC/NYSDOH requested that sub-slab depressurization systems be installed, are shown on Figure 3. They are the Scarsdale Post Office Building (SPOB), Spencer Place Building (SPB), DeCicco Building (DCB), Harwood Building (HWB), and the southern portion of the East Parkway Building (EPB). Although TCE is a degradation product of PCE, it was not found in these buildings at concentrations above any NYSDOH guidance concentration with the exception of the HWB. At HWB a tenant was found to be using TCE; the use was terminated and the tenant has since left the building.

1.3.4 UNDERGROUND STORAGE TANKS – NONE

1.4 SUMMARY OF RESPONSE ACTIONS

The site was remediated in accordance with the NYSDEC-approved removal, soil vapor extraction (SVE), followed by installation and operation of a sub-slab depressurization system (SSDS). Additional SSDSs were installed beneath nearby buildings as a mitigation measure to minimize potential vapor intrusion into the

buildings.

1.4.1 CHRISTIE PLACE BUILDING REMEDIATION

The CPB, including the Former Mimi Cleaners site, was remediated by excavation and removal, and by installation and operation of an SVE system, followed by operation of an SSDS mitigation system.

Initially, in 2000, HDR developed an excavation work plan which was approved by NYSDEC; HDR inspected the soil excavation and removal activities were conducted by the contractor within the CPB in the area of the dry cleaning equipment in July 2000. The work was performed after business hours to minimize disruption of business, and nuisance odor complaints. The excavation removed all contaminated soil and concrete that was accessible. Figure 4 shows the area excavated. A total of 73.5 tons of PCE-contaminated soil and concrete were removed and disposed of at a licensed disposal facility in Quebec, Canada. Documentation of the disposal is provided in Appendix K. The removal extended to the top of bedrock (2-4 feet deep), which sloped to the southwest beneath the building. Laterally, the excavation extended northeastward toward Christie Place to near a utility vault; to the southwest at the excavation perimeter very low contaminant levels were evident; in other directions the building foundations and partitions limited excavation (depicted on Figure 4). The excavation was backfilled with clean gravel and the concrete slab was restored.

Because contamination was present at the top of the shallow bedrock and beneath building foundations, HDR with a subcontractor, INTEX Environmental Group (formally MEI Environmental), designed a soil vapor extraction (SVE) system to remove additional contamination and to maintain a partial vacuum under the floor slab to prevent vapor intrusion into the occupied areas of the building. The firms inspected its installation and startup, and HDR conducted the operations, maintenance, and monitoring activities for the SVE system onward from its startup in May of 2001. The SVE system was issued a certificate to operate an air emission source by Westchester County (Permit No. 52-6040). The SVE system removed volatile contaminants and operated until the source contaminants were substantially depleted in 2004-2005. Diminishing recovery of contaminants by the SVE system

led NYSDEC and NYSDOH to agree that a sub-slab depressurization system (SSDS) would better mitigate the potential for vapor intrusion of remaining sub-slab vapors. During 2005 a SSDS for the CPB was designed and approved by NYSDEC. Extraction points were installed through the floor slab of CPB throughout the building and were piped to a blower mounted on the building roof. The SVE piping under the slab in the northeastern portion of the building was used as part of the SSDS to depressurize the area under the slab in this portion of the building. The discharge stack from the SVE system was plumbed into the SSDS blower on the roof. Additional details of the system are provided in Section 3 and Appendix E. The SSDS air emission has a certificate to operate issued by Westchester County (Permit No. 52-7227).

A pilot test of in-situ chemical oxidation (ISCO) was performed at the CPB site in March 2012, but it had little success in reaching and degrading residual contamination. Execution and recording of a Deed Restriction to restrict land use and prevent future exposure to any contamination remaining at the site is required by NYSDEC. The Deed Restriction is provided in Appendix A. Development and implementation of this Site Management Plan for long term management of remaining contamination is required by the Deed Restriction, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting.

1.4.2 MITIGATION AT OFFSITE BUILDINGS

At five nearby offsite buildings NYSDEC and NYSDOH requested mitigation based on NYSDEC-approved sub-slab and in some cases indoor air analysis conducted by HDR on behalf of the Remedial Party. SSDS systems were designed, approved by NYSDEC, installed and operated as requested by the agencies. Contaminant concentrations have decreased beneath these offsite buildings, so that NYSDEC and NYSDOH have approved shut-down of the offsite SSDSs. The buildings where SSDSs were installed, but are now shutdown, are:

1. Scarsdale Post Office Building (SPOB)
2. DeCicco Market Building (DCB)
3. Spencer Place Building (SPB)

4. Harwood Building (HWB)
5. Southern Portion of the East Parkway Building (EPB)

Remedial activities (excavation and SVE system operation) were completed at the CPB site by June 2005. The CPB SSDS continues to operate. Offsite SSDS operations terminated as the buildings met NYSDOH guidance and/or indoor air sampling documented that there was not a vapor intrusion pathway into the building, with the last system being shut off in 2012.

1.4.3 REMAINING CONTAMINATION

Detailed contaminant delineation data for soils are not available and would not likely represent current conditions. The contaminant removal was performed in 2000; at which time contamination remained along the perimeter of the excavation shown on Figure 4, as well as permeated into the shallow bedrock. After the removal, clean gravel was used as backfill, but the fluctuating water table, and dispersion of volatiles over the past 13 years have likely redistributed soil contamination remaining after the removal of accessible source area contaminated soils. Operation of the SVE system at the site from 2001 until 2005 volatilized and removed additional contaminant mass. The continuing operation of the SSDS at CPB continues to remove contamination that volatilizes into the sub-slab soils. As of the date hereof, residual soil and bedrock contamination under the CPB continues to cause sub-slab vapor concentrations above the NYSDOH guidance concentrations of both 1,000 mcg PCE/m^3, and 250 mcg TCE/m^3. Indoor air concentrations of PCE and TCE (when detectible) have been consistently hundreds of times lower than sub-slab concentrations, and indoor concentrations do not exceed concentrations that would trigger mitigation according to the NYSDOH guidance.

Groundwater contaminants remain above the groundwater standard for GA (water supply) for PCE, 5 mcg/l, (6 NYCRR 703.5f) in one of the two wells. Concentrations have generally declined from when the wells were first tested in 2003 until the latest monitoring in 2012. At the nearest well, MW-1, PCE concentrations have declined from 1,300 microgram per liter (mcg/l) in 2003 to 28 mcg/l in 2012. TCE concentrations at MW-1 have declined from 42 to 1.7 mcg/l, below the standard of 5 mcg/l. At MW-2, further down gradient, contaminant concentrations had a brief increase from 2003 to

2006, but have generally declined. PCE increased slightly above 50 mcg/l, then declined to 4.8 mcg/l, while TCE climbed from 3.1 to 6.4 mcg/l, then declined to 1.3 mcg/l. In summary, at the last sampling event in July 2012, only MW-1 exceeded the groundwater quality standards for PCE. Table 1 and Figure 5 lists the detected volatile contaminants for all analytical testing of the site monitoring wells.

Contaminant migration from the site over 13 years ago, and low concentrations of PCE in groundwater continue to release residual contaminant vapors beneath certain offsite buildings where SSDSs have been installed, albeit at lower concentrations than prior to remediation. Offsite concentrations have declined both beneath the buildings and in indoor air samples such that NYSDEC and NYSDOH have approved shut-down of the offsite SSDSs, and require only continued monitoring at the five offsite buildings at which SSDSs were installed.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 GENERAL

Since residually contaminated soil, groundwater and soil vapor exist beneath the site, Engineering Controls and Institutional Controls (EC/ICs) have been implemented to assure continued protection of human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the ongoing implementation and management of all EC/ICs at the CPB and in several nearby buildings. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC (until extinguished along with the Deed Restriction in accordance with ECL, Article 71, Title 36).

2.1.2 PURPOSE

This plan provides:

- A description of all EC/ICs on the site and nearby areas;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Deed Restriction;
- 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

2.2.1 ENGINEERING CONTROL SYSTEMS

2.2.1.1 Concrete Cover System

Exposure to residual contamination in soil/fill at the CPB site is prevented by the concrete cover system (building floor slab), which is comprised of concrete foundation slab underlain by gravel fill placed over the site after the excavation described above. It is noted that the gravel fill was clean at the time of excavation backfilling, but over time vapor contaminants have diffused and dispersed into the fill. The Excavation Work Plan that appears in Appendix C outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any residual contamination is exposed and/or disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 3 of this SMP.

2.2.1.2 Sub-Slab Depressurization System at CPB

Prior to installation of the SSDS, the floor in the CPB floor was inspected for cracks or openings. The building is a slab-on-grade construction with a center hallway. Where found, cracks were sealed and any openings in the slab were sealed. Currently, there are four stores in the southern portion and five stores in the northern portion of the building. The SSDS beneath the CPB is illustrated in Figure 6 and includes 30 suction locations including the SVE vertical suction points. The system has a condensate trap and is powered by a 4.5 hp blower on the roof.

As part of the SSDS design for the CPB, extraction points for the SSDS were installed through the floor and piped to a blower mounted on the roof of the building. Two-inch or 1.5-inch diameter schedule 40 PVC well screen points were installed approximately 1.5-2 feet below the slab. This screened section of PVC was sealed in place at the top of the slab with a concrete grout and coupled to PVC piping.

The SSDS discharge piping (the two legs from the center hallway and the pipe from the SVE system discharge stack) is manifolded together and connected to a regenerative blower (4.5 HP) mounted on the roof of the CPB. The blower is housed in

a weather-tight metal enclosure with an enclosed safety on/off disconnect switch mounted on the outside of it. The blower package inside the metal enclosure also contains intake air filters, a 20-gallon moisture separator tank with a float switch, and a differential pressure switch/gauge with adjustable high/low shutdown set points. The discharge pipe from the blower package contains a muffler/silencer.

Each vertical extraction leg of the SSDS has an in-line gate valve to provide manual adjustment to be able to balance the suction rates from the individual points to adjust the radius of depressurization/influence at each of the points allowing the system to achieve proper depressurization under the slab of the CPB. In addition, the blower has an air monitoring by-pass value on it to allow adjustment of the vacuum provided by the blower itself.

There are seven vacuum lines tapped into the lateral suction leg piping at various locations to monitor and document the differential pressure in the lateral legs of the system. The vacuum hoses are attached to differential pressure gauges for real-time readings/documentation that the SSDS is providing sufficient vacuum. Vacuum lines are also connected to a differential pressure transmitter and data logger, which can store the data for approximately 6 months. There are two data loggers in the monitoring panel to record the data from the seven lateral suction legs. The data are downloaded to a laptop computer to provide documentation that the SSDS has been working properly (continuous data and readings have remained fairly consistent since the start of system operation).

There are additional differential pressure sample ports (DPSPs) in the floor of the building that can be accessed periodically to measure and document the pressure differential under the slab throughout building to ensure the SSDS is providing adequate negative pressure under the slab. These sample ports are sealed with a threaded plug when not in use. The DPSPs are shown in Figure 6.

Descriptions of all SSDS components are further described in Appendix E. Procedures for operating and maintaining the CPB SSDS are documented in the Operation and Maintenance Plan (Section 4 of this SMP) and Appendix E. Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP)

and Appendices G and H. The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs.

2.2.2 CRITERIA FOR COMPLETION OF REMEDIATION/TERMINATION OF REMEDIAL SYSTEMS

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. A request to terminate operation of the CPB SSDS is expected to occur when the sub-slab vapors dissipate to below the concentration level at which NYSDOH guidance recommends mitigation, regardless of indoor vapor contamination concentration (i.e., below 1,000 mcg PCE/m^3), and/or indoor air concentrations are documented to be below acceptable concentrations. Such a request for terminating active operation of the CPB SSDS will be subject to approval by NYSDEC and NYSDOH.

2.2.2.1 Concrete Cover System

The cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals defined in Section 4, as long as the deed restriction remains in force.

2.2.2.2 Sub-Slab Depressurization System (SSDS)

Operation of the active SSDS will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSDS is no longer required, a proposal to discontinue operation of the SSDS may be submitted by the Remedial Party to the NYSDEC and NYSDOH.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the Deed Restriction and the VCA to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the residual subsurface contamination; and, (3) limit the use and development of the site to

commercial uses only, except upon NYSDEC approval. Adherence to these Institutional Controls on the site is required by the Deed Restriction (Appendix A) and will be implemented under this Site Management Plan. These Institutional Controls are:

- Deed Restriction, implemented in part through this SMP binding, in accordance with its terms, upon the Grantor and the Grantor's successors and assigns;
- All Engineering Controls at the Christie Place Building must be operated and maintained as specified in this SMP;
- All Engineering Controls at the Christie Place Building must be inspected at a frequency and in a manner defined in this SMP.
- Sub-slab vapor, indoor air and groundwater monitoring must be performed as defined in this SMP;
- Data and information specified by this SMP must be reported at the frequency and in a manner defined in this SMP;

Institutional Controls identified in the Deed Restriction may not be discontinued without an amendment to or extinguishment of the Deed Restriction. Site restrictions that apply are:

- The property may only be used for commercial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed.
- The property may not be used for a higher level of use, such as residential use without amendment of the Deed Restriction approved by the NYSDEC;
- All future activities on the property that will disturb residually contaminated material must be conducted in accordance with this SMP;
- The use of groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed on the site and any potential impacts that are identified must be monitored or mitigated, if necessary;
- Vegetable gardens and farming on the CPB property are prohibited;

The CPB Remedial Party will submit to NYSDEC a periodic certification as

specified in Section 5.2 of this SMP as to the implementation of the EC/ICs specified in this SMP, including the above.

2.3.1 EXCAVATION WORK PLAN

The former Mimi Cleaners site has been remediated for commercial use. Any future intrusive work that will penetrate the concrete cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix C to this SMP. 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. A sample HASP is attached as Appendix J to this SMP. The HASP for any work must be in compliance with the then-current DER-10 and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. A CAMP must be prepared for any planned excavation and it must meet then current standards and guidance of NYSDEC and NYSDOH. The HASP and CAMP will be submitted with the notification required by the first section of the appended EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and a summary of that work and any data will be included in the next periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

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

2.3.2 SOIL VAPOR INTRUSION EVALUATION

Prior to the construction of any new enclosed buildings located over the site, an 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 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.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 INSPECTIONS

Inspections of all remedial components installed at the site will be conducted by the Remedial Party or its consultants at the frequency specified in this 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 operating 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 Deed Restriction;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

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 remaining effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 NOTIFICATIONS

Notifications will be submitted by or on behalf of the property owner to the NYSDEC as needed for the following reasons and as more particularly described in Appendix B:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the VCA, 6 NYCRR 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 foundation, structures or engineering control that reduces or has the potential to reduce the effectiveness of an Engineering Control 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 CPB 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 VCA, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the CPB, the new owner's name, contact representative, and contact information will be confirmed in writing.

Notwithstanding the foregoing, the Remedial Party shall be responsible for making certain of the notifications required by this subsection 2.4.2 under certain circumstances, as more particularly described in Appendix B.

2.5 CONTINGENCY PLAN

Emergencies may include injury to CPB site, an emergency is an event that impacts or potentially impacts this site's EC/IC, specifically the concrete cap or SSDS. The contingency plan during an emergency will consist of:

- Notifications by the Remedial Party or its consultant, as specified in section 2.4.2 and/or Appendix B,
- Remedial Party retaining a qualified environmental professional who is acceptable to NYSDEC, to:
    - determine whether the ECs (concrete cap and SSDS) have been compromised in their capability to mitigate the contaminant condition, and

- a site-wide inspection for any changed contaminant condition

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 a qualified environmental professional, currently designated as HDR. These emergency contact lists must be maintained in an easily accessible location at the site.

Emergency Contact Numbers

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
HDR Engineering, Inc.	(845) 735-8300

* Note: Contact numbers subject to change and should be updated as necessary

2.5.2 MAP AND DIRECTIONS TO NEAREST HEALTH FACILITY

Site Location: 58 Christie Place, Scarsdale, NY 10583

Nearest Hospital Name: White Plains Hospital

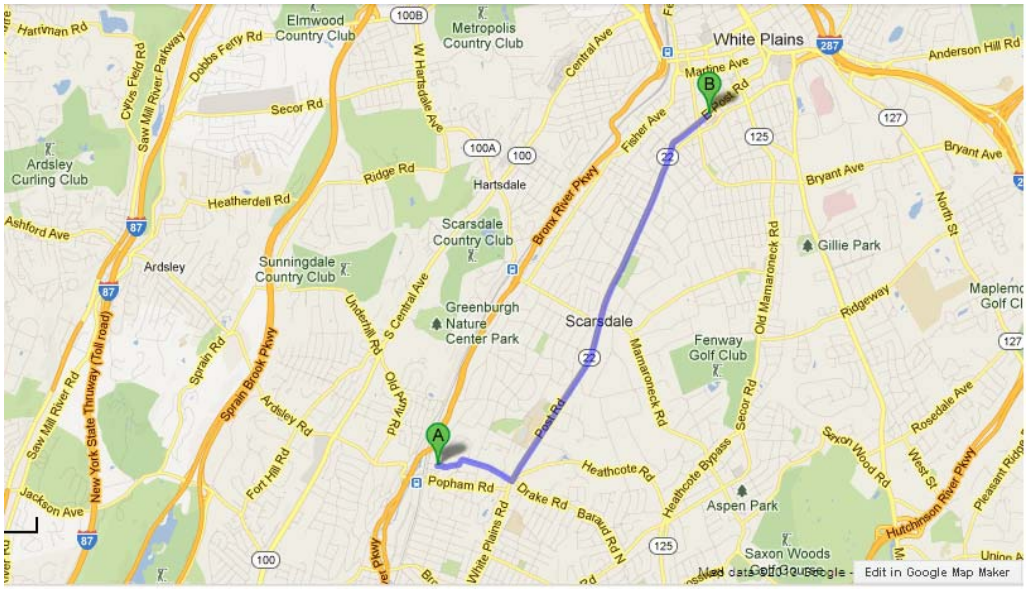
Hospital Location: 41 East Post Road White Plains, NY 10601

Hospital Telephone: (914) 681-0600

Directions to the Hospital:

1. Head east toward Chase Road; 266 feet
2. Continue straight onto Woodland Place; 0.1 mile
3. Turn right onto Crane Road; 0.4 mile
4. Turn left onto Post Road/White Plains Road; 3 miles
5. Continue to follow Post Road
6. Total Distance: 3.6 miles
7. Total Estimated Time: 10 minutes

Map Showing Route from the site to the Hospital:



2.5.1 RESPONSE PROCEDURES

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

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 GENERAL

This Site Monitoring Plan describes the measures that the Remedial Party or its consultants will take for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the integrity of the concrete cover system, contaminants in sub-slab vapor, indoor air contaminants, and groundwater quality at and near the CPB site. Monitoring of the active Engineering Control (the SSDS at the CPB) is described in Chapter 4, Operation, Monitoring and Maintenance Plan for SSDS. This Site Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 PURPOSE AND SCHEDULE

This Monitoring Plan describes the methods to be used for:

- Inspecting all relevant facilities for this SMP to insure that facilities and conditions are consistent with the specified EC/ICs
- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor);
- Assessing compliance with applicable NYSDEC and NYSDOH standards, criteria and guidance, particularly ambient groundwater standards and vapor intrusion guidance;
- Assessing achievement of the remedial performance criteria; and
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

Specification of the necessary reports for the various monitoring activities is provided in Section 5. To adequately address these issues, this Site Monitoring Plan provides information on:

- Inspection locations, objectives and checklists;
- Sampling locations, protocol, and frequency;

- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for SSDSs in nearby buildings, where monitoring continues.
- Inspection and maintenance of monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Monthly and then quarterly monitoring of the operation of the remedy and overall reduction in contamination onsite has been performed for 8 years. Quarterly inspection of the operating SSDS at CPB building will continue as specified in Section 4. A cellular modem system has been installed on the CPB system to provide routine notification/documentation to HDR and the Remedial Party, or their representatives, that the SSDS is operating properly. In addition, the CPB and offsite buildings subject to monitoring that have SSDSs in shutdown mode will be inspected on the frequency set forth in Table 2 and Table 3 below.

Trends in contaminant levels in air, soil, and groundwater in the affected areas have been evaluated and demonstrated the effectiveness of the remedy to date. As described in Section 5, Reporting Requirements, such evaluations will be performed for each periodic review to determine if the remedy continues to be effective in achieving remedial goals, and whether a more optimum monitoring program would be effective. Appropriate planned monitoring programs are summarized below in Table 2 and Table 3 and described below in detail in Section 3.3. If any sample results demonstrate a significant increase in any contaminant concentration in any medium, follow-up review of results and notification to NYSDEC will occur. An assessment proposal will be submitted to NYSDEC for its review and approval.

Table 2: Site Analytical Sampling and Analysis Monitoring Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Sub-slab vapor	As needed to evaluate the conditions for possible shut down of the system	Vapor	Chlorinated VOCs
Indoor air	As needed to evaluate the conditions for possible shut down of the system	Air	Chlorinated VOCs
Outdoor ambient air	As needed to evaluate the conditions for possible shut down of the system	Air	Chlorinated VOCs
Ground Water, (2 monitoring wells)	4 years	Water	Chlorinated VOCs

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

3.2 SITE INSPECTIONS AND COVER SYSTEM MONITORING

This section of the SMP summarizes the site and offsite inspection and monitoring activities to be performed by the Remedial Party or its consultants. Site-wide inspections of the CPB and the offsite locations where SSDSs are installed that still require monitoring will be performed by the Remedial Party or its consultants on an annual schedule. As described below and in Section 4, the CPB is also subject to more frequent inspections of the operating SSDS.

The CPB SSDS is operating, but the systems in five offsite buildings at which SSDSs were installed and operated are no longer operating because contaminants in sub-slab vapors have decreased and/or indoor air concentrations remain below NYSDOH guidance values and NYSDEC and NYSDOH approved shutting the systems

down. At one of those five offsite buildings, the East Parkway Building, concentrations beneath the northern half of the building are such that NYSDEC/NYSDOH requires no further monitoring or inspections in this portion of the building. Table 3 below provides a summary of the inspections activities and monitoring required at all buildings that have required on-going monitoring or inspections as part of this SMP.

Table 3: Site and Offsite Inspection/Monitoring & Sample and Analysis Schedule

Building	Inspections/Monitoring	Sample Collection and Analysis
Christie Place Bld.	***Quarterly*** inspection of SSDS including blower and piping for damage. Inspection of floor slab for any damage/changes that could allow for a vapor intrusion pathway. Collect differential pressure measurements from the DPSPs to document negative pressure under slab. ***Annual*** *inspection* (same as quarterly)	***As needed to evaluate the conditions for possible shut down of the system,*** two locations will be sampled during the heating season for CVOCs. The locations are CPB-SS-02 and -03. Indoor air samples will be collected at the same locations, CPB-IA-02 and -03.
DeCicco Market Bld.	***Annual*** inspection of SSDS including blower and piping for damage. Inspection of the building floor slab for any damage/changes that could allow for a vapor intrusion pathway.	***No routine sample collection.***
Spencer Place Bld.	***Annual*** inspection (same work as described for DeCicco Market Bld. above).	***No routine sample collection.***
Scarsdale Post Office Bld.	***Annual*** inspection (same work as described for DeCicco Market Bld. above).	***No routine sample collection.***
Harwood Bld.	***Annual*** inspection (same work as described for DeCicco Market Bld. above).	***Every 2 years***, sample 1 sub-slab and indoor air location for CVOCs during the heating season (HW-SS-4 & HW-IA-4).
East Parkway Bld.	***Annual*** inspection (same work as described for DeCicco Market Bld. above). This only includes the southern portion of the building.	***Every 2 years***, sample 1 sub-slab and indoor air location in the southern portion of the building for CVOCs during the heating season (EP-BANK-SS & EP-BANK-AMB).
28 Popham Road Bld.	None	***No routine sample collection.***
HSBC Bank Bld.	None	***Every 2 years***, sample two indoor air locations for CVOCs during the heating season (HBB-IA-01 and HBB-IA-02).
Note: An outdoor ambient air sample will be collected when indoor air samples are collected. *In the event of an "emergency" as defined in section 2.5 of the SMP, a site-wide inspection will be performed.		

Site-wide inspections will also be performed after all emergencies as defined in Section 2.5, Contingency Plan, as those events may affect Engineering Controls or site conditions. In addition, the operating CPB SSDS will be inspected quarterly and inspections conducted and data collected as specified in Table 3 above, Section 4, and Appendix E.

During all inspections, an inspection form will be completed (Appendix E or F as appropriate). The site-wide inspection forms are subject to NYSDEC approval and revision. The forms 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 Plan; and
- Confirm that site records are up to date.

The integrity of the concrete cap (building slab) in the CPB site will be inspected annually. Tenants will be interviewed to insure that no disturbance has occurred. If any disturbance is noted or reported, NYSDEC will be promptly notified (per section 2.4.2 of this SMP). The conditions that led to the disturbance will be investigated, and the current cap integrity evaluated. Parties responsible will be notified in writing of the need to maintain the integrity of the cap. Other remedial measures may be taken if required by NYSDEC.

There are offsite SSDSs at: Scarsdale Post Office Building, DeCicco Market Building, Spencer Place Building, Harwood Building, and East Parkway Building. At the East Parkway Building inspections and monitoring are required only for the southern portion of the building where the SSDS is located. The SSDS and basement floor slab (as accessible) for each of these buildings with shutdown SSDSs will be inspected annually, which is permitted by access agreements between the Remedial Party and the buildings' owners. The inspections will confirm that the floor slab remains free of significant

cracks, SSDS connections to vapor extraction ports are intact, that the plumbing is functional, that the moisture trap is empty, that the SSDS blower will run and other issues as identified on the inspection form. Air emission permits will be renewed as required by Westchester County. Descriptions of the SSDSs in offsite buildings and checklists for each inspection are provided in Appendix F.

3.3 MEDIA MONITORING PROGRAM

This section of the SMP summarizes the measures that the Remedial Party or its consultants will take to monitor conditions at the site, in groundwater and at the offsite buildings where SSDSs have been installed.

3.3.1 SUB-SLAB VAPOR AND INDOOR AIR MONITORING

A history of sub-slab vapor and indoor air testing serves as the basis for the monitoring program. At the CPB, several sub-slab locations that have been sampled recently. Two of these locations which have shown the highest historical concentrations of contaminants will be monitored when an evaluation of site conditions is required to determine if the SSDS at this location can be shutdown. When the system is running sub-slab vapor and indoor air sampling is not required on a routine basis. When sampling is conducted to evaluate the sub-slab and indoor air conditions, sub-slab locations CPB-SS-02 and -03 and the co-located indoor air sample locations (CPB-IA-02 and -03) will be sampled. Locations are shown on Appendix E, Section 6, Figure 2. The SSDS system in the CPB will be shut down for approximately 1 week prior to sample collection as has been done during previous sampling events at this location. The SSDS will be turned back on immediately after sample collection until the data can be evaluated and an assessment made as to whether the system needs to remain in operation. The CPB system will not be shut down without prior approval from NYSDEC and NYSDOH.

Offsite buildings' names and locations with SSDSs installed, but shut down, are designated on Figure 3 and include: Spencer Place Building, DeCicco Market Building, Scarsdale Post Office Building, Harwood Building and East Parkway Building (Southern portion). Based on the data collected from these locations and the downward or stable trending concentrations in the sub-slab vapors and low indoor air

concentrations of PCE and its degradation products, no additional sampling will be conducted in the Spencer Place Building, DeCicco Market Building, and Scarsdale Post Office Building. The Harwood Building and East Parkway Building will be monitored for sub-slab vapor and indoor air contaminants (CVOCs) on a biennial basis beginning in the 2015-2016 heating season. One nearby building, 28 Popham Rd Building, has been sampled annually since 2009. Based on the stable sub-slab vapor and low indoor air concentrations of PCE and its degradation products, no additional monitoring is scheduled for this location. One building (HSBC Bank Building) will be monitored for indoor air contaminants only, on a biennial schedule, which will begin during the 2014-2015 heating season. One ambient air sample will be collected on the common day of building sampling, and analyzed together with indoor air samples collected on that day. Table 3 presented in Section 3.2 provides a sampling schedule and summary of the samples to be collected and analyzed for these buildings.

After each sampling event, results are interpreted to define trends. Based on prior results which have exhibited decreasing contaminant concentrations, sampling may be terminated or continued at a further reduced frequency at some of those offsite buildings noted above where sampling has not been discontinued to date after the 2015-2016 results are interpreted. Sampling and analysis will continue, however, at a biennial frequency until NYSDEC and NYSDOH approve termination or reduced frequency of sampling. Methods and locations for purging, sampling, and analyzing the samples of sub-slab vapors, indoor air, and ambient air are described in Appendix G. Results will be reported according to specifications of Section 5 of this SMP.

3.3.2 GROUNDWATER MONITORING

There are two shallow groundwater monitoring wells west and southwest from the CPB site. Groundwater monitoring has been performed for 10 years, as summarized in Table 1 and on Figure 5, and reports listed in Appendix D, and will be performed once each 4 years to assess the performance of the remedy. The area is served by public water supply and the Deed Restriction prohibits the use of groundwater unless treated to render it safe for the intended use. A pair of monitoring wells has been installed to monitor groundwater conditions down-gradient of the site. Detailed logs for the wells

are included in Appendix H; both wells extend into the top of bedrock, a depth of approximately 10 ft. below grade.

The wells will be monitored each 4 years until consistent results below the groundwater standard of 5 mcg/l for both PCE and TCE are achieved. The sampling frequency may be modified with the approval NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified below.

3.3.2.1 Groundwater Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater-sampling log, following protocols specified in Appendix H. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network. Methods for well gauging, purging and sampling are prescribed in Appendix H. Analytical and validation methods and contract facilities are listed there as well, complemented by the QAPP specifications in Appendix I. Results will be reported as required by Section 5 of this SMP.

3.3.2.2 Monitoring Well Repairs, Replacement and Decommissioning

If biofouling or silt accumulation occurs in the monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable. Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified by the Remedial Party or its consultants prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures."

Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.4 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the site (Appendix I). Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC ASP requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/ matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and

completeness for each analytical method.

- Internal QC and Checks; QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

3.5 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular inspection and monitoring events and inspections will be kept on file at the designated environmental professional's office and will be incorporated into the Periodic Review Report for the period when such monitoring events and inspections occur. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted as specified in Section 5.

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This section of the SMP summarizes the measures that the Remedial Party or its consultants will take to maintain the sub-slab depressurization system (SSDS) in the CPB in proper working order. The detailed Operation and Maintenance Plan for the SSDS in CPB is provided in Appendix E; it describes the system startup, and steps necessary to operate, monitor and maintain the mechanical components of the SSDS for the site. The appended Operation, Inspection and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the site to operate and maintain the SSDS 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 SSDS is operated and maintained.

Information on non-mechanical Engineering Controls (i.e. concrete cover system) is provided in Section 3 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site at the monitoring panel in the center hallway. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 ENGINEERING CONTROL SYSTEM INSPECTION, MONITORING, OPERATION AND MAINTENANCE

4.2.1 ENGINEERING CONTROL SYSTEM INSPECTION, MONITORING, OPERATION AND MAINTENANCE AT THE CHRISTIE PLACE BUILDING

The CPB SSDS has been operating for approximately 6 years; its operation has been reliable and the anticipated tasks for operation and maintenance are minimal. The system includes safe guards such as an alarm, and indicators to illustrate, during inspection, how the system is operating.

The system is inspected and monitored quarterly to document the system

operation. A cellular modem system has been installed to provide routine notifications to the Remedial Party and HDR that the system is operating properly. The CPB SSDS includes a data logger; using a PC, the differential pressure data from the lateral legs from the last quarter is downloaded during each quarterly inspection. It has been noted on occasion that condensate can build-up in a few of the lateral legs of the system during the winter months which needs to be drained to allow the SSDS to operate efficiently. This may require monthly inspections from December through March to ensure the system operates 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 SSDS system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the SSDS system are specified in Appendix E.

A visual inspection of the complete system will be conducted during the quarterly and annual monitoring events. SSDS system components to be monitored include, but are not limited to the blower, the moisture trap, the circuit breakers, the piping, and the valves that are used to balance the system. A complete list of components to be checked is provided in the Inspection Checklist, 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 appended Operation and Maintenance Plan are required immediately, and the SSDS system should be promptly restarted.

The SSDS system has a visual warning device to indicate that the system is not operating properly. As noted above, a cellular modem system has been installed on the system to provide routine electronic notifications to the Remedial Party and HDR that the system is operating properly. The CPB system also has shut off conditions such as a high vacuum or a high moisture level in the moisture knock-out vessel to ensure the blower and/or the system does not get damaged. 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 restarted. Operational problems will be

promptly corrected and noted in the subsequent Periodic Review Report.

4.2.2 ENGINEERING CONTROL SYSTEM INSPECTION, MONITORING, OPERATION AND MAINTENANCE AT OFFSITE BUILDINGS WITH SHUTDOWN SYSTEMS

There are five additional offsite buildings where SSDSs were once operated to mitigate sub-slab vapors surrounding the Christie Place Building. These SSDSs are located in the Spencer Place Building, Harwood Building, DeCicco Building, Scarsdale Post Office Building, and East Parkway Building. Sub-slab vapor contaminant concentrations have declined in all offsite buildings and/or indoor air concentrations are below NYSDOH criteria for indoor air such that NYSDEC and NYSDOH have approved shutdown of the systems and they are no longer operating. Currently the SSDSs at these locations remain in place and operation can be resumed if it is determined there is a potential for sub-slab vapors to impact building occupants. The buildings continue to be inspected and monitored on an annual basis (in the East Parkway Building, only the southern half of the building requires inspection and monitoring). The inspections will verify that slabs are competent to impede vapor migration and that the shutdown SSDSs could be operated if NYSDEC or NYSDOH determine that active SSDS mitigation of potential vapor intrusion is warranted.

At each of the five locations where the SSDS's have been shut down as approved by NYSDEC and NYSDOH, so long as these systems remain shutdown, they will be inspected annually (or on a less frequent basis, if approved by NYSDEC). During these annual inspections, HDR will inspect the floor area for cracks or new penetrations in the floor or construction activities that may have compromised the slab. HDR will interview the building representative to determine if there have been any construction, renovation, or upgrade activities (e.g. installation of a new water main or gas lines or renovation of the heating system, or tenant space renovations) that could have affected the seal of the floor slab. The inspection will also include identification and repair of compromised or damaged SSDS piping inspection of the SSDS discharge piping, and recommendations for repairs of significant floor cracks or damage that could compromise the floor integrity. Where necessary, repairs will be conducted and noted on the appropriate inspection form.

Appendix F of this SMP provides additional information on the SSDSs in place at these five locations and additional monitoring required if the systems are required to be turned back on.

4.3 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on-file by the qualified environmental professional responsible for the 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 5 of this SMP.

Checklists or forms (see Appendix E) will be completed during each routine and non-routine maintenance event. The Checklist includes the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- 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).

5.0 REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS AND MONITORING

All inspections and sample collection and analyses to be conducted in the CPB and the offsite buildings will be conducted at the frequency specified in Table 3, as presented in Section 3, Monitoring Plan and Section 4, Operation and Maintenance Plan of this SMP. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition or emergency has taken place, such as an erosion or flooding event that may affect the ECs.

All inspections and monitoring events will be recorded on the appropriate forms for their respective system which are contained in Appendices E and F. Additionally, those forms provide for general site-wide inspections; the forms will be completed during the site-wide inspection. 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 specified below in Section 5.3.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

The results of the inspections 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 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.

After the last inspection of the reporting period, a Professional Engineer engaged by the Remedial Party and licensed to practice in New York State will prepare the following certification with respect to the CPB site:

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 Deed Restriction;
- 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;
- 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] [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.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted by the Remedial Party or its consultants to the Department, beginning fifteen months after the Release and Covenant Not to Sue is issued. The subsequent Periodic Review Reports will be submitted on an annual basis unless a different certification period is approved by NYSDEC set forth in the approval letter for the latest periodic review. A single report will summarize all aspects of this SMP's requirements. The report will be prepared in accordance with NYSDEC DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include, at least:

- Date of event;
- Personnel conducting any sampling;
- Description of the activities performed;
- Type of samples collected, if any (e.g., sub-slab vapor, indoor air, groundwater, PID readings);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC - identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether vapor, air or groundwater conditions have changed since the last reporting event and data will be reported in hard copy or digital format as determined by NYSDEC.
- Identification, assessment and certification of all ECs/ICs required by the remedy for the site;
- Results of the required site inspections and emergency or other inspections, if applicable; All applicable inspection forms and other records generated for the site during the reporting period in electronic format;

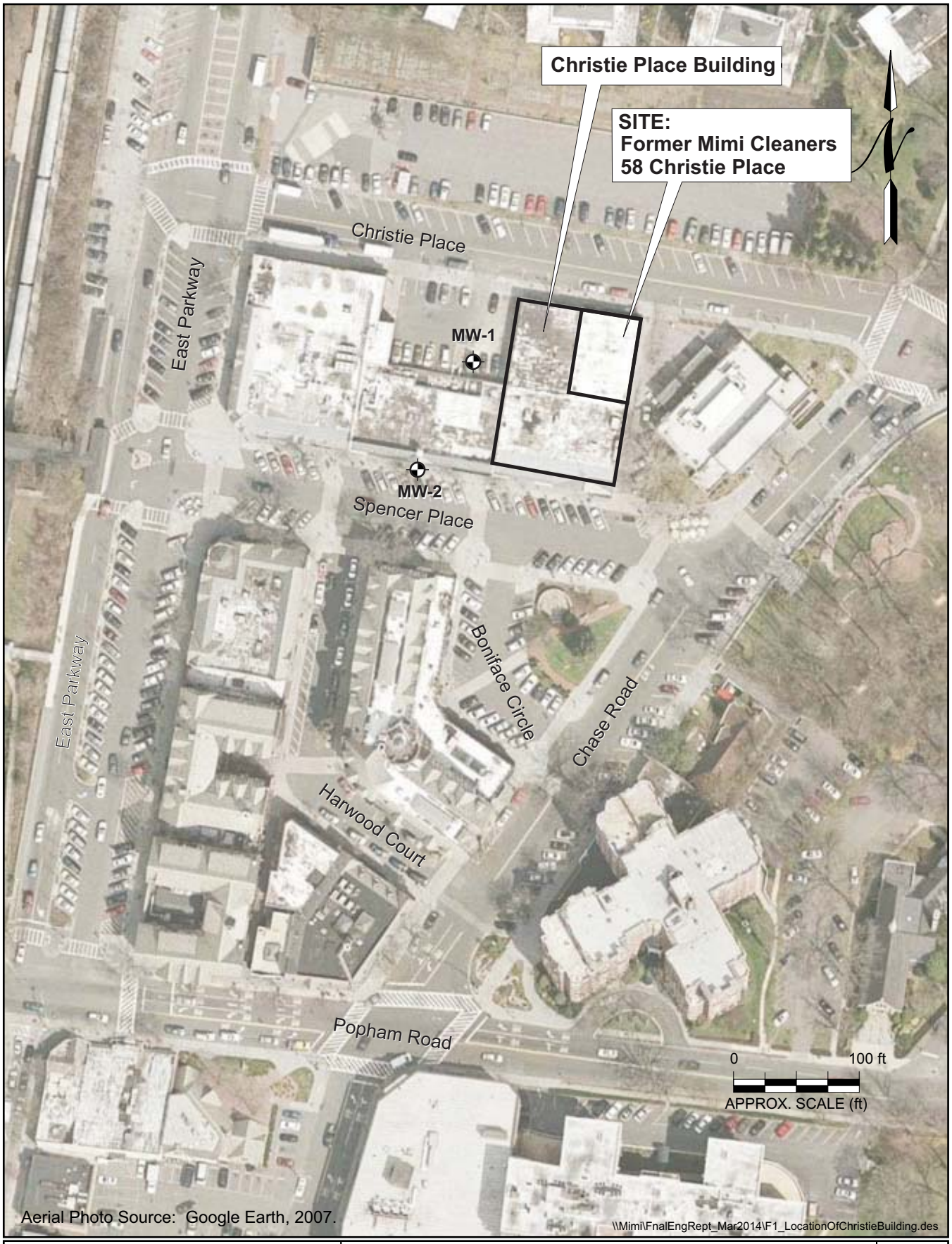
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along 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 Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
    - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored; and
    - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan.
- The overall performance and effectiveness of the remedy. A performance summary for all treatment systems at the site during the reporting period, including information such as:
    - 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 pressure differentials maintained;
    - A summary of the performance and/or effectiveness monitoring; and
    - Comments, conclusions, and recommendations based on data evaluation.

The Periodic Review Report will be submitted to the NYSDEC Central Office and the NYSDOH Bureau of Environmental Exposure Investigation in electronic format. Hard copies will be provided if requested by the NYSDEC project manager.

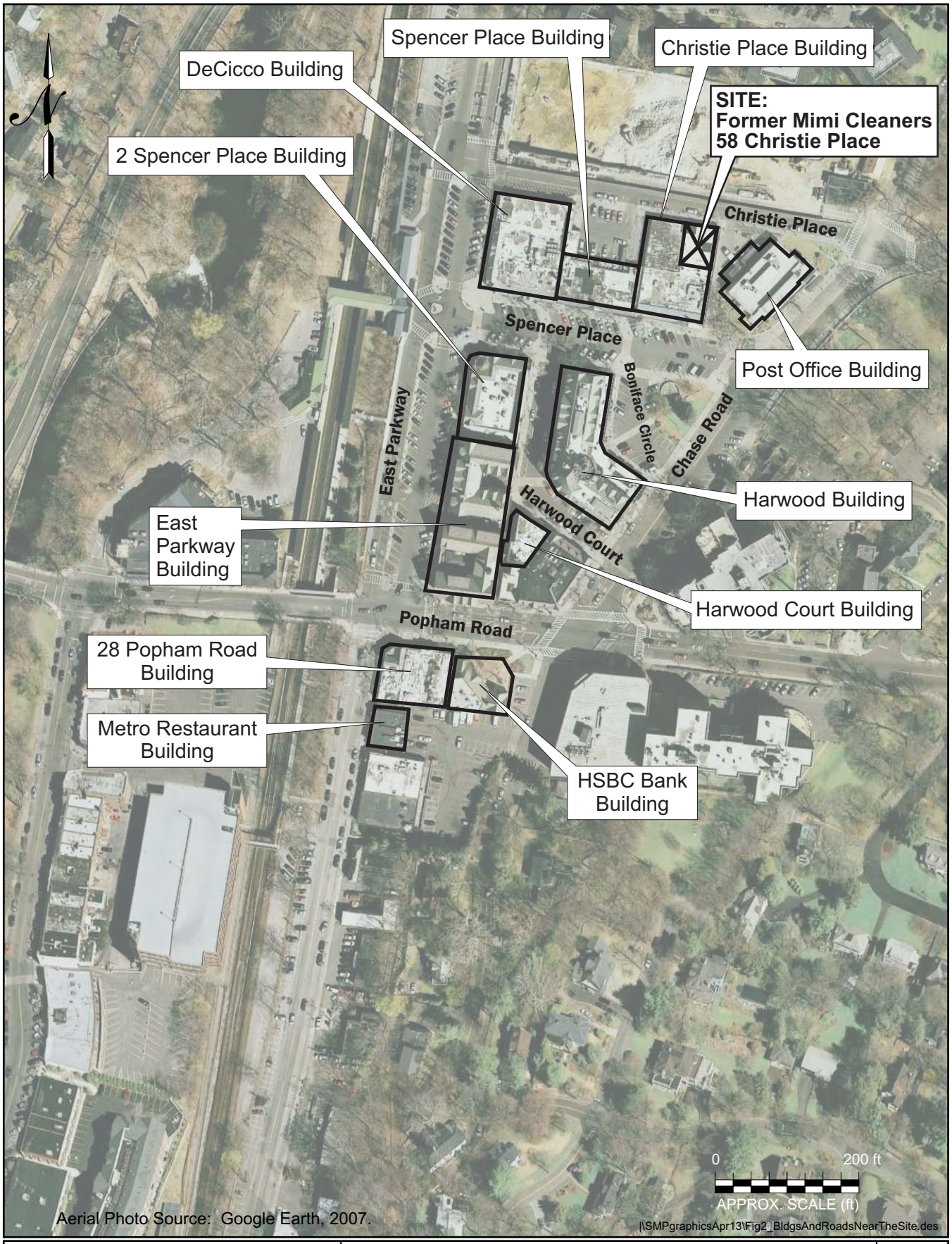
5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, the Remedial Party, after consultation with the owner, will submit a corrective measures plan 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.

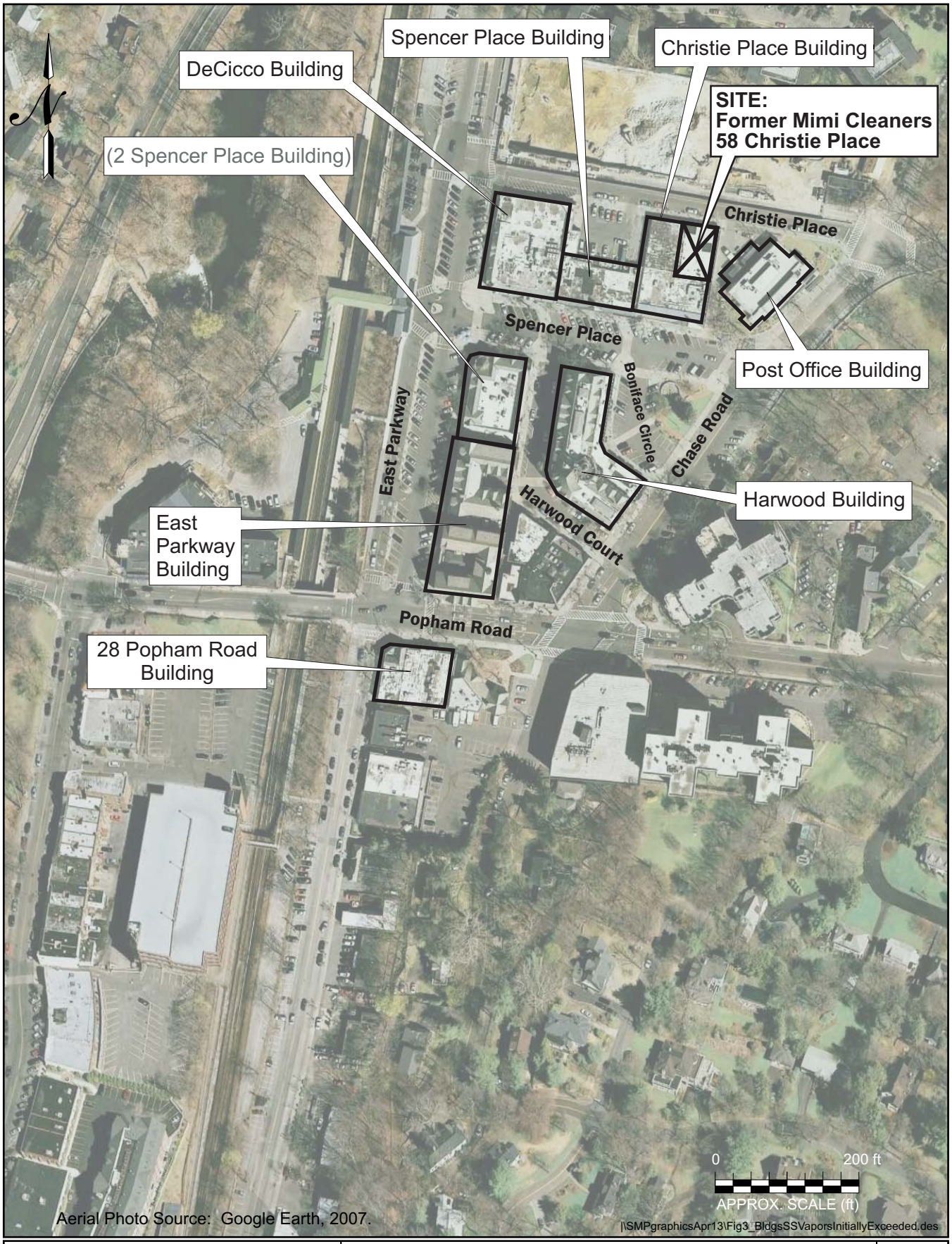
FIGURES & TABLES



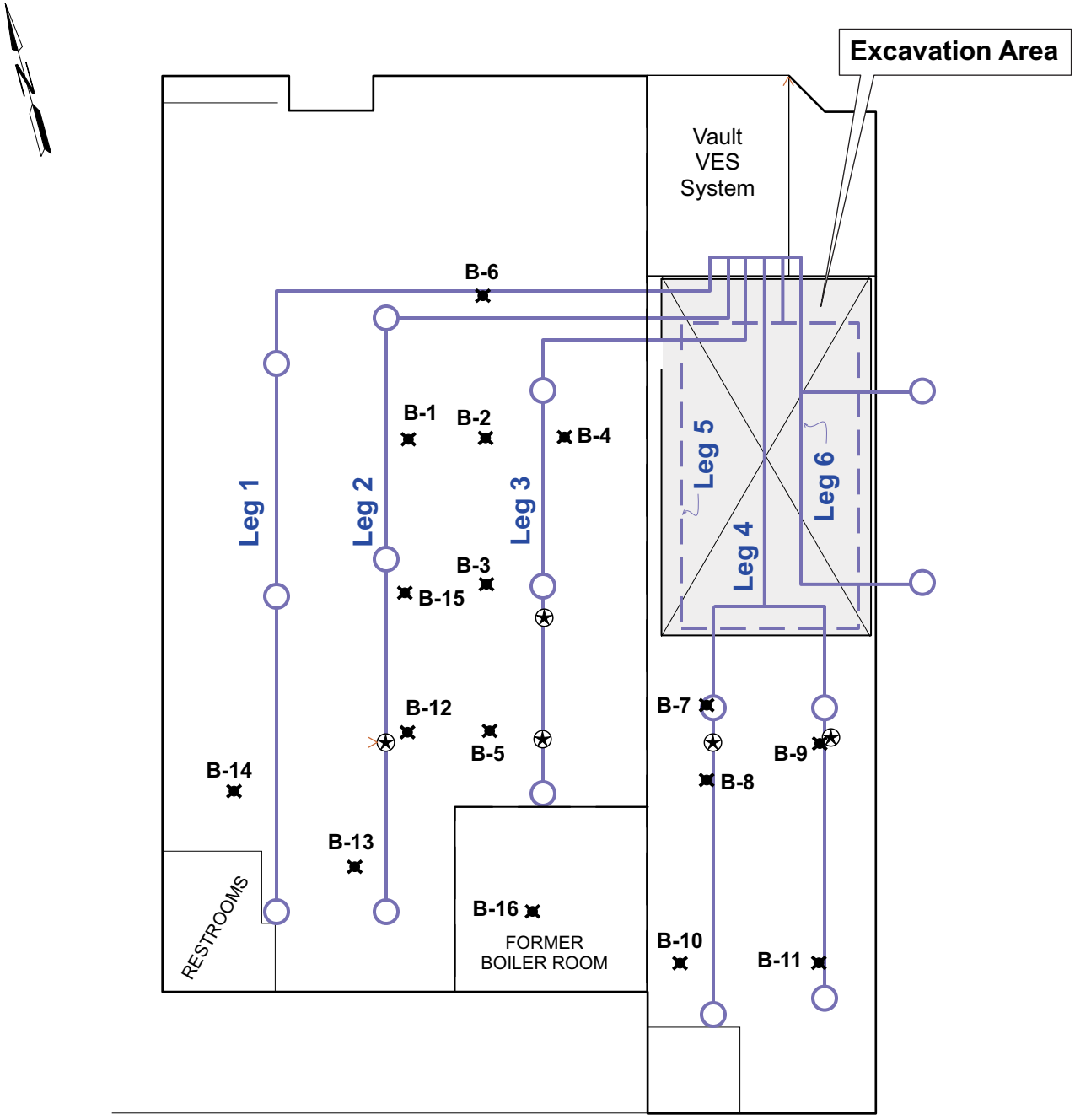
HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Location of Christie Place Building** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 1**



HDR Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Buildings and Roads Near the Site** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 2**



HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Buildings Where Sub Slab Vapors Initially Exceeded DOH Guidance** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 3**



LEGEND

- End point sample location and vacuum monitoring points
- Boring location
- Vapor extraction point
- Perforated extraction lateral (Leg 5)
- Former interior wall

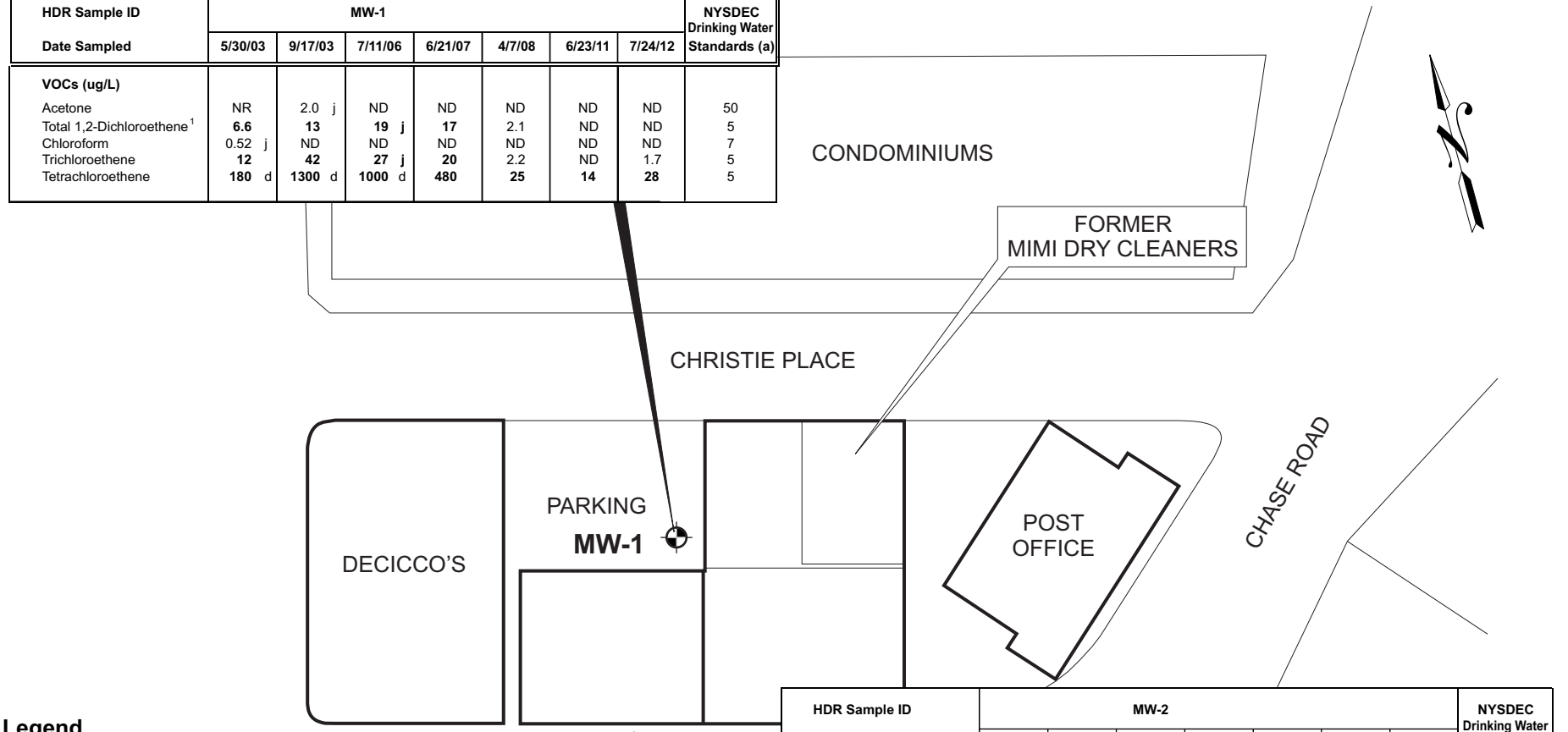
0 10 ft

APPROX. SCALE
1"=~10'

\\SMPsitePlan.des

HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Christie Place Building** **Area of Excavation** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 4**

HDR Sample ID	MW-1							NYSDEC Drinking Water Standards (a)
Date Sampled	5/30/03	9/17/03	7/11/06	6/21/07	4/7/08	6/23/11	7/24/12	
VOCs (ug/L)								
Acetone	NR	2.0 j	ND	ND	ND	ND	ND	50
Total 1,2-Dichloroethene[1]	**6.6**	**13**	**19 j**	**17**	2.1	ND	ND	5
Chloroform	0.52 j	ND	ND	ND	ND	ND	ND	7
Trichloroethene	**12**	**42**	**27 j**	**20**	2.2	ND	1.7	5
Tetrachloroethene	**180** d	**1300** d	**1000** d	**480**	**25**	**14**	**28**	5



HDR Sample ID	MW-2							NYSDEC Drinking Water Standards (a)
Date Sampled	5/30/03	9/17/03	7/11/06	6/21/07	4/7/08	6/23/11	7/24/12	
VOCs (ug/L)								
Acetone	ND	6.0 j	ND	ND	ND	ND	ND	50
Total 1,2-Dichloroethene[1]	2.0	2.0 j	ND	**7.5**	2.2	ND	ND	5
Chloroform	1.1	1.0 j	1.4	ND	ND	ND	ND	7
Trichloroethene	3.1	3.0 j	3.0 j	3.1 j	**6.4**	1.7	1.3	5
Tetrachloroethene	**50**	**53**	**54**	**48**	**37**	**11**	4.8	5

Legend

⌖ Monitoring well location, former Mimi Cleaners

NOTE: Locations are approximate

(a) - Division of Water Technical and Operational Guidance Series (1.1.1), June 1998.

d - Indicates all compounds identified in an analysis at a secondary dilution factor.

j - Indicates an estimated value. This compound meets the identification criteria, but the result is less than the specified detection limit.

NR - Not analyzed

Note - Numbers in **bold** exceed the Class GA Standard.

Map source: Developed from field sketch and notes.

0 80 ft

APPROX. SCALE
1 in. = 80 ft

\\201986_\0025692_\Reports\Graphics\MimiStreetBlock.des

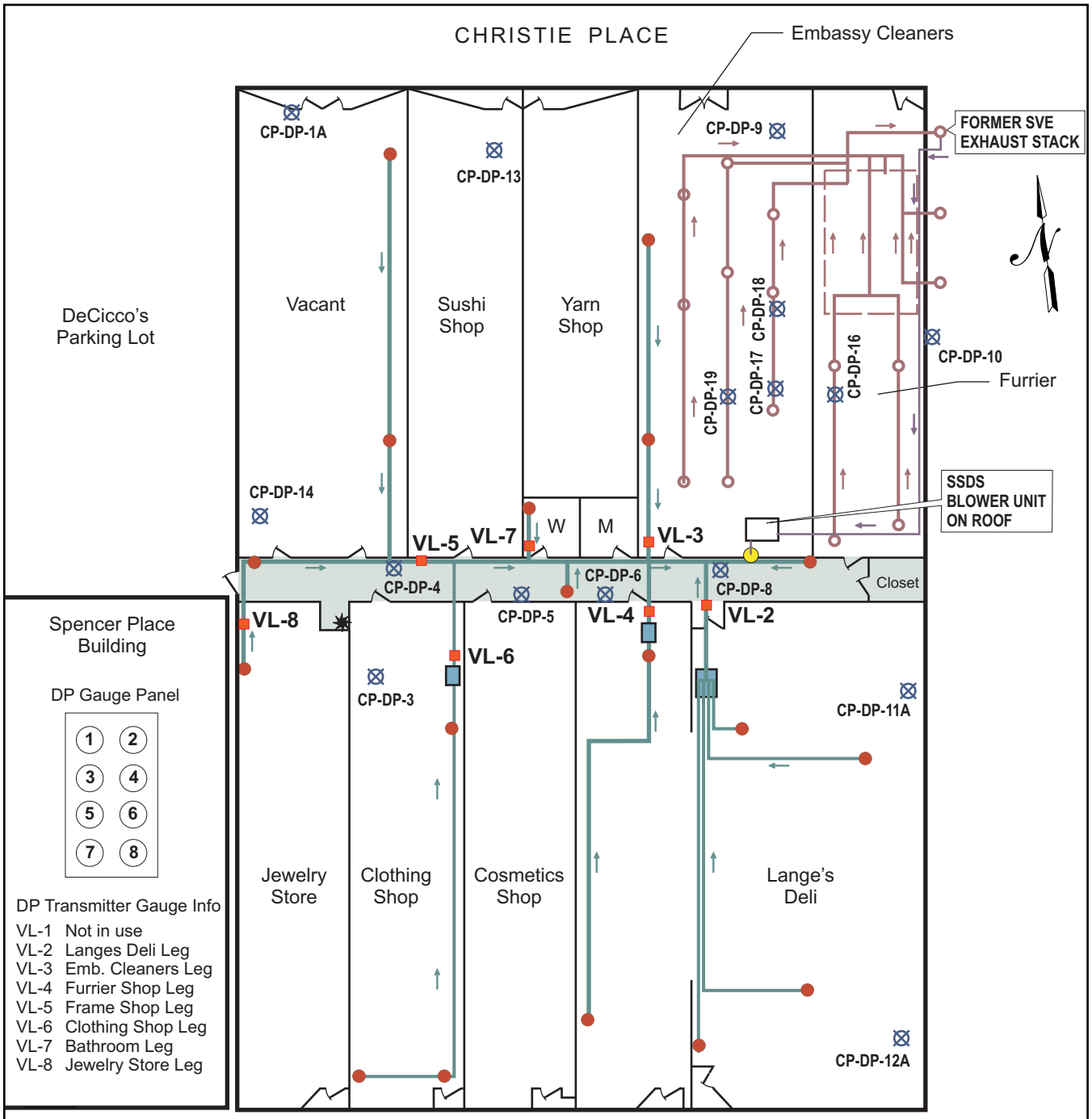
HDR

Henningson, Durham & Richardson Architecture and Engineering, P.C.
One Blue Hill Plaza
Pearl River, NY 10965

Groundwater Monitoring Well Locations and Sampling Results 2003 through 2012

Former Mimi Dry Cleaners **Scarsdale, NY**

Figure 5



HDR
Henningson, Durham & Richardson Architecture and Engineering, P.C.
One Blue Hill Plaza
Pearl River, NY 10965

Christie Place Building
Sub Slab Depressurization System
Former Mimi Dry Cleaners — **Scarsdale, NY**

Figure 6

Table 1

FORMER MIMI CLEANERS
Scarsdale, New York
GROUNDWATER ANALYTICAL DATA
(2003 - 2012)

HDR Sample ID	MW-1																		NYSDEC
Date Sampled	5/30/03			9/17/03			7/11/06			6/21/07			4/7/08			6/23/11			7/27/12			Standards (a)
	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	
VOCs (ug/L)																						
Acetone	NR		-	2.0	j	10	ND		250	ND		25	ND		25	ND		5.9	ND		10	50
Total 1,2-Dichloroethene[1]	**6.6**		1.0	**13**		10	**19**	j	50	**17**		5.0	2.1		1.0	ND		1.0	ND		1.0	5
Chloroform	0.52	j	1.0	ND		10	ND		50	ND		5.0	ND		1.0	ND		1.0	ND		1.0	7
Trichloroethene	**12**		1.0	**42**		10	**27**	j	50	**20**		5.0	2.2		1.0	ND		1.0	1.7		1.0	5
Tetrachloroethene	**180**	d	10	**1300**	d	100	**1000**	d	50	**480**		5.0	**25**		1.0	**14**		1.0	**28**		0.73	5
Total CVOCs:	199			1357			1046			517			29			14			29.7			

HDR Sample ID	MW-2																		NYSDEC
Date Sampled	5/30/03			9/17/03			7/11/06			6/21/07			4/7/08			6/23/11			7/24/12			Standards (a)
	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	Rslts	Q	RL	
VOCs (ug/L)																						
Acetone	NR		-	6.0	j	10	ND		25	ND		25	ND		25	ND		5.9	ND		10	50
Total 1,2-Dichloroethene[1]	2.0		1.0	2.0	j	10	ND		5.0	**7.5**		5.0	2.2		1.0	ND		1.0	ND		1.0	5
Chloroform	1.1		1.0	1.0	j	10	1.4	j	5.0	ND		5.0	ND		1.0	ND		1.0	ND		1.0	7
Trichloroethene	3.1		1.0	3.0	j	10	3.0	j	5.0	3.1	j	5.0	**6.4**		1.0	1.7		1.0	1.3		1.0	5
Tetrachloroethene	**50**		1.0	**53**		10	**54**		5.0	**48**		5.0	**37**		1.0	**11**		1.0	4.8		1.0	5
Total CVOCs:	56.2			65.0			58.4			58.6			45.6			12.7			6.1			

(a) - Division of Water Technical and Operational Guidance Series (1.1.1), June 1998.
d - Indicates all compounds identified in an analysis at a secondary dilution factor.
j - Indicates an estimated value. This compound meets the identification criteria, but the result is less than the specified detection limit.
Note - Numbers in **bold** exceed the Class GA Standard.
[1] cis- & trans-1,2-Dichloroethene

Rslts - Analytical Results
Q - Qualifier
RL - Reporting Limit
NR - Not Analyzed

APPENDICES

APPENDIX A

DEED RESTRICTION

AND

METES & BOUNDS SURVEY MAP

The Office of the Westchester County Clerk: This page is part of the instrument; the County Clerk will rely on the information provided on this page for purposes of indexing this instrument. To the best of submitter's knowledge, the information contained on this Recording and Endorsement Cover Page is consistent with the information contained in the attached document.

542393175DLR0013

Westchester County Recording & Endorsement Page

Submitter Information

Name:	National Real Estate Services Inc. (PICK UP ALL NE\	Phone:	914-686-5600
Address 1:	222 Bloomingddale Road	Fax:	914-686-1440
Address 2:	Suite 306	Email:	jkamna@allnyt.com
City/State/Zip:	White Plains NY 10605	Reference for Submitter:	ACR-7656^

Document Details

Control Number: **542393175** Document Type: **Declaration (DLR)**

Package ID: 2014082700074001001 Document Page Count: **6** Total Page Count: **7**

Parties

☐ Additional Parties on Continuation page

1st PARTY		2nd PARTY	
1: CHRISTIE PLACE OWNERS LLC	- Other	1: CHRISTIE PLACE OWNERS LLC	- Other
2: CHRISTE SPENCER CORP	- Other	2:	

Property

☐ Additional Properties on Continuation page

Street Address: 35-59 SPENCER PL Tax Designation: 2.5.11

City/Town: SCARSDALE Village:

Cross- References

☐ Additional Cross-Refs on Continuation page

1: 2: 3: 4:

Supporting Documents

Recording Fees

Statutory Recording Fee:	$40.00
Page Fee:	$35.00
Cross-Reference Fee:	$0.00
Mortgage Affidavit Filing Fee:	$0.00
RP-5217 Filing Fee:	$0.00
TP-584 Filing Fee:	$0.00
Total Recording Fees Paid:	**$75.00**

Transfer Taxes

Consideration:	$0.00
Transfer Tax:	$0.00
Mansion Tax:	$0.00
Transfer Tax Number:	

Mortgage Taxes

Document Date:

Mortgage Amount:

Basic:	$0.00
Westchester:	$0.00
Additional:	$0.00
MTA:	$0.00
Special:	$0.00
Yonkers:	$0.00
Total Mortgage Tax:	**$0.00**

Dwelling Type: Exempt: ☐

Serial #:

RECORDED IN THE OFFICE OF THE WESTCHESTER COUNTY CLERK

Recorded: 09/03/2014 at 10:35 AM

Control Number: **542393175**

Witness my hand and official seal

Timothy C.Idoni
Westchester County Clerk

Record and Return To

☐ Pick-up at County Clerk's office

KELLY WELCH, ESQ.
BERTINE HUFNAGEL HEADLEY ZELTNER DRUMMOND & D(
700 WHITE PLAINS ROAD
SCARSDALE, NY 10583

DECLARATION of COVENANTS and RESTRICTIONS

THIS COVENANT is made the 24 day of July 2014 by Christie Place Owners, LLC, a limited liability company organized and existing under the laws of the State of New York and having an office for the transaction of business at 14 Harwood Place, Suite 304; Scarsdale, NY 10583.

WHEREAS, Former Mimi Cleaners Site (Site #V00306-3) is the subject of a Voluntary Cleanup Agreement executed by Hausman Realty Company, Inc. as part of the New York State Department of Environmental Conservation's (the "Department's) Voluntary Cleanup Program, namely that parcel of real property located at the address of 58 Christie Place in the Village of Scarsdale, County of Westchester, State of New York, being the same as (or part of) that property conveyed to Christie Place Owners LLC by Christie-Spencer Corporation by deed(s) dated August 21, 2012 and again by correction deed dated April 21, 2014 correcting a scrivenor's error in Schedule A of the deed dated August 21, 2012, and recorded on September 4, 2012 and May 13, 2014, respectively, in the Westchester County Clerk's Office in Instrument No. 522343090 (August 21, 2012 deed) and No. 541013364 (April 21, 2014 deed), and being more particularly described in Schedule "A," attached to this declaration and made a part hereof, and hereinafter referred to as "the Property"; and

WHEREAS, the Department approved a remedy to eliminate or mitigate all significant threats to the environment presented by the contamination disposed at the Property and such remedy requires that the Property be subject to restrictive covenants.

NOW, THEREFORE, Christie Place Owners LLC, for itself and its successors and/or assigns, covenants that:

First, the Property subject to this Declaration of Covenants and Restrictions is as shown on a map attached to this declaration as Schedule "B" and made a part hereof.

Second, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsequently created to protect the environment of the State and the health of the State's citizens, hereinafter referred to as "the Relevant Agency," is first obtained, where contamination remains at the Property subject to the provisions of the Site Management Plan ("SMP"), there shall be no construction, use or occupancy of the Property that results in the disturbance or excavation of the Property which threatens the integrity of the engineering controls or which results in unacceptable human exposure to contaminated soils. 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.

Third, the owner of the Property shall not disturb, remove, or otherwise interfere with the installation, use, operation, and maintenance of engineering controls required for the Remedy, which are described in the SMP, unless in each instance the owner first obtains a written waiver of such prohibition from the Department or Relevant Agency.

Fourth, the owner of the Property shall prohibit the Property from ever being used for purposes other than for **Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)** without the express written waiver of such prohibition by the Department or Relevant Agency.

Fifth, the use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Westchester County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.

Sixth, the owner of the Property shall provide a periodic certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department or Relevant Agency, which will certify that the institutional and engineering controls put in place are unchanged from the previous certification, comply with the SMP, and have not been impaired.

Seventh, the owner of the Property shall continue in full force and effect any institutional and engineering controls required for the Remedy and maintain such controls, unless the owner first obtains permission to discontinue such controls from the Department or Relevant Agency, in compliance with the approved SMP, which is incorporated and made enforceable hereto, subject to modifications as approved by the Department or Relevant Agency.

Eighth, this Declaration is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Property, and shall provide that the owner and its successors and assigns consent to enforcement by the Department or Relevant Agency of the prohibitions and restrictions that the Voluntary Cleanup Agreement requires to be recorded, and hereby covenant not to contest the authority of the Department or Relevant Agency to seek enforcement.

Ninth, any deed of conveyance of the Property, or any portion thereof, shall recite, unless the Department or Relevant Agency has consented to the termination of such covenants and restrictions, that said conveyance is subject to this Declaration of Covenants and Restrictions.

IN WITNESS WHEREOF, the undersigned has executed this instrument the day written below.

Christie Place Owners LLC
by Christie Towers Corp.

By: _____

Print Name: Rush Wilson

Title: PRESIDENT Date: July 24, 2014
CHRISTIE SPENCER CORP., MANAGING MEMBER

Grantor's Acknowledgment

STATE OF NEW YORK)

) s.s.:

COUNTY OF Westchester)

On the 24th day of July, in the year 2014 before me, the undersigned, personally appeared Rush Wilson, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public State of New York

TAMITHA HOBBS
Notary Public, State of New York
No. 01HO6110257
Qualified in Westchester County
Commission Expires May 24, 20 16

ALL that certain plot, piece or parcel of land, situate, lying and being in the Village and Town of Scarsdale, County of Westchester and State of New York, bounded and described as follows:

BEGINNING at a point on the easterly side of East Parkway at the northerly end of a curve having a radius of 20 feet connecting the easterly side of East Parkway with the northerly side of Spencer Place;
THENCE along the easterly side of East Parkway, North 18° 08' 00" East 120 feet to the southerly side of Christie Place;
THENCE along the southerly side of Christie Place, South 71° 52' 0" East 311.40 feet to the lands now or formerly of the United States of America, being the point and place of BEGINNING.
THENCE along said lands now or formerly of the United States of America, South 18° 08' 00" West 140 feet to the northerly side of Spencer Place;
THENCE along the northerly side of Spencer Place, North 71° 52' 00" West 96.40 feet to a point;
THENCE from said point and parallel to the aforesaid division line of the premises herein and lands now or formerly of the United States of America North 18° 08' 00" East 140 feet to the southerly side of Christie Place;
THENCE along the southerly side of Christie Place, South 71° 52' 00" West 96.40 feet to the division line between property herein and lands now or formerly of the United States of America, being the point and place of BEGINNING

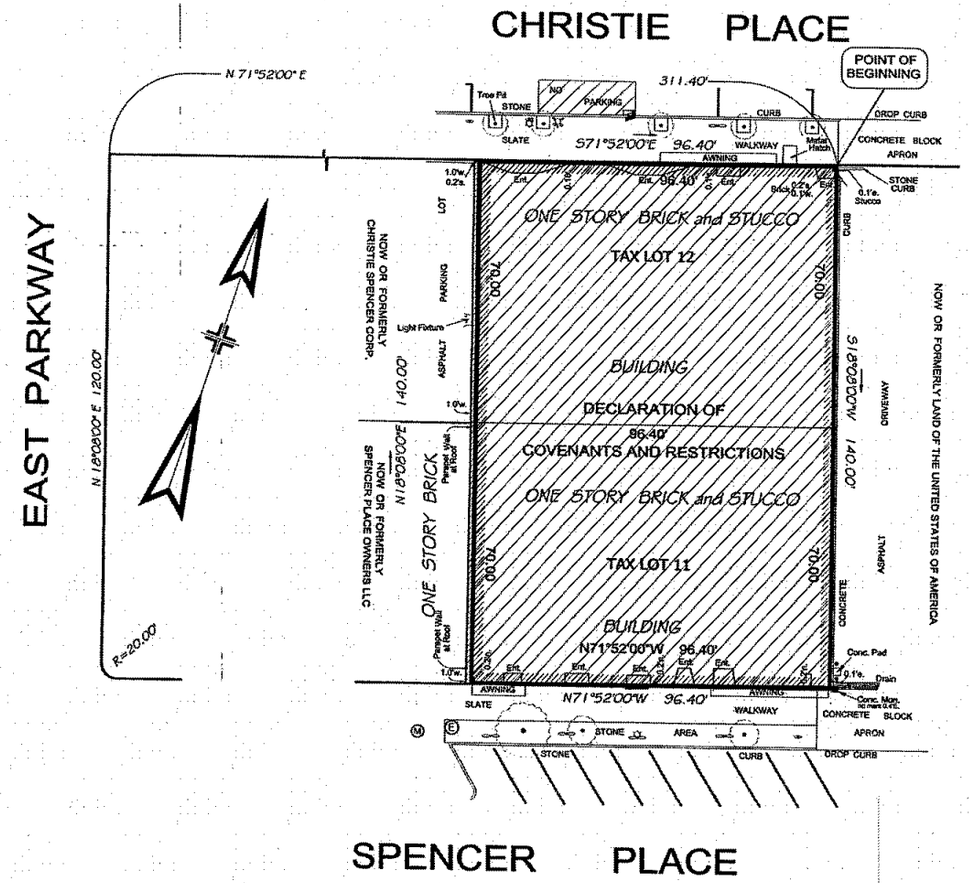
SAID PREMISES CONTAINING 13,496 Sq. Ft. = 0.3098 ACRES.

SCHEDULE "B"

6823

THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS DECLARATION OF COVENANTS and RESTRICTIONS ARE SET FORTH 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 CAN BE OBTAINED FROM THE NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT derweb@gw.dec.state.ny.us.

DECLARATION OF COVENANTS and RESTRICTIONS
THE DEC OR THEIR AGENT MAY ACCESS THE EASEMENT AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESSOR BUILDING INGRESS / EGRESS ACCESS POINT.



IN FEET

IN METERS

COMMENTS	JRL	5-28-14
REVISED		
DECLARATION OF COVENANTS and RESTRICTIONS :	JRL	3-12-14
COMMENT	BY	DATE

ALTA / ACSM SURVEY OF PROPERTY SITUATE IN THE TOWN / VILLAGE OF SCARSDALE WESTCHESTER COUNTY NEW YORK

SCALE: 1"= 16'

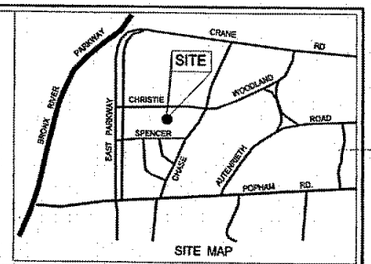
SURVEYED: SEPTEMBER 23,2013

SYMBOLS

- CATCH BASIN
- ELECTRIC MANHOLE
- FIRE HYDRANT
- LIGHT POLE
- MANHOLE
- LIGHT POLE/ PARKING METER
- DOUBLE PARKING METER
- DECLARATION OF COVENANTS and RESTRICTIONS AREA

SURVEYORS NOTES:

- THE PREMISES SHOWN HEREON ARE BEING THE SAME AS DESCRIBED IN CONTROL No. 5410133/04 AND FILED IN THE WESTCHESTER COUNTY CLERK'S OFFICE DIVISION OF LAND RECORDS.
- UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAWS.
- ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S SEAL SHALL BE CONSIDERED TO BE TRUE VALID COPIES.
- THE OFFSETS SHOWN ARE FOR INFORMATIONAL PURPOSE ONLY. THEY ARE NOT INTENDED TO ESTABLISH PROPERTY LINES FOR THE ERECTION OF FENCES, STRUCTURES OR ANY OTHER IMPROVEMENT.
- COPYRIGHT 2013 LINK LAND SURVEYOR P.C. ALL RIGHTS RESERVED. THE UNAUTHORIZED REPRODUCTION AND DISTRIBUTION OF THIS DOCUMENT IS ILLEGAL, AND IS A VIOLATION UNDER UNITED STATES COPYRIGHT LAWS.
- THE SURVEY SHOWN HEREON WAS PREPARED FROM AN ACTUAL FIELD SURVEY CONDUCTED ON THE DATE SHOWN AND THAT SAID SURVEY WAS PERFORMED IN ACCORDANCE WITH THE EXISTING " CODE OF PRACTICE FOR LAND SURVEYS " ADOPTED BY THE NEW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS.
- ENCROACHMENTS BELOW GRADE AND/OR SUBSURFACE FEATURES, IF ANY, NOT LOCATED OR SHOWN HEREON.
- THE LEGAL DESCRIPTION OF THE PREMISES SHOWN HEREON FORMS A MATHEMATICALLY CLOSED FIGURE.



SITE MAP

PROPERTY INFORMATION

DEC SITE NO. V00306-3
DECLARATION OF COVENANTS and RESTRICTIONS :
PREMISES ARE KNOWN AS : No. 35-59 SPENCER PLACE
No. 42-66 CHRISTIE PLACE
PROPERTY AREA : 0.3098 ACRES = 13,496 Sq. Ft.
THE PREMISES SHOWN HEREON ARE DESIGNATED ON THE TAX MAPS FOR THE TOWN / VILLAGE OF SCARSDALE
SECTION 2 * BLOCK 5 * LOT 11 and 12

LEGAL DESCRIPTION

ALL that certain plot, piece or parcel of land, situate, lying and being in the Village and Town of Scarsdale, County of Westchester and State of New York, bounded and described as follow:

BEGINNING at a point on the easterly side of East Parkway at the northerly end of a curve having a radius of 20 feet connecting the easterly side of East Parkway with the northerly side of Spencer Place;

THENCE along the easterly side of East Parkway, North 18° 08' 00" East 120 feet to the southerly side of Christie Place;

THENCE along the southerly side of Christie Place, South 71° 52' 00" East 311.40 feet to the lands now or formerly of the United States of America, being the point and place of BEGINNING.

THENCE along said lands now or formerly of the United States of America, South 18° 08' 00" West 140 feet to the northerly side of Spencer Place;

THENCE along the northerly side of Spencer Place, North 71 degrees 52' 00" West 96.40 feet to a point;

THENCE from said point and parallel to the aforesaid division line of the premises herein and lands now or formerly of the United States of America, North 18° 08'00" East 140 feet to the southerly side of Christie Place;

THENCE along the southerly side of Christie Place, South 71° 52' 00" West 96.40 feet to the division line between property herein and lands now or formerly of the United States of America, being the point and place of BEGINNING

SAID PREMISES CONTAINING 13,496 Sq. Ft. = 0.3098 ACRES

DECLARATION OF COVENANTS and RESTRICTIONS SITE No. V00306-3

ALL that certain plot, piece or parcel of land, situate, lying and being in the Village and Town of Scarsdale, County of Westchester and State of New York, bounded and described as follows:

BEGINNING at a point on the easterly side of East Parkway at the northerly end of a curve having a radius of 20 feet connecting the easterly side of East Parkway with the northerly side of Spencer Place;

THENCE along the easterly side of East Parkway, North 18° 08' 00" East 120 feet to the southerly side of Christie Place;

THENCE along the southerly side of Christie Place, South 71° 52' 00" East 311.40 feet to the lands now or formerly of the United States of America, being the point and place of BEGINNING.

THENCE along said lands now or formerly of the United States of America, South 18° 08' 00" West 140 feet to the northerly side of Spencer Place;

THENCE along the northerly side of Spencer Place, North 71 degrees 52' 00" West 96.40 feet to a point;

THENCE from said point and parallel to the aforesaid division line of the premises herein and lands now or formerly of the United States of America, North 18° 08'00" East 140 feet to the southerly side of Christie Place;

THENCE along the southerly side of Christie Place, South 71° 52' 00" West 96.40 feet to the division line between property herein and lands now or formerly of the United States of America, being the point and place of BEGINNING

SAID PREMISES CONTAINING 13,496 Sq. Ft. = 0.3098 ACRES

SURVEYOR'S CERTIFICATION

DATED AS OF MAY 28,2014
TO:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS" JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS IN AND INCLUDE NO ITEMS OF TABLE "A" THEREOF.
THE FIELD WORK WAS COMPLETED ON SEPTEMBER 28,2013
DATE OF MAP OR PLAT : OCTOBER 31, 2013 REVISED ON MAY 28,2014

JOSEPH R. LINK
NEW YORK STATE LICENSED LAND SURVEYOR NO. 050436

5/28/14
DATE

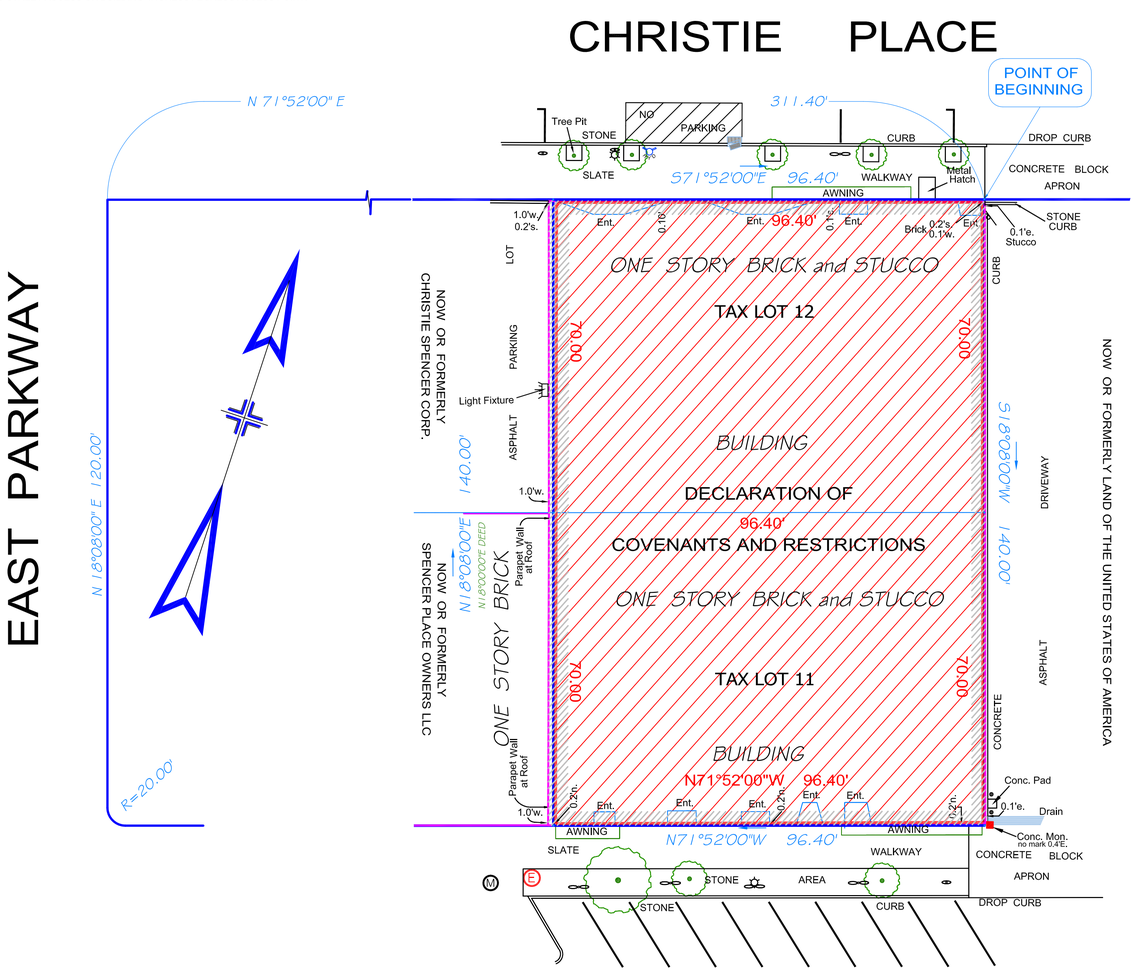
NEW YORK STATE LICENSED LAND SURVEYOR SEAL

Link Land Surveyors P.C.
21 Clark Place Suite 1B Phone 845-628-5857
Mahopac N.Y. 10541 Fax 845-621-0013

6823

THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS DECLARATION OF COVENANTS and RESTRICTIONS ARE SET FORTH 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 CAN BE OBTAINED FROM THE NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION. 625 BROADWAY, ALBANY, NY 12233 OR AT derweb@gw.dec.state.ny.us.

DECLARATION OF COVENANTS and RESTRICTIONS
THE DEC OR THEIR AGENT MAY ACCESS THE EASEMENT AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS / EGRESS ACCESS POINT.



16' 0 8' 16' 32' 64'

IN FEET

10 0 5 10 20 30

IN METERS

1.	REVISED	
	DECLARATION OF COVENANTS and RESTRICTIONS :	JRL
REV.	COMMENT	BY

ALTA / ACSM SURVEY OF PROPERTY

SITUATE IN THE

TOWN / VILLAGE OF SCARSDALE

WESTCHESTER COUNTY

NEW YORK

SCALE: 1"= 16'

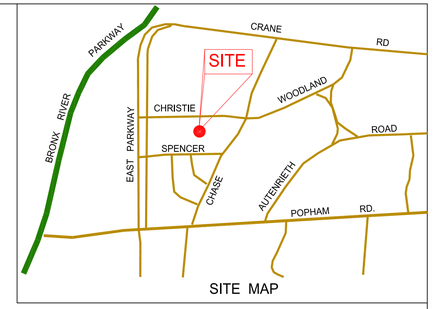
SURVEYED: SEPTEMBER 23,2013

SYMBOLS

- CATCH BASIN
- ELECTRIC MANHOLE
- FIRE HYDRANT
- LIGHT POLE
- MANHOLE
- LIGHT POLE/ PARKING METER
- DOUBLE PARKING METER
- DECLARATION OF COVENANTS and RESTRICTIONS AREA

* Note THE BEARING IN THE DESCRIPTION IN PARAGRAPH (*) DEED BEARING ***NORTH 18° 00'00" EAST***

SHOULD READ AS PER SURVEY NORTH 18° **08**'00" EAST



SITE MAP

PROPERTY INFORMATION

DEC SITE NO. V00306-3
DECLARATION OF COVENANTS and RESTRICTIONS :

PREMISES ARE KNOWN AS : No. 35-56 SPENCER PLACE
No. 42-66 CHRISTIE PLACE

PROPERTY AREA : 0.3098 ACRES = 13,496 Sq. Ft.

THE PREMISES SHOWN HEREON ARE DESIGNATED ON THE TAX MAPS FOR THE TOWN / VILLAGE OF SCARSDALE
SECTION 2 * BLOCK 6 * LOT 11 and 12

LEGAL DESCRIPTION

ALL that certain plot, piece or parcel of land, situate, lying and being in the Village and Town of Scarsdale, County of Westchester and State of New York, bounded and described as follows:

BEGINNING at a point on the easterly side of East Parkway at the northerly end of a curve having a radius of 20 feet connecting the easterly side of East Parkway with the northerly side of Spencer Place;

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SAID PREMISES CONTAINING 13,496 Sq. Ft. = 0.3098 ACRES

DECLARATION OF COVENANTS and RESTRICTIONS SITE No. V00306-3

ALL that certain plot, piece or parcel of land, situate, lying and being in the Village and Town of Scarsdale, County of Westchester and State of New York, bounded and described as follows:

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140 feet to the southerly side of Christie Place;

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SAID PREMISES CONTAINING 13,496 Sq. Ft. = 0.3098 ACRES

SURVEYORS NOTES:

- THE PREMISES SHOWN HEREON ARE BEING THE SAME AS DESCRIBED IN CONTROL No. 522343090 AND FILED IN THE WESTCHESTER COUNTY CLERK'S OFFICE DIVISION OF LAND RECORDS.
- UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAWS.
- ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S SEAL SHALL BE CONSIDERED TO BE TRUE VALID COPIES.
- THE OFFSETS SHOWN ARE FOR INFORMATIONAL PURPOSE ONLY. THEY ARE NOT INTENDED TO ESTABLISH PROPERTY LINES FOR THE ERECTION OF FENCES, STRUCTURES OR ANY OTHER IMPROVEMENT.
- COPYRIGHT 2013 LINK LAND SURVEYOR P.C. ALL RIGHTS RESERVED. THE UNAUTHORIZED REPRODUCTION AND DISTRIBUTION OF THIS DOCUMENT IS ILLEGAL, AND IS A VIOLATION UNDER UNITED STATES COPYRIGHT LAWS.
- THE SURVEY SHOWN HEREON WAS PREPARED FROM AN ACTUAL FIELD SURVEY CONDUCTED ON THE DATE SHOWN AND THAT SAID SURVEY WAS PERFORMED IN ACCORDANCE WITH THE EXISTING " CODE OF PRACTICE FOR LAND SURVEYS " ADOPTED BY THE NEW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS.
- ENCROACHMENTS BELOW GRADE AND/OR SUBSURFACE FEATURES, IF ANY, NOT LOCATED OR SHOWN HEREON.
- THE LEGAL DESCRIPTION OF THE PREMISES SHOWN HEREON FORMS A MATHEMATICALLY CLOSED FIGURE.

SURVEYOR'S CERTIFICATION

DATED AS OF OCTOBER 21,2013

TO:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS" JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS IN AND INCLUDE NO ITEMS OF TABLE "A" THEREOF.
THE FIELD WORK WAS COMPLETED ON SEPTEMBER 26,2013
DATE OF MAP OR PLAT : OCTOBER 21, 2013

JOSEPH R. LINK
NEW YORK STATE LICENSED LAND SURVEYOR NO. 050456

DATE

NEW YORK STATE LICENSED LAND SURVEYOR SEAL

Link Land Surveyors P.C.
21 Clark Place Suite 1B Phone 845-628-5857
Mahopac N.Y. 10541 Fax 845-621-0013

APPENDIX B

RESPONSIBILITIES OF OWNER AND REMEDIAL PARTY

The responsibilities for implementing the Site Management Plan ("SMP") for the 58 Christie Place site (the "site"), number V00306-3, are divided between the site owner(s) and a Remedial Party, as defined below. The owner(s) is/are currently listed as: Christie Place Owners LLC, 14 Harwood Court, #304, Scarsdale NY 10583; (Contact: Rush Wilson, (914) 723-0348).

Solely for the purposes of this document and based upon the facts related to a particular site and the remedial program being carried out, the term Remedial Party ("RP") refers to any of the following: certificate of completion holder, volunteer, applicant, responsible party, and, in the event the New York State Department of Environmental Conservation ("NYSDEC") is carrying out remediation or site management, the NYSDEC and/or an agent acting on its behalf. The RP is:

Hausman Realty Co., Inc., c/o West-Ex Associates, Inc., 119 E. Hartsdale Ave., Hartsdale, NY 10530; (Contact: Barbara Groden (914) 948-5800).

Nothing in this Appendix B shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the site.

Site Owner's Responsibilities:

1) The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the site.

2) In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in a Deed Restriction remain in place and continue to be complied with. The owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the site's Periodic Review Report (PRR) certification to the NYSDEC.

3) Upon reasonable notice, the owner shall grant access to the site to the RP and the NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.

4) The owner is responsible for assuring the security of the remedial components located on its property to the best of its ability. In the event that the owner becomes aware of damage or vandalism to the remedial components, the owner shall notify the site's RP and NYSDEC in accordance with the timeframes indicated in Section 2.4.2-Notifications.

6) In the event owner becomes aware that its action or inaction has adversely impacted the site, the owner must notify the site's RP and the NYSDEC in accordance with the time frame indicated in Section 2.4.2- Notifications and coordinate the performance of necessary corrective actions with the RP.

7) The owner must notify the RP and the NYSDEC of any change in ownership of the site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the site property. 6 NYCRR Part 375-1.11(d) contains notification requirements applicable to certain construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a change in use are detailed in Section 2.4 of the SMP. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8) Within 15 days of receipt, the owner must provide notice of the availability of indoor air quality test results that are produced with respect to the site and that exceed NYSDOH or OSHA guidelines on the site, whether produced by the NYSDEC, RP, or

owner, to the tenants on the site. The owner must also advise prospective tenants of the site in leases with those tenants of the site's participation in the Voluntary Cleanup Program, and of the availability of indoor air quality test results.

Remedial Party Responsibilities

1) The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the site.
2) The RP shall report to the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes periodic review reports and certifications, electronic data deliverables, corrective action work plans and reports, and other reporting required by the SMP.
3) If required by the owner, the RP shall provide the owner advanced notifications of work at the property. The RP shall provide to (i) the owner, upon the owner's request, and (ii) the NYSDEC, a copy of any data generated during the site visit and/or any final report produced.
4) If the NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner.
5) The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html .
6) The RP shall notify the NYSDEC of any defect, damage to or modification of the systems and/or Engineering Controls as required under Section 2.4.2 - Notifications of the SMP.
7) The RP shall notify NYSDEC of any ground-intrusive activities it proposes to undertake at the site as required under Section 2.4.2.
8) The RP is responsible for the on-site and off-site monitoring, and sample collection/analysis requirements of the SMP, as more particularly described in Appendices G and H, and for the inspection and proper operation and maintenance of any installed vapor intrusion mitigation systems associated with the site, as required in Appendix E (Christie Place Building, Operation, Maintenance, and Inspection Plan), and Appendix F (Offsite Inspection, Operation, and Maintenance Plans) of the SMP.
9) Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to the NYSDEC for approval an amended SMP.

Change in RP ownership and/or control and/or site ownership does not affect the RP's obligations with respect to the site unless a legally binding document executed by the NYSDEC releases the RP of its obligations.

Future site owners and RPs and their successors and assigns are required to carry out the activities set forth above.

APPENDIX C

EXCAVATION WORK PLAN

APPENDIX C – EXCAVATION WORK PLAN

C-1 NOTIFICATION

At least 7 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 Robert Filkins,

Senior Engineering Geologist, Remedial Bureau B
Division of Environmental Remediation, NYSDEC
625 Broadway, 12th Floor
Albany NY 12233-7016

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site intrusive elements or utilities to be installed, estimated volumes of contaminated soil and rock to be excavated and any other work that may impact the SSDS,
- 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, if it differs from the HASP provided in Appendix J of the Site Management Plan,
- Identification of disposal facilities for potential waste streams,
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

C-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all 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 NFA.

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, to the extent such uses are possible for the project..

C-3 STOCKPILE METHODS

Any stockpiles outside of buildings that may be created on the small site will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters 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 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.

C-4 MATERIALS EXCAVATION AND LOAD OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

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 qualified environmental professional. 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.

Loading procedures that minimize truck and wheel contamination will be used for work excavated materials. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be clean of external soils before leaving the site.

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

The qualified environmental professional 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.

C-5 MATERIALS 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.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements). Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Wastes from truck cleaning will be collected and disposed of off-site in an appropriate manner.

All trucks loaded with site materials will exit the vicinity of the site using only an NYSDEC-approved truck route. 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 is prohibited unless at an approved location.

C-6 MATERIALS DISPOSAL OFF-SITE

All soil/fill/rock/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, unless testing demonstrates another appropriate classification. If disposal of excavated materials 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 materials 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 Annual 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).

C-7 MATERIALS REUSE ON-SITE

Chemical criteria for on-site reuse of material have not been approved by NYSDEC. The qualified environmental professional will ensure that NYSDEC procedures are followed and that NYSDEC approves any criteria, and specification for how and where such materials may be used.

C-8 FLUIDS MANAGEMENT

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

CVOC concentrations in the groundwater has decreased significantly since the monitoring wells were installed in 2003. Recent sampling results indicated one of the well meets the drinking water standard and the other well has PCE concentrations a little above the drinking water standard. As a precautionary measure during well sampling, water removed from the monitoring well will be filtered through a portable activated carbon canister and discharged to the ground surface.

C-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the concrete cover system will be restored in a manner that replicates the current cover, unless an alternative has been proposed to and approved by the NYSDEC. A figure showing the modified surface will be included in the subsequent Annual Review Report and in any updates to the Site Management Plan.

C-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional 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). Soils that meet less stringent standards may only be accepted with prior NYSDEC approval. 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.

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.

C-11 STORMWATER POLLUTION PREVENTION

This site is less than 1 acre in size and would not require a stormwater construction permit. 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.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

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

Erosion and sediment control 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.

C-12 CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for chlorinated volatile organic compounds (CVOCs) by an approved EPA method for the media to be sampled (e.g. EPA TO-15 analytical method for air samples and EPA Method 8260 for soils), or as otherwise approved by NYSDEC.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

C-13 COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring program shall be developed for any excavation outside of the CPB, or if the building is removed or partially removed. Such a plan will be consistent with Appendix 1A of DER-10, Generic Community Air Monitoring Plan. It will include a figure showing the location of air sampling stations based on generally prevailing wind conditions. Such locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

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

C-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will depend on the pre-excavation soil testing. 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, these measures will include: (a) direct load-out of material to trucks for off-site disposal; (b) limiting the area of open excavations; (c) shrouding open excavations with tarps and other covers; and (d) using foams to cover exposed odorous soils or other material. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (e) use of chemical odorants in spray or misting systems; and, (f) 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.

C-15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of water spray, controlled to maintain moist material, but not sufficient to create runoff.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

C-16 OTHER NUISANCES

If dictated by site conditions, a plan for rodent or other pests' control will be developed and utilized by the contractor prior to and during site work. A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX D

KEY DOCUMENTS AND APPROVALS

(See Attachment H of the FER Document for Copies of the Documents)

(FER Attachment H Document Key Included Here)

Former Mimi Cleaners
FER Attachment H – Key Documents and Approvals – Descriptions

Submission Date	File Name	Building(s)	Document Description
9/17/1999	Doc-001	CPB	Voluntary Cleanup Agreement Application - CPB
5/1/2000	Doc-002	CPB	Remedial Work Plan-CPB **(also FER Attachment C)**
5/18/2000	Doc-003	CPB	DEC Comments on the March 2000 Remediation Work Plan-CPB
6/25/2000	Doc-004	CPB	Original VCA: V00306-3-CPB
8/31/2000	Doc-005	CPB	Additional Remedial Response-Progress Report-CPB **(also FER Attachment D)**
10/5/2000	Doc-006	CPB	LMS Response Letter to NYSDEC - Detailing the Excavation Activities Conducted and Proposed SVE System
1/9/2001	Doc-007	CPB	Request For Modification to the Remedial Work Plan - Proposed SVE System (includes NYSDEC Correspondence from 27 Oct through 7 Nov 2000) **(also FER Attachment E)**
3/23/2001	Doc-008	CPB	NYSDEC-Approval Letter To Hausman-SVE System Install-CPB
5/14/2001	Doc-009	CPB	LMS Letter to WCDOH - Air Permit Exhaust Stream Analysis - SVE System-CPB
5/16/2001	Doc-010	CPB	Letter To DEC-SVE Startup Notification-CPB
7/10/2001	Doc-011	CPB	Initial Monthly Progress Report to NYSDEC - SVE System-CPB
7/19/2001	Doc-012	CPB	DEC Letter To LMS: Approval of Reduction of SVE System Monitoring Frequency
5/17/2002	Doc-013	CPB	VCA Modification: V00306-3-CPB
8/01-4/02	Doc-014	CPB	Progress Reports to NYSDEC - SVE System-CPB
7/11/2002	Doc-015	CPB	Progress Report to NYSDEC - SVE System_Apr-July-2002 - Includes GW Data & Endpoint Soil Samples from SVE Area

CBP – Christie Place Bld
SPOB – Post Office Bld
EPB – East Parkway Bld
HBB – HSBC Bank Bld
SPB – Spencer Place Bld
HWB – Harwood Bld
2SPB – 2 Spencer Pl Bld
MRB – Metro Restaurant Bld
DCB – DeCicco Bld
HWCB – Harwood Court Bld
28PRB – 28 Popham Rd Bld

Submission Date	File Name	Building(s)	Document Description
7/02 - 6/05	Doc-016	CPB	Progress Reports to NYSDEC - SVE System-CPB
3/18/2003	Doc-017	CPB Area	Mimi-Spill Report Info-Gasoline Spills Info -Gas Station north of DCB
11/21/2003	Doc-018	CPB	DEC Comments Letter on the June-Oct Progress Report and Mention of DOH Fact Sheet on PCE and Requirement for additional Sub-Slab and Indoor Air Samples
1/22/2004	Doc-019	CPB, SPB	Proposed Sampling Scope Letter for Sub-Slab and Indoor Air Sampling - CPB
1/28/2004	Doc-020	CPB, SPB	NYSDEC-Approval Letter-Soil Gas-Indoor Air Sampling Work Scope
4/16/2004	Doc-021	CPB, SPB	Spencer-Christie Blds Sub-Slab-Indoor Air Sample Results Report
9/29/2004	Doc-022	CPB, SPB	Indoor Air Sample Results Letter-Response to DEC-DOH Comments -Response To Comments On Mitigation Measures
11/16/2004	Doc-023	CPB, SPB	Christie Pl-Spencer Pl Blds Sub-Slab Work Scope
11/24/2004	Doc-024	CPB, SPB	Proposed Sampling Scope Letter for Sub-Slab and Indoor Air Sampling – SPB-CPB
12/29/2004	Doc-025	CPB, SPB	DEC-Letter: Comments on Mitigation-SPB-CPB
5/3/2005	Doc-026	Project Area	Revised Soil Gas Delineation & Mitigation Investigation Work Scope
6/10/2005	Doc-027	Project Area	DEC-Approval-Revised Soil Gas Delineation & Mitigation Investigation Work Scope
6/14/2005	Doc-028	DCB, SPB	Revised DCB-SPB-Sub Slab Work Scope Letter
6/17/2005	Doc-029	DCB-SPB	DEC-Approval-DCB-SPB SG Sampling Work Scope
9/16/2005	Doc-030	DCB-SPB	DeCicco-Spencer Blds-Sub Slab Results Letter Report

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HWCB – Harwood Court Bld
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28PRB – 28 Popham Rd Bld
HBB – HSBC Bank Bld
MRB – Metro Restaurant Bld

Submission Date	File Name	Building(s)	Document Description
2/9/2006	Doc-031	Project	NYSDEC-Approval: Sample Analysis For Chlorinated VOCs Only
7/13/2006	Doc-032	Project Area	Soil Gas Sampling Report & Additional Soil Gas and Sub-Slab Sampling Recommendations
9/7/2006	Doc-033	Project Area	Soil Gas Sampling Report & Additional Soil Gas and Sub-Slab Sampling Recommendations
10/4/2006	Doc-034	DCB-SPB	DEC-Approval: Additional Soil Gas Work Plan
7/25/2007	Doc-035	HWB	Harwood Bld Sub-Slab-Indoor Air Sample Work Scope Letter
8/28/2007	Doc-036	HWB, SPOB	NYSDEC-Letter-Comments on HWB-SPOB - Sub-Slab-Indoor Air Work Scopes
9/28/2007	Doc-037	SPOB	SPOB Bld SS-SG Work Scope Letter
10/23/2007	Doc-038	SPOB	NYSDEC-Approval Letter - SPOB-Sub-Slab-Indoor Air Sampling Work Scope
11/15/2007	Doc-039	HWB	NYSDEC-Approval Letter: HWB-Sub-Slab-Indoor Air Sampling Work Scope
2/27/2008	Doc-040	SPOB	SPOB – Sub-Slab-Soil Gas Sampling Letter Report
3/10/2008	Doc-041	HWB	HWB Bld Sub-Slab-Indoor Air Sample Report
3/17/2008	Doc-042	HWB, DCB	HWB-DCB Additional Sub-Slab-Indoor Air Sampling Work Scope-Revision
3/17/2008	Doc-043	HWB, DCB	NYSDEC-Approval Letter: Additional Sampling Work Scope-HWB-DCB-Sub-Slab-Indoor Air
3/21/2008	Doc-044	HWB, HWCB	HWB-HWCB Bld Sub-Slab-Indoor Air Sampling Work Scope Letter
3/22/2008	Doc-045	HWB, DCB	NYSDEC Approval: HWB-DCB Additional SS-IA Sampling
5/6/2008	Doc-046	HWB	HWB Indoor Air Sampling Work Scope

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MRB – Metro Restaurant Bld
DCB – DeCicco Bld
HWCB – Harwood Court Bld
28PRB – 28 Popham Rd Bld

Submission Date	File Name	Building(s)	Document Description
5/13/2008	Doc-047	CPB-SPB	CPB-SPB_GW Results Report
5/20/2008	Doc-048	EPB	EPB Sub-Slab-Indoor Air Sample Work Scope Letter
6/11/2008	Doc-049	HWB, HWCB	Harwood Bld - Harwood Court Bld Sampling Letter Report
7/18/2008	Doc-050	EPB	NYSDEC-Approval Letter: EPB-Sub-Slab-Indoor Air Sampling Work Scope
10/21/2008	Doc-051	2SPB	HDR-Letter To P&G-Realty-2 Spencer Pl-Requesting Access
1/23/2009	Doc-052	EPB	EPB Sub-Slab-Indoor Air Resample Work Scope Letter
1/27/2009	Doc-053	EPB	NYSDEC-Approval: EPB Sub-Slab-Indoor Air Resample Work Scope
3/3/2009	Doc-054	DCB	DeCicco Bld Memo: Additional Extraction Leg Installation for SSDS
3/4/2009	Doc-055	DCB	NYSDEC Approval-Email: DCB Additional Extraction Leg Installation
6/22/2009	Doc-056	28PRB	28PRB Sub-Slab-Indoor Air Sample Work Scope Letter
7/7/2009	Doc-057	EPB	EPB SSDS Installation Memo
7/9/2009	Doc-058	28PRB	28PRB Sub-Slab-Indoor Air Sample Work Scope Revised Letter
7/16/2009	Doc-059	28PRB, EPB	NYSDEC-Approval-Email_28PRB-Sub-Slab Sampling-EPB SSDS System Revision Approval
7/20/2009	Doc-060	2SPB	NYSDEC-Letter_DougCarp-2Spencer-Requesting Access -Tenants were cc'd
7/31/2009	Doc-061	2SPB	NYSDEC-Letter_DougCarp-2Spencer-Requesting Access
8/21/2009	Doc-062	28PRB	28 Popham Rd Sub-Slab-Indoor Air Results Letter Report

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MRB – Metro Restaurant Bld
DCB – DeCicco Bld
HWCB – Harwood Court Bld
28PRB – 28 Popham Rd Bld

Submission Date	File Name	Building(s)	Document Description
10/1/2009	Doc-063	CPB	Christie Place Bld SSDS O&M Manual
10/1/2009	Doc-064	SPB	Spencer Place Bld SSDS O&M Manual
10/1/2009	Doc-065	HWB	Harwood Bld SSDS O&M Manual
10/1/2009	Doc-066	DCB	DeCicco Bld SSDS O&M Manual
10/1/2009	Doc-066A	DCB	Scarsdale Post Office Bld SSDS O&M Manual
2/17/2010	Doc-067	28PRB	28 Popham Rd Bld SS-IA Resample Work Scope Letter
2/17/2010	Doc-068	MRB	Metro Restaurant Bld SS-IA Sample Work Scope Letter
2/22/2010	Doc-069	28PRB, MRB	NYSDEC-Approval: 28PRB SS-IA Resample Work Scope & MRB SS-IA Work Scope
2/22/2010	Doc-070	CPB	NYSDEC-Approval To Remove Small Fan From Embassy Cleaners
4/16/2010	Doc-071	28PRB	28 Popham Rd Bld SS-IA Resampling Results Letter
4/16/2010	Doc-072	MRB	Metro Restaurant Bld SS-IA Resampling Results Letter
5/26/2010	Doc-073	2SPB	2 Spencer Place Bld Work Scope
6/16/2010	Doc-074	2SPB	NYSDEC-Approval Spencer Pl Bld Work Plan
7/19/2010	Doc-075	CPB	Christie Bld SSDS Annual Report
7/19/2010	Doc-076	DCB	DeCicco Bld SSDS Annual Report
7/19/2010	Doc-077	HWB	Harwood Bld SSDS Annual Report

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HWCB – Harwood Court Bld
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2SPB – 2 Spencer Pl Bld
28PRB – 28 Popham Rd Bld
HBB – HSBC Bank Bld
MRB – Metro Restaurant Bld

Submission Date	File Name	Building(s)	Document Description
7/19/2010	Doc-078	SPOB	Scarsdale PO Bld SSDS Annual Report
7/19/2010	Doc-079	SPB	Spencer Bld SSDS Annual Report
8/09/2010	Doc-080	2SPB	2 Spencer Place SS-IA Summary Report
9/15/2010	Doc-081	2SPB	NYSDEC-Letter_2 Spencer Pl- Additional Sampling Location Recommendations
10/25/2010	Doc-082	2SPB	2 Spencer Place SS-IA Work Plan Additional Sampling
10/28/2010	Doc-083	SPOB	Westchester County DOH Air Permit CO, SPOB
11/9/2010	Doc-084	2SPB	NYSDEC-Letter: Approving 2 Spencer Pl-Additional Sampling Work Scope
11/23/2010	Doc-085	MRB	Metro Restaurant Bld SS-IA Resampling Scope Work Letter
11/23/2010	Doc-086	28PRB	28 Popham Rd Bld SS-IA Resample Scope Work Letter
11/24/2010	Doc-087	MRB	NYSDEC- Approval Metro Restaurant Bld-28 Popham Rd SS-IA Resampling Letter
12/7/2010	Doc-088	SPB	Westchester County DOH Air Permit CO, Spencer Bld
12/17/2010	Doc-089	2SPB	Letter from 2 Spencer Pl Bld Owner's Counsel to NYSDEC indicating they are installing their own SSDS.
1/27/2011	Doc-090	HBB	HSBC Bank Bld IA Work Plan
2/1/2011	Doc-091	HBB	NYSDEC-Approval Letter HSBC Bank Bld IA
2/8/2011	Doc-092	28PRB	28 Popham Rd Bld SS-IA Sampling Report
2/8/2011	Doc-093	MRB	Metro Restaurant Bld SS-IA Sampling Report

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MRB – Metro Restaurant Bld
DCB – DeCicco Bld
HWCB – Harwood Court Bld
28PRB – 28 Popham Rd Bld

Submission Date	File Name	Building(s)	Document Description
3/1/2011	Doc-094	SPOB, CPB, SPB, DCB	Revision-SSDS Assessment Study Work Scope Fall 2011
3/3/2011	Doc-095	SPOB, CPB, SPB, DCB	NYSDEC-Approval Letter SSDS Assessment Study Work Scope Fall 2011
3/17/2011	Doc-096	HBB	HSBC Bank Bld IA Summary Report
3/31/2011	Doc-097	28PRB, HBB, MRB	NYSDEC-Recommendation Approval Letter 28 Popham Rd Bld/HSBC Bank Bld/Metro Restaurant Bld
5/1/2011	Doc-097A	DCB	East Parkway Bld SSDS O&M Manual
8/29/2011	Doc-098	SPOB, CPB, SPB, DCB	SSDS Assessment Study-May-June Interim Report
8/30/2011	Doc-099	CPB, SPB	GW Sampling Report-June 2011 Sampling Event
8/31/2011	Doc-100	EPB	East Parkway Bld SS-IA Sampling Report
11/17/2011	Doc-101	CBP	Christie Bld SSDS Annual Report-2010
11/17/2011	Doc-102	DCB	DeCicco Bld SSDS Annual Report-2010
11/17/2011	Doc-103	HWB	Harwood Bld SSDS Annual Report-2010
11/17/2011	Doc-104	SPOB	Scarsdale PO Bld SSDS Annual Report-2010
11/17/2011	Doc-105	SPB	Spencer Bld SSDS Annual Report-2010
1/23/2012	Doc-106	HBB, 28PRB, EPB	Email Correspondence - HSBC Bank Bld IA Scope & 28PRB and EPB SS-IA Sample Scope Outline

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DCB – DeCicco Bld
HWCB – Harwood Court Bld
28PRB – 28 Popham Rd Bld

Submission Date	File Name	Building(s)	Document Description
2/10/2012	Doc-107	SPOB, CPB, SPB, DCB	SSDS Assessment Study-Fall 2011
2/27/2012	Doc-108	SPOB, CPB, SPB, DCB	NYSDEC-Response Letter-SSDS Shutdown Assessment-Correction
2/17/2012	Doc-109	CPB	Christie Place Bld ISCO Treatment Pilot Test Scope
2/27/2012	Doc-110	CPB	NYSDEC-Response Letter to Christie Place Bld ISCO Treatment Pilot Test Scope
3/28/2012	Doc-111	HWB, EPB	Revision SSDS Assessment Study-2012 Harwood Bld-East Parkway Bld
3/28/2012	Doc-112	HWB, EPB	NYSDEC Approval Letter-Revision SSDS Assessment Study-2012 Harwood Bld-East Parkway Bld
4/3/2012	Doc-113	HBB	HSBC Bank Building IA Sampling Report
4/9/2012	Doc-114	28PRB	28 Popham Rd Bld SS-IA Sampling Report
4/25/2012	Doc-115	28PRB, HBB, EPB	NYSDEC-Response letter 28 Popham Rd Bld/HSBC Bank Bld/ East Parkway Bld
05/17/2012	Doc-116	HSBC	NYSDEC-Response letter HSBC Bld-Revised IA Report
7/16/2012	Doc-117	HWB, EPB	SSDS Assessment Study Report 2012 Harwood Bld-East Parkway Bld
7/20/2012	Doc-118	CPB	Christie Bld SSDS Annual Report-2011
7/20/2012	Doc-119	DCB	DeCicco Bld SSDS Annual Report-2011
7/20/2012	Doc-120	EPB	East Parkway Bld SSDS Annual Report-2011
7/20/2012	Doc-121	HWB	Harwood Bld SSDS Annual Report-2011

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MRB – Metro Restaurant Bld
DCB – DeCicco Bld
HWCB – Harwood Court Bld
28PRB – 28 Popham Rd Bld

Submission Date	File Name	Building(s)	Document Description
7/20/2012	Doc-122	SPOB	Scarsdale PO Bld SSDS Annual Report-2011
7/20/2012	Doc-123	SPB	Spencer Bld SSDS Annual Report-2011
11/14/2012	Doc-124	CPB-SPB	Christie Place Bld GW Sampling Results – July 2012 Sampling Event
1/24/13	Doc-125	CPB	NYSDEC Approval Letter to Reduce GW Sampling Frequency
12/13/2012	Doc-126	EPB, DCB, HWB	Westchester County DOH Air Permit CO, East Parkway Bld, DeCicco Bld, Harwood Bld, Christie Place Bld
2/28/2013	Doc-127	CPB	Christie Place Bld ISCO Treatment Pilot Test Summary Report
3/1/2013	Doc-128	SPOB	SSDS Compliance Sampling Report Nov-2012 Post Office Bld
3/1/2013	Doc-129	SPB	SSDS Compliance Sampling Report Nov-2012 Sampling-SPB
3/1/2013	Doc-130	HWB	SSDS Compliance Sampling Report Nov-2012 Sampling-HWB
3/1/2013	Doc-131	DCB	SSDS Compliance Sampling Report Nov-2012 Sampling-DCB
3/1/2013	Doc-132	EPB	SSDS Compliance Sampling Report Nov-2012 Sampling-EPB
4/26/2013	Doc-133	SPOB, SPB, HWB, DCB, EPB	DEC-Response Letter: SSDS Compliance Sampling Report Nov-2012:SPOB, SPB, HWB, EPB, DCB
5/1/2013	Doc-134	CPB	DEC-Response Letter: Christie Place Bld ISCO Treatment Pilot Test Summary Report
11/7/13	Doc-135	SPOB, SPB, HWB, DCB, EPB, HWB	Summary Tables and Figures requested by NYSDEC & NYSDOH summarizing the data collected at the Blds that have (or had) SSDSs operating – Email Correspondence
4/15/2014	Doc-136	28PRB	Sub-Slab Vapor and Indoor Air Sampling – 2013-2014 Heating Season Summary Report – 28 Popham Road Building

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DCB – DeCicco Bld
HWCB – Harwood Court Bld
28PRB – 28 Popham Rd Bld

Former Mimi Cleaners
FER Attachment H – Key Documents and Approvals – Descriptions

Submission Date	File Name	Building(s)	Document Description
4/15/2014	Doc-137	DCB	Sub-Slab Vapor and Indoor Air Sampling – 2013-2014 Heating Season Summary Report – DeCicco Building
4/15/2014	Doc-138	EPB	Sub-Slab Vapor and Indoor Air Sampling – 2013-2014 Heating Season Summary Report – East Parkway Building
4/15/2014	Doc-139	HWB	Sub-Slab Vapor and Indoor Air Sampling – 2013-2014 Heating Season Summary Report – Harwood Building
4/15/2014	Doc-140	SPB	Sub-Slab Vapor and Indoor Air Sampling – 2013-2014 Heating Season Summary Report – Spencer Place Building
4/15/2014	Doc-141	SPOB	Sub-Slab Vapor and Indoor Air Sampling – 2013-2014 Heating Season Summary Report – Post Office Building
4/21/2014	Doc-142	CPB	Sub-Slab Vapor and Indoor Air Sampling – 2013-2014 Heating Season Summary Report – Christie Place Building
6/2/2014	Doc-143	28PRB, DCB, EPB, HWB, SPB, SPOB, CPB	DEC-Response Letter & Recommendation Approvals: SS Vapor and IA Sampling – 2013-2014 Heating Season Summary Reports:28PRB, DCB, EPB, HWB, SPB, SPOB, CPB

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MRB – Metro Restaurant Bld
DCB – DeCicco Bld
HWCB – Harwood Court Bld
28PRB – 28 Popham Rd Bld

APPENDIX E

CHRISTIE PLACE BUILDING

OPERATION, MAINTENANCE, AND INSPECTION PLAN

OPERATIONS & MAINTENANCE PLAN

SUB-SLAB DEPRESSURIZATION SYSTEM

FORMER MIMI CLEANERS SITE

(VOLUNTARY CLEANUP AGREEMENT SITE # V00306-3)

CHRISTIE PLACE BUILDING

Scarsdale, NY

Westchester County

Prepared By:

HDR Engineering, Inc.

One Blue Hill Plaza

Pearl River, NY 10965

May 2014

Revision 1

TABLE OF CONTENTS

SECTION

1.0 EQUIPMENT AND SPECIFICATIONS

1.1 Regenerative Blower Unit

1.1.1 Metal Enclosure Unit (on roof)

- **Outside Components**

- Safety On/Off Switch on outside of metal enclosure (Siemens General Duty Enclosed Switch – Type VBII)
- 110 VAC outdoor outlet on outside of metal enclosure

- **Inside Components**

- Regenerative 206 SCFM Ring Compressor (Fuji Electric Model VFC600A-7WS) (4.5 HP, 230 VAC, 3-phase, TEFC)
- Muffler
- 15-Gallon Moisture Separator Tank
- Moisture Separator Tank Float Switch (W.E. Anderson FlotecT Float Switch - Model L6EPB BS3C)
- Inlet Particulate Filter (GAST Model AJ151G) (Replacement Filter Element AJ135G)
- Air Bypass Valve Inlet Particulate Filter (Solberg Model FS-19P-15)
- Photohelic Pressure Switch/Gauge (Dwyer Series 3000 Model 3100C)
- Motor Control Panel Enclosure (Ultra Guard Model AM 1206)

1.1.2 Motor Control Panel (inside metal enclosure on roof)

- IDEC SmartRelay Control (Model FL1C-H12RCC)
- IDEC Contactors (Models YS1N-20 & YS1T-RHA25F)
- On/Off Switch (Hand-Off-Auto)
- High Liquid Alarm Indicator Light
- High Vacuum Indicator Light
- Low Vacuum Indicator Light
- Reset Button
- Running Time Meter

1.1.3 Inside Pressure Monitoring Panel (in Spencer Place Hallway)

- Aluminum Hinged Panel with Clear Cover (UltraLine Model AM-1648)
- Differential Pressure Gauges (8) (Dwyer Minihelic II Series 2-5000 (0-10 in. of water)
- Differential Pressure Transmitters (8)
- (Dwyer 616 Series; Models 616K-04, 616-2, & 616-3 [0-10, 0-6, & 0-10 in. of water, respectively])
- Onset Hobo Data Loggers (2) (Model U12 4-External Channel)
- Sola Power Supply (Model SDN-2.5-24-100)

1.2 Extraction Points & Lateral Suction Legs

- 2-in. diameter schedule 40 PVC Slotted Well Screen Extraction Point (well screen extends below floor slab or through basement wall)
- Schedule 40 and 80 PVC Lateral Leg Piping (2-in. and 3-in. diameter)
- Extraction Point / Lateral Suction Leg Control Valves (Milwaukee Valve Co. Model BB2FS100)
- 1/4” Vacuum Lines
- Specified Technologies Inc. (STI) Specseal LLC Firestop Collar Model LCC150 UPC No. 03901 for through-wall penetrations
- Various wall supports and ceiling hangers to support piping

2.0 SYSTEM INSTALLATION

The SSDS for the CPB was designed and installed by INTEX Environmental Group, Inc. (INTEX) of Pipersville, PA under the direction of HDR. The SSDS for this building is similar in design at each of the buildings within the study area. A general description of the SSDS design is summarized below and details relevant to the building's specific layout follow. See Figure 1 for the location of the CPB in Scarsdale, New York. Figure 2 shows the layout of the SSDS for the CPB.

Prior to installation of the SSDS, the floor in the CPB floor was inspected for cracks or openings. This building is a slab-on-grade construction with a center hallway. The southern portion of the floor slab is about 4 ft lower than the northern portion with the center hallway at the same grade as the northern portion of the building. Where necessary, cracks were sealed and any openings in the slab were sealed. There are four tenant spaces in the southern portion and five tenant spaces in the northern portion of the building. HDR did not have access to two of the stores based on the tenant's requests to West-Ex Associates (see the shaded spaces in Figure 2). In many of the stores where extraction points and lateral legs were required in the retail portion of the stores the installation work was conducted during off-hours to minimize disruptions to the normal operations of the stores.

The communication testing data from the adjacent Spencer Place Building (SPB) was used to design the SSDS for the CPB. For the SPB the communication testing was conducted to aid in the design of an effective SSDS (e.g., number of extraction points, blower size, radius of influence below the basement slab, piping size, etc.). A Shop-Vac® commercial/industrial use wet/dry vacuum (Model No. 925-50-10) with a suction pressure of 80 inches of water column was used to apply a vacuum at various pressures at a number of locations to help determine the radius of influence below the basement slab by measuring the differential pressure at various locations around the vacuum point with a low-range differential pressure manometer (Gray Wolf Zephyr II digital micro-manometer, or equivalent). It was assumed the material under the CPB would be similar to that of the SPB. SSDS for the CPB was designed so that additional extraction legs could be added if necessary. Additional extraction legs were added to the SSDS in the center hallway after the data from the initial rounds of differential pressure measurements were reviewed.

As part of the SSDS design for the CPB, extraction points for the SSDS were installed through the floor and piped to a blower mounted on the roof of the building. INTEX cored through the concrete floor at designated locations and installed a 2-in. diameter schedule 40 PVC well screen point approximately 1.5-2 feet below the slab (see photographs). This screened section of PVC was sealed in place at the top of the slab with a concrete grout and coupled to PVC piping.

The PVC piping for the extraction points runs up to the ceiling and joins a PVC lateral suction leg. The piping from the extraction point to the lateral suction leg and the lateral suction leg piping are schedule 40 or schedule 80 PVC depending on the location and potential for it getting knocked into and/or disturbed. The lateral suction legs run to the center hallway area where they join with other lateral suction legs and eventually they manifold into two PVC discharge pipes. These pipes exit the center hallway area near the top of the wall where they go through a wall penetration and up to the blower located on the roof of the northern portion of the building (the

roof elevation of the northern portion of the building is about 4 feet above the elevation of the roof of the southern portion of the building). In addition, the discharge stack from the soil vapor extraction (SVE) system that was installed in the area of the former Mimi Cleaner's store has been modified and connected to the SSDS blower on the roof to provide coverage under the slab in this northeast section of the building. The SVE system was shut down because it had effectively removed all of the residual contamination that it could. All lateral suction leg piping penetrations through walls inside the building were sealed with fire-proof collars in accordance with applicable codes.

The SSDS discharge piping (the two legs from the center hallway and the pipe from the SVE system discharge stack) is manifolded together and connected to a regenerative blower (4.5 HP) mounted on the roof of the CPB. The blower is housed in a weather-tight metal enclosure with an enclosed safety on/off disconnect switch mounted on the outside of it. The blower package inside the metal enclosure also contains a PLC-based motor control panel. The motor control panel contains IDEC Contactors/Starters and an IDEC SmartRelay control. The display window of this electronic control panel displays the 3-position on/off switch (Hand-Off-Auto), high/low pressure blower shutdown indicator lights, a high level liquid indicator light, a reset button, and a running time meter. The blower package inside the metal enclosure also contains intake air filters, a 15-gallon moisture separator tank with a float switch, and a differential pressure switch/gauge with adjustable high/low shutdown set points. The discharge pipe from the blower package contains a muffler/silencer.

Each vertical extraction leg of the SSDS has an in-line gate valve to provide manual adjustment to be able to balance the suction rates from the individual points to adjust the radius of depressurization/influence at each of the points allowing the system to achieve proper depressurization under the slab of the CPB. In addition, the blower has an ambient air by-pass value on it to allow adjustment of the vacuum provided by the blower itself.

There are seven vacuum lines tapped into the lateral suction leg piping at various locations to monitor and document the differential pressure in the lateral legs of the system. Small diameter vacuum tubing is tapped into the pipe at these locations and the tubing runs back along the piping to the pressure monitoring panel located on the wall in an alcove off the center hallway near the western end of the hallway by the back door of the jewelry store. These vacuum hoses are attached to differential pressure gauges (Dwyer Minihelic II gauges; 0-10 inches of water column) for real-time readings/documentation that the SSDS is providing sufficient vacuum in the lateral suction leg where it is attached. These gauges are labeled below the gauges to indicate which lateral leg they are attached to:

VL-1 (Gauge not in use)

- VL-2 (Lange's Deli Leg)
- VL-3 (Embassy Cleaners Leg)
- VL-4 (Lange's Pizza Shop)
- VL-5 (Frame Shop Leg)
- VL-6 (Clothing Shop Leg)
- VL-7 (Women's Bathroom Leg)
- VL-8 (Jewelry Store Leg)

This allows HDR personnel or a trained representative to periodically check the gauges and document the system is running properly. If it appears there is a problem or a significant decline in the differential pressure gauge readings HDR will be notified immediately so the issue can be investigated and corrected as required.

In addition, the vacuum lines are split in the system control/monitoring panel and the other leg of the vacuum line is attached to a differential pressure transmitter (Dwyer Series 616 and 616K). The transmitters convert the reading into a 4-20 mA output signal which is sent to two 4-channel data logger (Hobo Model U12). The data logger can store the four channels of data for approximately 6 months. The data from the data logger are downloaded to a laptop computer to provide documentation that the SSDS has been working properly (continuous data and readings that remain fairly consistent).

There are permanent differential pressure sample ports (DPSPs) in the floor of the building that can be accessed periodically to measure and document the pressure differential under the slab throughout the basement of the building to ensure the SSDS is providing adequate negative pressure under the slab. At a few locations we installed the DPSPs through the outside walls because we could not get permission from a few tenants to install the points in the floors of their stores. There are a total of 18 DPSPs installed in the CPB (CB-DP-15 was removed and sealed with concrete). One of these ports, CP-DP-02, is not monitored anymore because an extraction point was installed right next to it at the west end of the center hallway. These sample ports are sealed with a threaded plug when not in use (see photograph).

As stated previously, the SSDS design layout inclusive of DPSP monitoring locations, extraction points, suction laterals, vacuum points, and the discharge piping location for the CPB is shown on Figure 2.

3.0 SYSTEM OPERATION

3.1 Regenerative Blower Operation

At the main blower control panel in the metal enclosure on the roof of the CBP there is a Hand-Off-Auto switch for the regenerative blower that energizes the motor starter circuit to the blower. In order for the blower to operate the Hand-Off-Auto switch must be in the Hand or Auto setting. In the Hand position, the blower will operate while bypassing any alarm conditions (high level liquid, blower high vacuum, and blower high pressure). With the switch set in the Auto position, all alarms are functional and the control panel will shut down the blower if an alarm condition occurs. Power is supplied to the blower from a 30-amp 3-pole breaker located in the dedicated 100-amp 3-phase main circuit breaker panel in the electric room of the SPB. There is also a fused emergency disconnect safety switch for the system mounted on the outside of the metal blower enclosure.

3.1.1 Motor Starter & Circuit Breakers

Power to the blower control panel is supplied by a 30-amp 3-pole breaker located in the dedicated 100-amp 3-phase main breaker panel in the electrical room of the SPB.

3.1.2 Blower Control Panel

The blower control panel houses the regenerative blower motor starter with overload protection. The motor starter overload relay is designed to interrupt power to the SSDS blower if the amperage draw is more than 15 amps. Power to the motor starter is supplied by a 230 VAC 30-amp 3-pole breaker. It is additionally protected by the 20- amp fuses in the fused safety disconnect enclosure mounted on the side of the metal blower housing. The blower motor amperage draw during normal operation should be 12.8 amps.

3.2 Alarm Conditions

The blower control panel contains the indicator lights displayed through the clear door of the enclosure panel inside the metal blower enclosure. The panel contains the Hand-Off-Auto switch with a system running indicator light (green). This panel also displays the high level liquid, blower high-pressure, and the blower low-pressure indicator lights (red) along with a manual reset button for the alarms. When the blower is running in the “Auto” position and an alarm condition occurs the indicator light will illuminate and the blower will shut down if high water or high vacuum conditions exist more than 30 seconds. If a low vacuum condition exists for more than 30 seconds the low vacuum indicator light will be illuminated and the system will remain running. See Section 5.5 in the troubleshooting and maintenance section for instructions on alarm condition remedies. If the system is running in the “Hand” position the indicator lights will illuminate if an alarm condition occurs, however, the blower will not shut down.

3.3 Blower Package Sensors and Gauges

The blower package is equipped with a photohelic differential pressure switch/gauge which shows the operating pressure (vacuum) of the blower and it also displays the adjustable low-vacuum and high-vacuum set points for the blower.

3.4 Moisture Separator

The moisture separator should be checked on a routine basis to determine if the system is collecting moisture from the extraction points. If the high liquid indicator light is on it indicated the float switch has sensed a high-liquid condition and the blower will be shut down to protect it from pulling water through it. There is a manual drain valve at the bottom of the tank to drain the liquid. Once the tank is emptied, the switch will reset and normal operation can resume after resetting the alarm condition in the motor control panel.

3.5 Pressure Monitoring Panel

The pressure monitoring panel is in an alcove off the center hallway near the back door of the jewelry store. This panel contains differential pressure gauges, differential pressure transmitters, and two data loggers. The power to the monitoring panel is supplied from the main breaker panel in the electrical room of the SPB. The power for the monitoring panel is protected by a 2-amp quick blow fuse located in the panel. The pressure transmitters receive DC power from the 200-watt Sola power supply/transformer unit in the monitoring panel. The data loggers are powered by a 3 volt “button” battery (Duracell DL 2032, or equivalent). When the data is downloaded from the data loggers the voltage on the batteries should be checked and replaced if necessary.

4.0 SYSTEM MONITORING

Once the SSDS was operational, differential pressure readings were collected from the DPSPs. It was determined that additional extraction points were required in the center hallway area because there did not appear to be sufficient communication in the center hallway with the extraction points in north and south portions of the building. Three additional extraction points were installed in the center hallway area. The valves on the extraction legs were adjusted to provide sufficient vacuum draw under the slab in all portions of the building. When necessary, the valves on the extraction legs can be adjusted to re-balance the system and ensure that a negative pressure field and proper coverage is maintained under the slab-on-grade floors of the CPB.

The differential pressure gauges displayed in the door window of the pressure monitoring panel provide real-time differential pressure readings from seven locations along the lateral suction legs of the system (there is one gauge [VL-1] that is in the panel but it is not hooked up to anything. The gauge readings are monitored monthly (at a minimum) by HDR or a trained representative to provide real-time documentation that the SSDS is running properly and providing consistent negative pressure in the different sections of the system as described previously. The pressure gauge readings will be recorded on the datasheet (see attached Inspection Forms) over the life of system operation. The pressure gauge readings should be compared against previous readings. If there is a significant decrease in the readings it is possible that a change has occurred that may have affected the balance of the system or there is a problem with the vacuum in the lateral leg that is showing the significantly decreased reading. A cellular modem notification system has been installed on the SSDS to inform the Remedial Party and/or HDR on a routine basis that the system is operating. This system will eliminate the requirement for routine monthly physical checks. HDR will be notified immediately if there is a significant drop in the readings or if it appears there is a problem with the SSDS. HDR will diagnose the issue or problem and provide the required maintenance and/or repairs (see Section 5.0, Troubleshooting and Maintenance).

As long as the CPB system is operating, HDR will conduct quarterly inspections of the CPB SSDS. The differential pressure gauge readings will be observed and documented on the datasheet (see Inspection Forms). The differential pressure transmitters convert the readings into a 4-20 mA signal which is recorded on two Onset Hobo data loggers. The data from the data loggers will be downloaded on a quarterly basis. The data from the data logger provides documentation that the SSDS has been running consistently and is providing sufficient negative pressure in the different sections of the SSDS. The logged data recorded on the data loggers will be downloaded to a laptop for review at another time. The battery on the loggers will be replaced if necessary before starting them back up.

Where accessible, the extraction legs and the lateral suction leg piping will be inspected for any problems or damage. The blower package on the CPB roof will be inspected to document that the unit is running properly. If it appears there is a substantial amount of liquid in the moisture separator the system will be shut down and the tank inspected to determine how much water has collected in it. The inline filter on the blower will be inspected for visible signs of dirt impregnation and replaced if necessary.

A handheld digital differential pressure gauge (Love Controls Model HM28 or equivalent) capable of reading differential pressure down to 0.001 inches of water column will be used to measure the differential pressures from 17 DPSPs installed in the floor (that are accessible) to document that sufficient negative pressure is being maintained under the slab in these areas. The differential pressure data will be reviewed and, if necessary, the system will be re-balanced by adjusting the control valves on the extraction points and/or adjustment of the blower ambient air by-pass valve to increase or reduce flow as required from the different sections of the lateral suction legs to maximize the system's capture under the slab of the building.

HDR will conduct annual maintenance inspections during one of the quarterly inspection events. In addition to the tasks outlined for the quarterly inspection events, HDR will inspect the floor area for cracks or new penetrations in the floor or construction activities that may affect the SSDS's operational efficiency. HDR will interview the building representative to determine if there have been any construction, renovation, or upgrade activities (e.g. installation of a new water main or gas lines or renovation of the heating system, or tenant space renovations) that could have affected the performance or balance of the SSDS. The inspection will also include identification and repair of leaks within the piping and inspection of the exhaust, discharge pipe. Where necessary, repairs will be conducted and noted on the appropriate inspection form. Preventative maintenance shall be conducted as recommended by the manufacturer and for adherence to applicable warranties. Troubleshooting and maintenance is covered in more detail in Section 5.

5.0 TROUBLESHOOTING AND MAINTENANCE

5.1 Regenerative Blower Maintenance

The Fuji Electric regenerative blower at this site is designed with maintenance-free, single stage dynamics, free of contacting moving parts other than the motor ball-bearings and the shaft seal. The blower motor ball-bearings are permanently sealed and the bearings are rated for 15,000 - 20,000 hours on average for continual maintenance-free operation. Refer to the manufacturer supplied information for the blower presented in Section 7.

The inline filter should be inspected and cleaned if there are visible signs of dirt impregnation. Particle buildup on the filter element will reduce flow through the filter and an increase in vacuum will be noticed from the normal operating vacuum range. The filter can be cleaned by scrubbing it with a mild soap and water solution and allowing it to completely dry before inserting it back into the filter housing.

5.2 SSDS Moisture Accumulation

There is potential for moisture accumulation in the moisture separator tank and/or low sections of the lateral suction leg piping. This water should be drained as necessary to ensure the system operates properly. The moisture separator has a float switch on it such that the blower motor will be shut down when the tank is approximately half full to avoid water damage to the blower motor. Water accumulation in the lateral leg piping could restrict air flow and cause a reduction of vacuum on the upstream side of the restriction. Water that accumulates in the system is from condensate build-up. The extraction legs extend below the slab a foot or less which is well above groundwater elevations in this area.

5.3 Extraction Legs - Lateral Suction Legs – Discharge Piping to the Blower Unit

The PVC piping has glued joints for the most part and does not require any maintenance. At a few connection points rubber hose-clamp fittings were used to connect the system. If there appears to be a drop-off in the differential pressure reading at one of the four ports an inspection should be done to make sure there has been no damage to the extraction point(s) or the lateral suction leg piping in this area and all of the connection points are properly attached and sealed including the flow control valves. The flow control valves at each extraction point should be checked to make sure they were not inadvertently closed off.

5.4 Pressure Monitoring Panel

The differential pressure gauges and transmitters are basically maintenance-free. The differential pressure gauges do not have any power requirements. The differential pressure transmitters receive DC power from the Sola power supply/transformer unit in the monitoring panel. If the Hobo data loggers are not receiving data and it has a fresh battery in it check to make sure the transmitters are wired to the power source. The data loggers are powered by a “button” battery; they have a red LED on them that flashes intermittently to indicate they are functioning normally and receiving data. Generally the batteries in these units will last more than a year. When the loggers are downloaded the software checks the battery condition. If the voltage on the battery appears to be dropping it should be replaced. If the transmitters are receiving power from the

power supply and are still not sending data to the data logger they may be faulty and may need to be replaced.

If the readings from one or more of the differential pressure gauges is significantly lower than normal and the blower is running properly and the DPSP readings are similar to past readings check the following:

- Check and listen to the lateral suction legs to determine if they have water in them (drain if necessary)
- Check the tubing connection points in the monitoring panel; make sure they are properly attached and sealed to the gauges and transmitters
- Check the connection points where two sections of the vacuum tubing are joined together
- Check the locations where the tubing is attached to the piping (threaded fittings screwed into the lateral suction leg piping and connected to the tubing with a barbed fitting).

If the quarterly differential pressure readings from one or more of the DPSPs are significantly lower than normal or below the low-end guidance value provided in the NYSDOH guidance document for vapor intrusion (Guidance for Evaluating Soil Vapor Intrusion in the State of New York - October 2006) which is 0.002 inches of water column) check the following items:

- Check the blower to make sure it is running properly and the intake vacuum is within the operating range
- If the blower is running at a higher vacuum and is still not pulling sufficient air the intake particulate filter(s) may need to be cleaned/replaced
- Check the extraction points and lateral suction legs to make sure they are not damaged
- Check the lateral suction leg control valves to make sure they are open and/or have not been significantly changed
- Check the floor for new cracks and/or penetrations to make sure they are not damaged
- Check the DPSPs to ensure they are not clogged due to moisture

5.5 Troubleshooting Guide

The following table lists procedures to correct system alarm conditions for the blower package:

	Possible Cause	Remedy
Moisture Separator High-Level	Moisture separator is full & high-level switch tripped Liquid level switch could be faulty	Drain separator via manual drain at the bottom of the tank. Remove, check continuity while moving the float switch up and down
Blower High Vacuum	Extraction legs all closed? Is air flow restricted on the SSDS discharge piping to the blower Air filter restricting	At least one extraction leg or bypass valve must be open. Check piping before blower for restriction Clean or replace air filter
Blower High Pressure	Something blocking flow on discharge side of the blower	Check effluent piping for restrictions/blockage causing back pressure
Blower won't run	Overload Relay is tripped Motor Control Panel fuse is blown. Fuses blown in fused safety disconnect switch Load center control panel breaker is tripped	Reset overload relay Check for continuity in power circuit to blower. If continuity good, check fuses, if fuses are bad replace. Reset breaker in load center
Monitoring Panel not working	2-amp control power fuse blown No power to system control/monitoring panel	Replace fuse Check fuses in safety disconnect, check 30-amp main breaker in the Electrical Room in the SPB

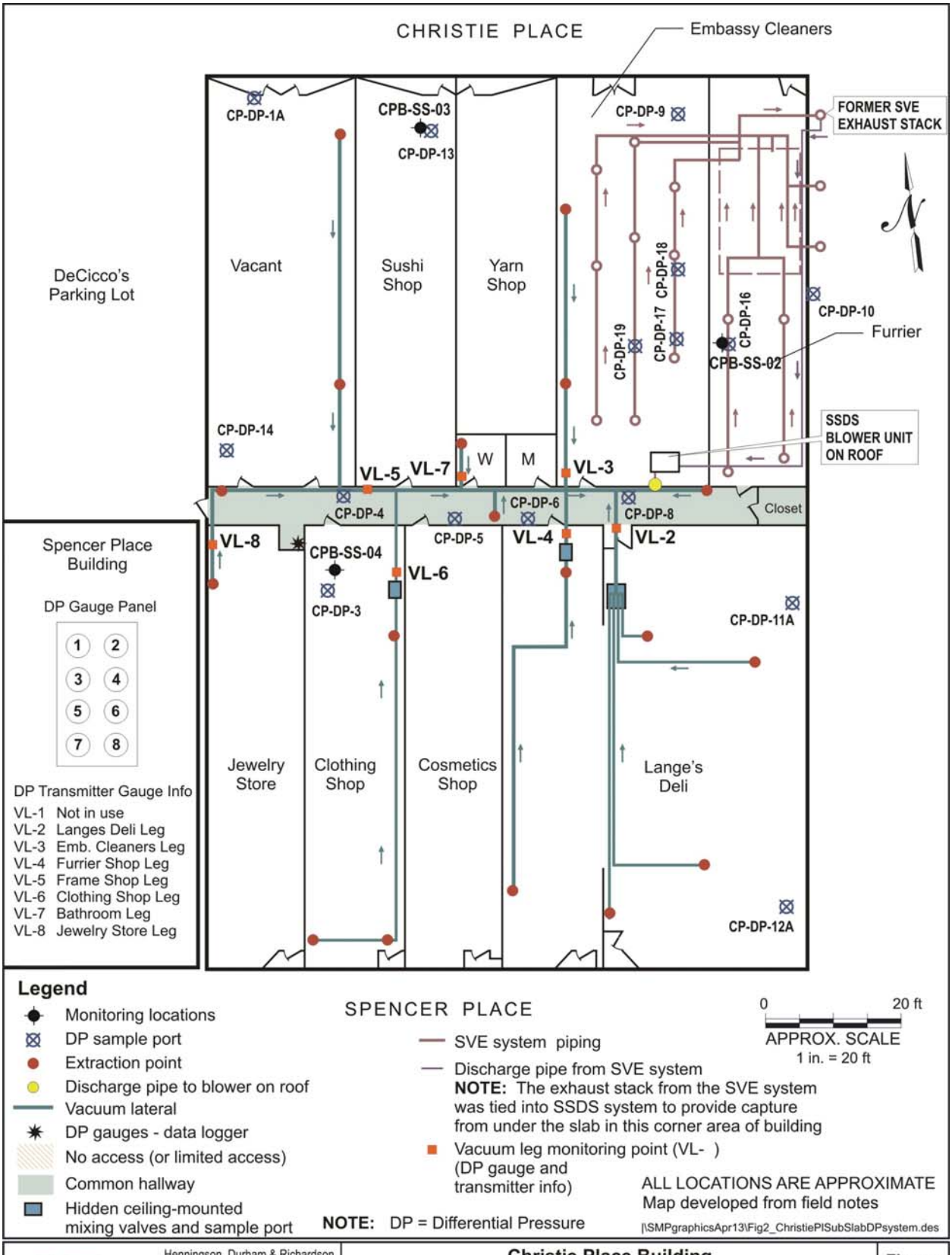
After the cause of the alarm condition has been corrected, pushing the alarm reset button will extinguish the alarm light and the blower will restart.

5.6 Equipment Replacement

If any of the SSDS components fail or degrade because of a malfunction or they get worn out due to usage they will be replaced with compatible components to maintain the continued operation of the SSDS until NYSDOH indicates it can be shut down. This includes the components such as the regenerative blower, control panel switches, indicator lights, pressure gauges and transmitters, PVC piping, vacuum lines, etc.

SECTION 6.0
FIGURES

HDR Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Location of Christie Building** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 1**



HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Christie Place Building** **Sub Slab Depressurization System** **Former Mimi Dry Cleaners** Scarsdale, NY	**Figure 2**

SECTION 7.0
INSPECTION FORMS

Former Mimi Cleaners Site - Christie Place Building
SSDS Quarterly Observation Sheet

Date	Inspect. Name	Minihelic Gauges				Photohelic Pressure Gauge Reading	Running Time Meter (hours)	Alarm Lights Illum. (Y / N)	Data Down-loaded (Y / N)	Blower Running Properly (Y / N)	Floor: New Cracks / Holes (Y / N)	DP Gauge Panel (1 2 3 4 5 6 7 8)	Comments
		VL-1	VL-3	VL-5	VL-7								
		VL-2	VL-4	VL-6	VL-8								
		Differential Pressure Readings (in. of H_2O)											

Note: If there are any visible problems with the system or if the gauge readings are significantly below normal please contact HDR immediately.
(John Guzewich [Office 845-735-8300 x252; Cell 845-548-5493])

Lateral Suction Leg IDs

VL-1	- Not in use	**VL-4**	- Lange's Deli West	**VL-7**	- Women's Bathroom Leg
VL-2	- Lange's Deli Leg	**VL-5**	- NW Tennant Space	**VL-8**	- Jewelry Store Leg
VL-3	- Embassy Cleaners Leg	**VL-6**	- Clothing Shop Leg		

Former Mimi Cleaners Site - Christie Place Building
SSDS Differential Pressure Measurement Sheet

Sample Point ID	Sample Port Location Description	Date												
	Christie Place Bld	Differential Pressure Readings (in. H_2O)												
CP-DP-1a	NW corner of Frame Shop under window display platform													
CP-DP-3	Clothing Store (back room on west side)													
CP-DP-4	Center Hallway (~ 20 ft from door; north side)													
CP-DP-5	Center Hallway (~ 36 ft from door; south side)													
CP-DP-6	Center Hallway (~ 60 ft from door; south side)													
CP-DP-8	Center Hallway (~ 80 ft from door; south side)													
CP-DP-9	Emb. Cleaners (near sewing machine -NE corner)													
CP-DP-10	Outside wall (~110 ft north of SE corner of bld)													
CP-DP-11a	In kicthen of Lang's near E wall under sink.													
CP-DP-12a	SE corner of Lang's behind counter.													
CP-DP-13	Sushi Restaurant (behind frond display counter)													
CP-DP-14	Frame Shop (back SE corner by compressor)													
CP-DP-16	New Furrier Location (back area)													
CP-DP-17	Emb. Cleaners (back area-SE area)													
CP-DP-18	Emb. Cleaners (back area-near counter)													
CP-DP-19	Emb. Cleaners (back area-SW area)													
	Technician's initials:													

Former Mimi Cleaners Site - Christie Place Building
SSDS Inspection/Observation Documentation Sheet

Former Mimi Cleaners Site - Christie Place Building (CPB)

Inspecting Company:

Inspector:

Date & Time:

Floor condition (report any cracks or penetrations).

Wall condition (report any cracks or penetrations).

Piping condition (report any damage).

Are system extraction (suction) points sealed?

Any noted odors or liquids?

Any complaints from contact person?

Comments:

Sub Slab Depressurization System

Blower/fan operational (Y/N):

Circuit breakers on (Y/N):

Alarm light(s) illuminated (Y/N):

Running time meter (hours):

Moisture separator tank:

In-ling gate valve open on extraction point(s)(Y/N):

Photohelic pressure gauge reading (in. H_2O):

Magnahelic gauge #	2	3	4	5	6	7	8
	Lange's Deli	Embassy Cleaners	Furrier Shop	Frame Shop	Clothing Store	Women's Room	Jewelry Store
in. H_2O							

APPENDIX F

OFFSITE BUILDINGS

INSPECTION AND MONITORING PLANS

APPENDIX F- OFFSITE BUILDINGS, INSPECTION AND MONITORING PLAN

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F-5 SCARSDALE POST OFFICE OPERATIONS & MAINTENANCE PLAN SUB-SLAB DEPRESSURIZATION SYSTEM

1.0 System Equipment and Specifications
2.0 System Installation
3.0 System Operation
4.0 System Monitoring
5.0 Trouble shooting and Maintenance

Map of Building in Relation to Former Mimi's Cleaners

F-6 EAST PARKWAY BUILDING OPERATIONS & MAINTENANCE PLAN SUB-SLAB DEPRESSURIZATION SYSTEM

1.0 System Equipment and Specifications
2.0 System Installation
3.0 System Operation
4.0 System Monitoring
5.0 Trouble shooting and Maintenance

Map of Building in Relation to Former Mimi's Cleaners

F-7 INSPECTION FORM

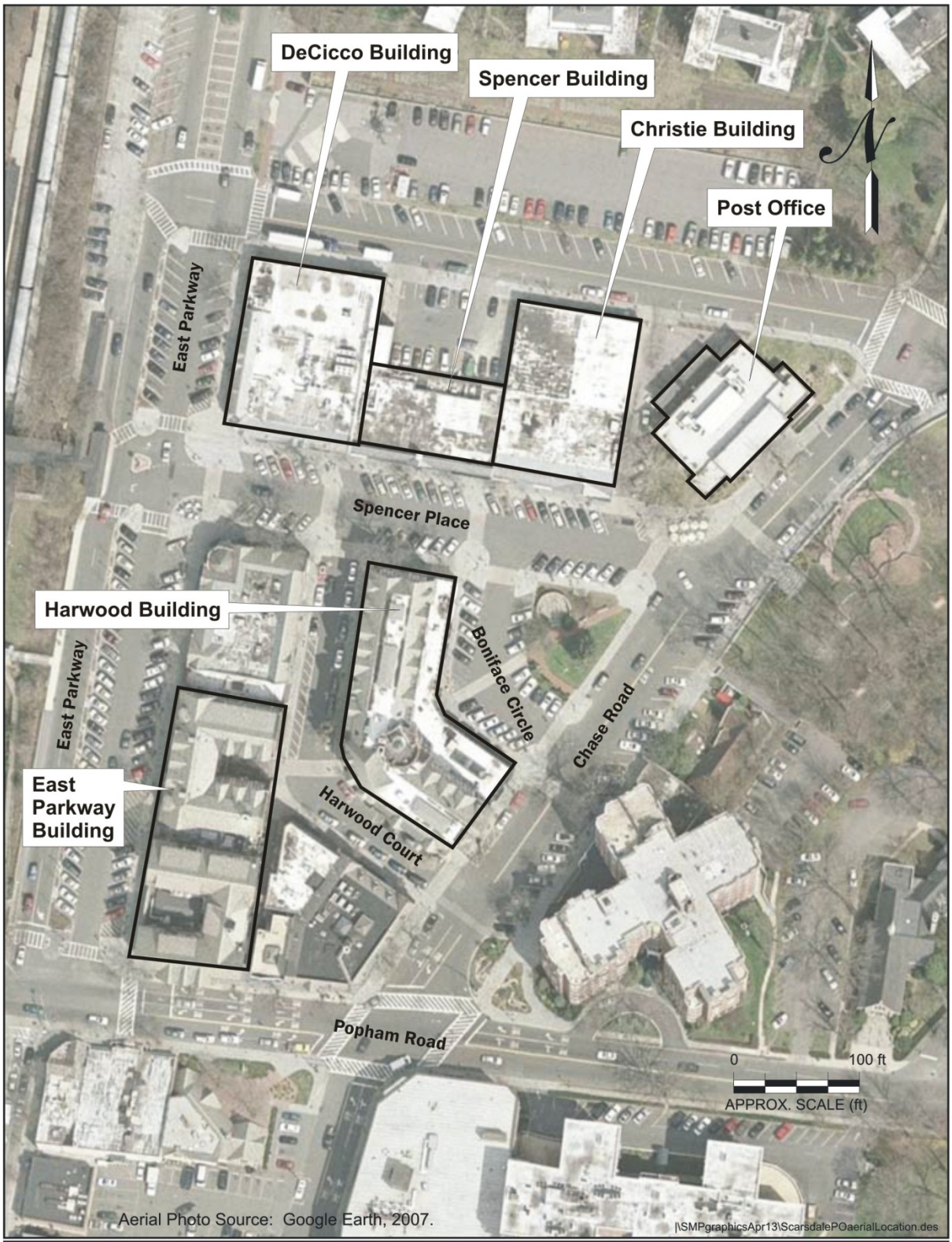
F-1 INTRODUCTION

This appendix describes the five offsite sub-slab depressurization systems (SSDSs) that were operated to mitigate sub-slab vapors surrounding the Christie Place Building. The SSDSs are located in the Spencer Place Building, Harwood Building, DeCicco Building, Scarsdale Post Office, and East Parkway Building. Building locations are shown on Figure 1. Sub-slab vapor contaminant concentrations have declined in all offsite buildings and/or indoor air concentrations are below NYSDOH criteria for indoor air such that NYSDEC and NYSDOH have approved shutdown of the systems and they are no longer operating. Currently the SSDSs remain in place and operation can be resumed if it is determined there is a potential for sub-slab vapors to impact building occupants. The buildings continue to be inspected and monitored on an annual basis (in the East Parkway Building, only the southern half of the building requires inspection and monitoring). The systems have proven to be reliable by their operating history. The inspections verify that slabs are competent to impede vapor migration and that the shutdown SSDSs could be operated if NYSDEC or NYSDOH determine that active SSDS mitigation of potential vapor intrusion is warranted. This appendix provides descriptions of those off-site systems and inspection forms.

In addition, Appendix D of this SMP contains work scopes, summary reports, and previous O&M documents that contain investigation, SSDS installation, and monitoring/sampling activities related to the work previously conducted in these buildings. Appendix D also contains NYSDEC approvals of the work scopes and the approvals to shut down operation of these systems.

At each of the five locations where the SSDS's have been shut down as approved by NYSDEC and NYSDOH, so long as these systems remain shutdown, they will be inspected annually (or on a less frequent basis, if approved by NYSDEC). During these annual inspections, HDR will inspect the floor area for cracks or new penetrations in the floor or construction activities that may have compromised the slab. HDR will interview the building representative to determine if there have been any construction, renovation, or upgrade activities (e.g. installation of a new water main or gas lines or renovation of the heating system, or tenant space renovations) that could have affected the seal of the floor slab. The inspection will also include identification and repair of compromised or damaged SSDS piping inspection of the SSDS discharge piping, and recommendations for repairs of significant floor cracks or damage that could compromise the floor integrity. Where necessary, repairs will be conducted and noted on the appropriate inspection form.

The following sections provide the SSDS information for each building location where the systems are currently shutdown including the system components and the monitoring and observations to be conducted if one of these systems is required to be restarted.



HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Current Buildings in the Study** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 1**

F-2 SPENCER PLACE BUILDING OPERATIONS & MAINTENANCE PLAN SUB-SLAB DEPRESSURIZATION SYSTEM

1.0 EQUIPMENT AND SPECIFICATIONS

1.1 Regenerative Blower Unit

1.1.1 Metal Enclosure Unit (on roof)

- **Outside Components**

- Safety On/Off Switch on outside of metal enclosure
  (Siemens General Duty Enclosed Switch – Type VBII)
- 110 VAC outdoor outlet on outside of metal enclosure
- Strobe on top of enclosure for blower shutdown indication

- **Inside Components**

- Regenerative 154 SCFM Ring Compressor (Fuji Electric Model VFC508P-2T)
  (2.5 HP, 230 VAC, 1-phase, TEFC)
- Muffler
- 15-Gallon Moisture Separator Tank
- Moisture Separator Tank Float Switch
  (W.E. Anderson FlotecT Float Switch - Model L6EPB B930)
- Inlet Particulate Filter (Solberg Model CSL-851200HC)
- Air Bypass Valve Inlet Particulate Filter (Solberg Model FS-19P-150)
- Photohelic Pressure Switch/Gauge (Dwyer Series 3000 Model 3100C)
- Motor Control Panel Enclosure (Ultra Guard Model AM 1206)

1.1.2 Motor Control Panel (inside metal enclosure on roof)

- IDEC SmartRelay Control (Model FL1C-H12RCC)
- IDEC Contactors (Models YS1N-20 & YS1T-RHA25F)
- On/Off Switch (Hand-Off-Auto)
- High Liquid Alarm Indicator Light
- High Vacuum Indicator Light
- Low Vacuum Indicator Light
- Reset Button
- Running Time Meter

1.1.3 Inside Pressure Monitoring Panel (in Spencer Place Hallway)

- Aluminum Hinged Panel with Clear Cover (UltraLine Model AM-1648)
- Differential Pressure Gauges (6)
  (Dwyer Minihelic II Series 2-5000 (0-20 in. of water)

- Differential Pressure Transmitters (4)

  (Dwyer 616 Series; Models 616-5, & 616-7 [0-40 and 0-200 in. of water, respectively])
- Onset Hobo Data Loggers (2) (Model U12 4-External Channel)
- Sola Power Supply (Model SDN-2.5-24-100P)

1.2 Extraction Points & Lateral Suction Legs

- 2-in. diameter schedule 40 PVC Slotted Well Screen Extraction Point
  (well screen extends below floor slab or through basement wall)
  2-in. diameter flexible polyethylene hose (from extraction point up to lateral leg)
- Schedule 40 and 80 PVC Lateral Leg Piping (2-in. and 3-in. diameter)
- Extraction Point / Lateral Suction Leg Control Valves
  (Milwaukee Valve Co. Model BB2FS100)
- ¼" Vacuum Lines
- Specified Technologies Inc. (STI) Specseal LLC Firestop Collar Model LCC150 UPC No. 03901 for through-wall penetrations
- Various wall supports and ceiling hangers to support piping

2.0 SYSTEM INSTALLATION

The SSDS for the SPB was designed and installed by INTEX Environmental Group, Inc. (INTEX) of Pipersville, PA under the direction of HDR. The SSDS for this building is similar in design to that at each of the buildings within the study area. A general description of the SSDS design is summarized below and details relevant to the building's specific layout follow. As mentioned previously, the SPB SSDS has been shut down since April 2011 as approved by NYSDEC and NYSDOH.

This building has a basement with common basement hallways on the north and south ends of sectioned storage spaces. The basement area is sectioned into five main areas that serve as storage spaces for stores on the first floor. Prior to installation of the SSDS, the floor in the SPB floor was inspected for cracks or openings. Where necessary, cracks were sealed and any openings in the slab were sealed. This basement area contains three shallow sumps with pumps in them. Two of the sumps (one in the southeast corner of the building and one in the center area in the Pharmacy's storage space) have holes in them below grade so they are open to the soil below the slab. It is assumed these were designed this way to be able to capture and pump shallow groundwater and/or surface runoff that possibly comes through the walls or sidewalk access hatches during heavy rains to minimize the potential for moisture damage to the items stored in the basement area. HDR rebuilt/retrofitted these two sumps and installed vapor-proof covers equipped with one-way valves/drains to allow groundwater or surface water to flow into the sumps and keep potential vapors below the slab from coming up through the sumps into the basement. There is a third sump in the southwest corner area of the building but the sump is solid so it does not allow sub-slab vapors to come up into the basement. This sump was removed and filled in and sealed with concrete in December 2010.

Communication testing was conducted in the basement area prior to the design of the SSDS to aid in the design of an effective SSDS (e.g., number of extraction points, blower size, radius of influence below the basement slab, piping size, etc.) A Shop-Vac® commercial/industrial use wet/dry vacuum (Model No. 925-50-10) with a suction pressure of 80 inches of water column was used to apply a vacuum at various pressures at a number of locations and to help determine the radius of influence below the basement slab by measuring the differential pressure at various locations around the vacuum point with a low-range differential pressure manometer (Gray Wolf Zephyr II digital manometer). INTEX used this data to design the SSDS. The SSDS for the SPB was designed so that additional extraction points could be added if necessary.

As part of the SSDS design for the SPB, extraction points for the SSDS were installed through the floor and piped to a blower mounted on the roof of the building. INTEX cored through the concrete floor at designated locations and installed a 2-in. diameter schedule 40 PVC well screen point approximately 1.5-2 feet below the slab. This screened section of PVC was sealed in place at the top of the slab with a concrete grout and connected to the PVC lateral suction leg piping with heavy- duty flexible wire-reinforced polyethylene hose.

The lateral suction leg piping is schedule 40 or schedule 80 PVC depending on the location and potential for it getting knocked into and/or disturbed. All lateral suction leg piping

penetrations through walls inside the building were sealed with fire-proof collars in accordance with applicable codes. The lateral suction legs run to the north hallway area where they join with other lateral suction legs and eventually they manifold into one PVC discharge pipe in the hallway. This pipe penetrates through the ceiling of the basement to the first floor, where it exits the building through the back (northern) wall. The SSDS discharge piping connects to a regenerative blower (2.5 HP) mounted on the back portion of the roof of the SPB.

The blower is housed in a weather-tight metal enclosure with an enclosed safety on/off disconnect switch mounted on the outside of it. The blower package inside the metal enclosure also contains a PLC-based motor control panel. The motor control panel contains IDEC Contactors/Starters and an IDEC Smart Relay control. The display window of this electronic control panel displays the 3-position on/off switch (Hand-Off- Auto), high/low pressure blower shutdown indicator lights, a high level liquid indicator light, a reset button, and a running time meter. The blower package inside the metal enclosure also contains intake air filters, a 15-gallon moisture separator tank with a float switch, and a differential pressure switch/gauge with adjustable high/low shutdown set points. The discharge pipe from the blower package contains a muffler/silencer.

Each vertical extraction leg of the SSDS has an in-line gate valve to provide manual adjustment to be able to balance the suction rates from the individual points to adjust the radius of depressurization/influence at each of the points allowing the system to achieve proper depressurization under the slab of the SPB. In addition, the blower has an ambient air by-pass value on it to allow adjustment of the vacuum provided by the blower itself.

There are six vacuum lines tapped into the lateral suction leg piping at the top of each extraction leg to monitor and document the differential pressure in the lateral legs of the system. Small diameter vacuum tubing is tapped into the pipe at these locations and the tubing runs back along the piping to the pressure monitoring panel located on the wall in the center area of the north hallway. These vacuum hoses are attached to differential pressure gauges (Dwyer Minihelic II gauges; 0-10 inches of water column) for real-time readings/documentation that the SSDS is providing sufficient vacuum in the lateral suction leg where it is attached. These gauges are labeled below the gauges to indicate which lateral leg they are attached to:

- PG-1 (Toy Store-North Extraction Point)
- PG-2 (Toy Store-South Extraction Point)
- PG-3 (North Hallway-Mid Extraction Point)
- PG-4 (Pharmacy-Mid Extraction Point)
- PG-5 (Great Stuff Clothing Store Extraction Point)
- PG-6 (Electrical Meter Room-West Extraction Point)

This allows HDR personnel or a trained representative to periodically check the gauges and document the system is running properly. If it appears there is a problem or a significant decline in the differential pressure gauge readings HDR will be notified immediately so the issue can be investigated and corrected as required.

In addition, there are four additional vacuum lines that are tapped into the lateral suction legs at various locations. These lines are attached to differential pressure transmitters (Dwyer Series 616 and 616K) in the pressure monitoring panel. The transmitters convert the reading into a 4-20 mA output signal which is sent to a 4-channel data logger (Hobo Model U12). The data logger can store the four channels of data for approximately 6 months. The data from the data logger are downloaded to a laptop computer to provide documentation that the SSDS has been working properly (continuous data and readings that remain fairly consistent).

These transmitters receive data from the following locations:

- VL-1 (Overall Vacuum at Discharge Pipe)
- VL-2 (Western Leg [Toy Store])
- VL-3 (Center Leg [Pharmacy])
- VL-4 (Eastern Leg [Great Stuff Clothing Store])

There are permanent differential pressure sample ports (DPSPs) in the basement floor or slab-on-grade portion of the building that can be accessed periodically to measure and document the pressure differential under the slab throughout the basement of the building to ensure the SSDS is providing adequate negative pressure under the slab. There are a total of 17 DPSPs installed in the SPB. These sample ports are sealed with a threaded plug when not in use.

3.0 SYSTEM OPERATION

3.1 Regenerative Blower Operation

At the main blower control panel in the metal enclosure on the roof of the SPB there is a Hand-Off-Auto switch for the regenerative blower that energizes the motor starter circuit to the blower. In order for the blower to operate the Hand-Off-Auto switch must be in the Hand or Auto setting. In the Hand position, the blower will operate while bypassing any alarm conditions (high level liquid, blower high vacuum, and blower high pressure). With the switch set in the Auto position, all alarms are functional and the control panel will shut down the blower if an alarm condition occurs. Power is supplied to the blower from a 30-amp 3-pole breaker located in the dedicated 100-amp 3-phase main circuit breaker panel in the electric room of the SPB. There is also a fused emergency disconnect safety switch for the system mounted on the outside of the metal blower enclosure.

3.1.1 Motor Starter & Circuit Breakers

Power to the blower control panel is supplied by a 30-amp 3-pole breaker located in the dedicated 100-amp 3-phase main breaker panel in the electrical room of the SPB.

3.1.2 Blower Control Panel

The blower control panel houses the regenerative blower motor starter with overload protection. The motor starter overload relay is designed to interrupt power to the SSDS blower if the amperage draw is more than 15 amps. Power to the motor starter is supplied by a 230 VAC 30-amp 3-pole breaker. It is additionally protected by the 20- amp fuses in the fused safety disconnect enclosure mounted on the side of the metal blower housing. The blower motor amperage draw during normal operation should be 12.8 amps.

3.2 Alarm Conditions

The blower control panel contains the indicator lights displayed through the clear door of the enclosure panel inside the metal blower enclosure. The panel contains the Hand-Off- Auto switch with a system running indicator light (green). This panel also displays the high level liquid, blower high-pressure, and the blower low-pressure indicator lights (red) along with a manual reset button for the alarms. When the blower is running in the “Auto” position and an alarm condition occurs the indicator light will illuminate and the blower will shut down if high water or high vacuum conditions exist for more than 30 seconds. If a low vacuum condition exists for more than 30 seconds the low vacuum indicator light will be illuminated and the system will remain running. See Section 5.5 in the troubleshooting and maintenance section for instructions on alarm condition remedies. If the system is running in the “Hand” position the indicator lights will illuminate if an alarm condition occurs, however, the blower will not shut down.

3.3 Blower Package Sensors and Gauges

The blower package is equipped with a photohelic differential pressure switch/gauge which shows the operating pressure (vacuum) of the blower and it also displays the adjustable low-vacuum and high-vacuum set points for the blower.

3.4 Moisture Separator

The moisture separator should be checked on a routine basis to determine if the system is collecting moisture from the extraction points. If the high liquid indicator light is on it indicates that the float switch has sensed a high-liquid condition and the blower will be shut down to protect it from pulling water through it. There is a manual drain valve at the bottom of the tank to drain the liquid. Once the tank is emptied, the switch will reset and normal operation can resume after resetting the alarm condition in the motor control panel.

3.5 Pressure Monitoring Panel

The pressure monitoring panel is in the center area of the northern hallway on the back wall. This panel contains differential pressure gauges, differential pressure transmitters, and the data logger. The power to the monitoring panel is supplied from the main breaker panel in the electrical room of the SPB. The power for the monitoring panel is protected by a 2-amp quick blow fuse located in the panel. The pressure transmitters receive DC power from the 200-watt Sola power supply/transformer unit in the monitoring panel. The data logger is powered by a 3 volt “button” battery (Duracell DL 2032, or equivalent). When the data is downloaded from the data logger the voltage on the battery should be checked and replaced if necessary.

4.0 SYSTEM MONITORING

If it is determined there is a potential for sub-slab vapors to impact building occupants and NYSDEC requires the resumption of an active mitigation at this location, the system will be turned back on and quarterly monitoring and inspections will be conducted to ensure the SSDS maintains a slight negative pressure under the building slab. The system will be monitored and inspected as outlined in this section if it is required to be restarted.

Differential pressure readings will be collected from the 13 DPSPs installed in the basement floor area throughout the building (in areas HDR is provided access) to document the negative pressure field under the slab. When necessary, the valves on the extraction legs can be adjusted to re-balance the system and ensure that a negative pressure field and proper coverage is maintained under the basement floor of the SPB.

As part of the quarterly inspections required when the system is in operation, the differential pressure gauge readings displayed in the system monitoring panel will be observed and documented on an inspection form for the SPB SSDS. The pressure gauge readings should be compared against previous readings. If there is a significant decrease in the readings it is possible that a change has occurred that may have affected the balance of the system or there is a problem with the vacuum in the lateral leg that is showing the significantly decreased reading. HDR will diagnose the issue or problem and provide the required maintenance and/or repairs (see Section 5.0, Troubleshooting and Maintenance).

Differential pressure transmitters convert the gauge readings into a 4-20 mA signal which is recorded on the Onset Hobo data logger. The data from the data logger will be downloaded on a quarterly basis. The data from the data logger provides documentation that the SSDS has been running consistently and is providing sufficient negative pressure at the four sections of the SSDS. The logged data recorded on the data logger will be downloaded to a laptop for review at another time. The battery on the logger will be replaced if necessary before starting it back up. If it is determined there is a potential for sub-slab vapors to impact building occupants and NYSDEC requires the resumption of an active mitigation at this location, the system will be turned back on and quarterly monitoring and inspections will be conducted to ensure the SSDS maintains a slight negative pressure under the building slab. The system will be monitored and inspected as outlined in this section if it is required to be restarted.

Where accessible, the extraction legs and the lateral suction leg piping will be inspected for any problems or damage. The blower package on the SPB roof will be inspected to document that the unit is running properly. If it appears there is a substantial amount of liquid in the moisture separator the system will be shut down and the tank inspected to determine how much water has collected in it. The inline particulate filter on the blower will be inspected for visible signs of dirt impregnation and replaced if necessary.

A handheld digital differential pressure gauge (Love Controls Model HM28 or equivalent) capable of reading differential pressure down to 0.001 inches of water column will be used to measure the differential pressures from the 13 DPSPs installed in the floor to document that sufficient negative pressure is being maintained under the slab in these areas. The differential pressure data will be reviewed and, if necessary, the system will be re-balanced by adjusting the control valves on the extraction points and/or adjustment of the blower ambient air by-pass valve to increase or reduce flow as required from the different sections of the lateral suction legs to maximize the system's capture under the slab of the building.

An annual maintenance inspection will be conducted during one of the quarterly inspection events. In addition to the tasks outlined for the quarterly inspection events, the accessible floor areas will be inspected for cracks or new penetrations, or construction activities that could affect the SSDS's operational effectiveness. The building representative will be interviewed to determine if there have been any construction, renovation, or upgrade activities (e.g. installation of a new water main or gas lines or renovation of the heating system) that could have affected the performance or balance of the SSDS. The inspection will also include identification and repair of leaks within the piping and inspection of the exhaust, discharge pipe. Where necessary, repairs will be conducted and noted on the appropriate inspection form. Preventative maintenance shall be conducted as recommended by the manufacturer and for adherence to applicable warranties. Troubleshooting and maintenance is covered in more detail in Section 5.

5.0 TROUBLESHOOTING AND MAINTENANCE

5.1 Regenerative Blower Maintenance

The Fuji Electric regenerative blower at this site is designed with maintenance-free, single stage dynamics, free of contacting moving parts other than the motor ball-bearings and the shaft seal. The blower motor ball-bearings are permanently sealed and the bearings are rated for 15,000 – 20,000 hours on average for continual maintenance-free operation.

The inline filter should be inspected and cleaned if there are visible signs of dirt impregnation. Particle buildup on the filter element will reduce flow through the filter and an increase in vacuum will be noticed from the normal operating vacuum range. The filter can be cleaned by scrubbing it with a mild soap and water solution and allowing it to completely dry before inserting it back into the filter housing.

5.2 SSDS Moisture Accumulation

There is potential for moisture accumulation in the moisture separator tank and/or low sections of the lateral suction leg piping. This water should be drained as necessary to ensure the system operates properly. The moisture separator has a float switch on it such that the blower motor will be shut down when the tank is approximately half full to avoid water damage to the blower motor. Water accumulation in the lateral leg piping could restrict air flow and cause a reduction of vacuum on the upstream side of the restriction. Water that accumulates in the system is from condensate build-up. If necessary the condensate will be removed from the tank and/or the lateral legs to increase the effectiveness of the system.

5.3 Extraction Legs-Lateral Suction Legs–Discharge Piping to the Blower Unit

The PVC piping has glued joints for the most part and does not require any maintenance. At a few connection points rubber hose-clamp fittings were used to connect the system. If there appears to be a drop-off in the differential pressure reading at one of the four ports an inspection should be done to make sure there has been no damage to the extraction point(s) or the lateral suction leg piping in this area and all of the connection points are properly attached and sealed including the flow control valves. The flow control valves at each extraction point should be checked to make sure they were not inadvertently closed off.

5.4 Pressure Monitoring Panel

The differential pressure gauges and transmitters are basically maintenance-free. The differential pressure gauges do not have any power requirements. The differential pressure transmitters receive DC power from the Sola power supply/transformer unit in the monitoring panel. If the Hobo data logger is not receiving data and it has a fresh battery in it check to make sure the transmitters are wired to the power source. The data logger is powered by a “button” battery; it has a red LED on it that flashes intermittently to indicate it is functioning normally and receiving. Generally the batteries in these units will last more than a year. When the logger is downloaded the software checks the battery condition. If the voltage on the battery appears to be dropping it should be replaced. If the transmitters are receiving power from the power supply and are still not sending data to the data logger they may be faulty and may need to be replaced.

If the readings from one or more of the differential pressure gauges is significantly lower than normal and the blower is running properly and the DPSP readings are similar to past readings check the following:

- Check and listen to the lateral suction legs to determine if they have water in them (drain if necessary)
- Check the tubing connection points in the monitoring panel; make sure they are properly attached and sealed to the gauges and transmitters
- Check the connection points where two sections of the vacuum tubing are joined together
- Check the locations where the tubing is attached to the piping (threaded fittings screwed into the lateral suction leg piping and connected to the tubing with a barbed fitting).

If the differential pressure readings from one or more of the DPSPs are significantly lower than normal or below the low-end guidance value provided in the NYSDOH guidance document for vapor intrusion (Guidance for Evaluating Soil Vapor Intrusion in the State of New York - October 2006) which is 0.002 inches of water column) check the following items:

- Check the blower to make sure it is running properly and the intake vacuum is within the operating range
- If the blower is running at a higher vacuum and is still not pulling sufficient air the intake particulate filter(s) may need to be cleaned/replaced
- Check the extraction points and lateral suction legs to make sure they are not damaged
- Check the lateral suction leg control valves to make sure they are open and/or have not been significantly changed
- Check the floor for new cracks and/or penetrations to make sure they are not damaged
- Check the DPSPs to ensure they are not clogged due to moisture

5.5 Troubleshooting Guide

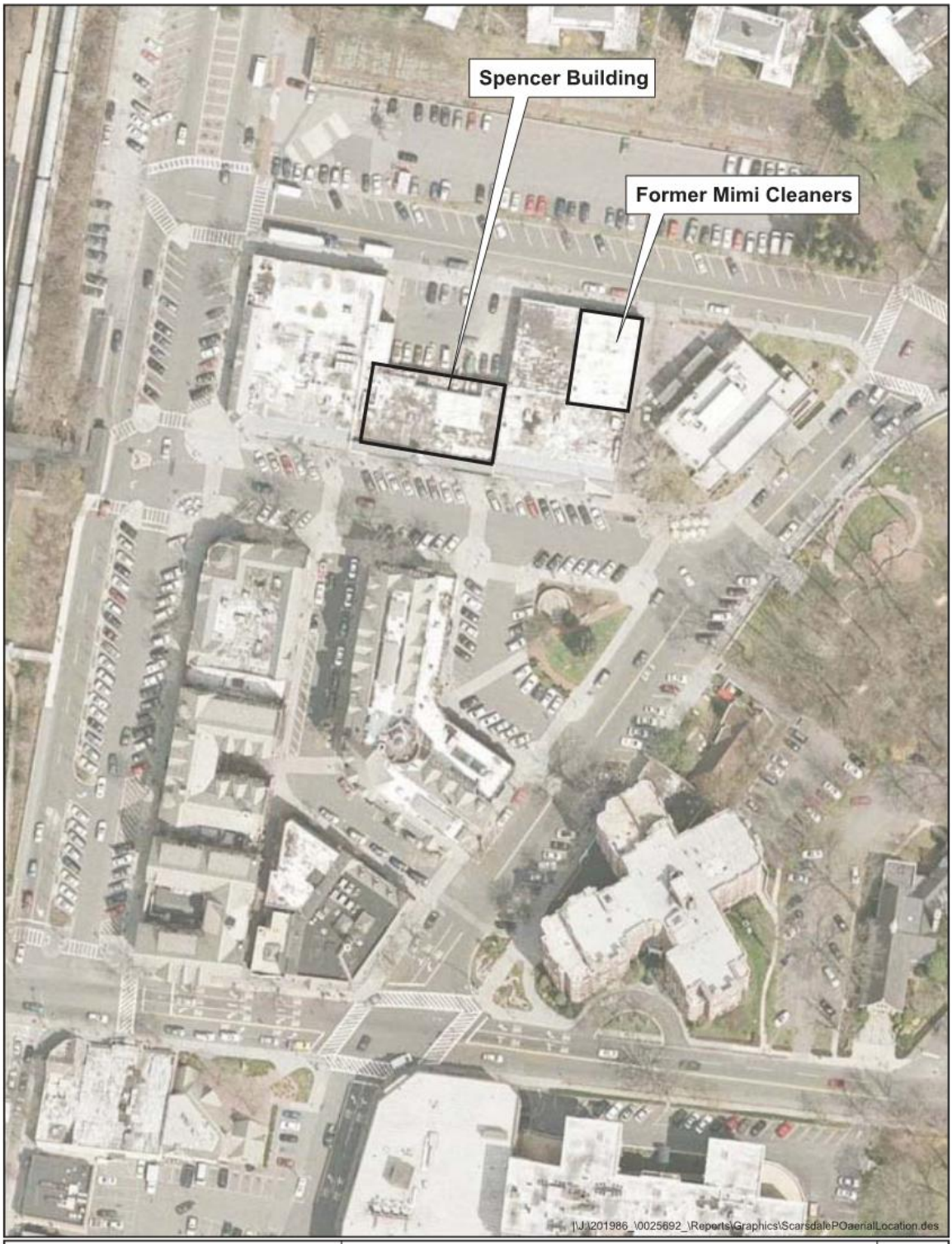
The following table lists procedures to correct system alarm conditions for the blower package when in operation:

Alarm Condition	Possible Cause	Remedy
Moisture Separator High-Level	Moisture separator is full & high-level switch tripped Liquid level switch could be faulty	Drain separator via manual drain at the bottom of the tank. Remove, check continuity while moving the float switch up and down
Blower High Vacuum	Extraction legs all closed? Is air flow restricted on the SSDS discharge piping to the blower Air filter restricting flow	At least one extraction leg or bypass valve must be open. Check piping before blower for restriction Clean or replace air filter
Blower High Pressure	Something blocking flow on discharge side of the blower	Check effluent piping for restrictions/blockage causing back pressure
Blower won't run	Overload Relay is tripped Motor Control Panel fuse is blown. Fuses blown in fused safety disconnect switch Load center control panel breaker is tripped	Reset overload relay Check for continuity in power circuit to blower. If continuity good, check fuses, if fuses are bad replace. Reset breaker in load center
Monitoring Panel not working	1-amp control power fuse blown No power to system control/monitoring panel	Replace fuse Check fuses in safety disconnect, check 30-amp main breaker in the Electrical Room

After the cause of the alarm condition has been corrected, pushing the alarm reset button will extinguish the alarm light and the blower will restart.

5.6 Equipment Replacement

If any of the SSDS components fail or degrade because of a malfunction or they get worn out due to usage they will be replaced with compatible components to maintain the continued operation of the SSDS until NYSDOH indicates it can be shut down. This includes the components such as the regenerative blower, control panel switches, indicator lights, pressure gauges and transmitters, PVC piping, vacuum lines, etc.



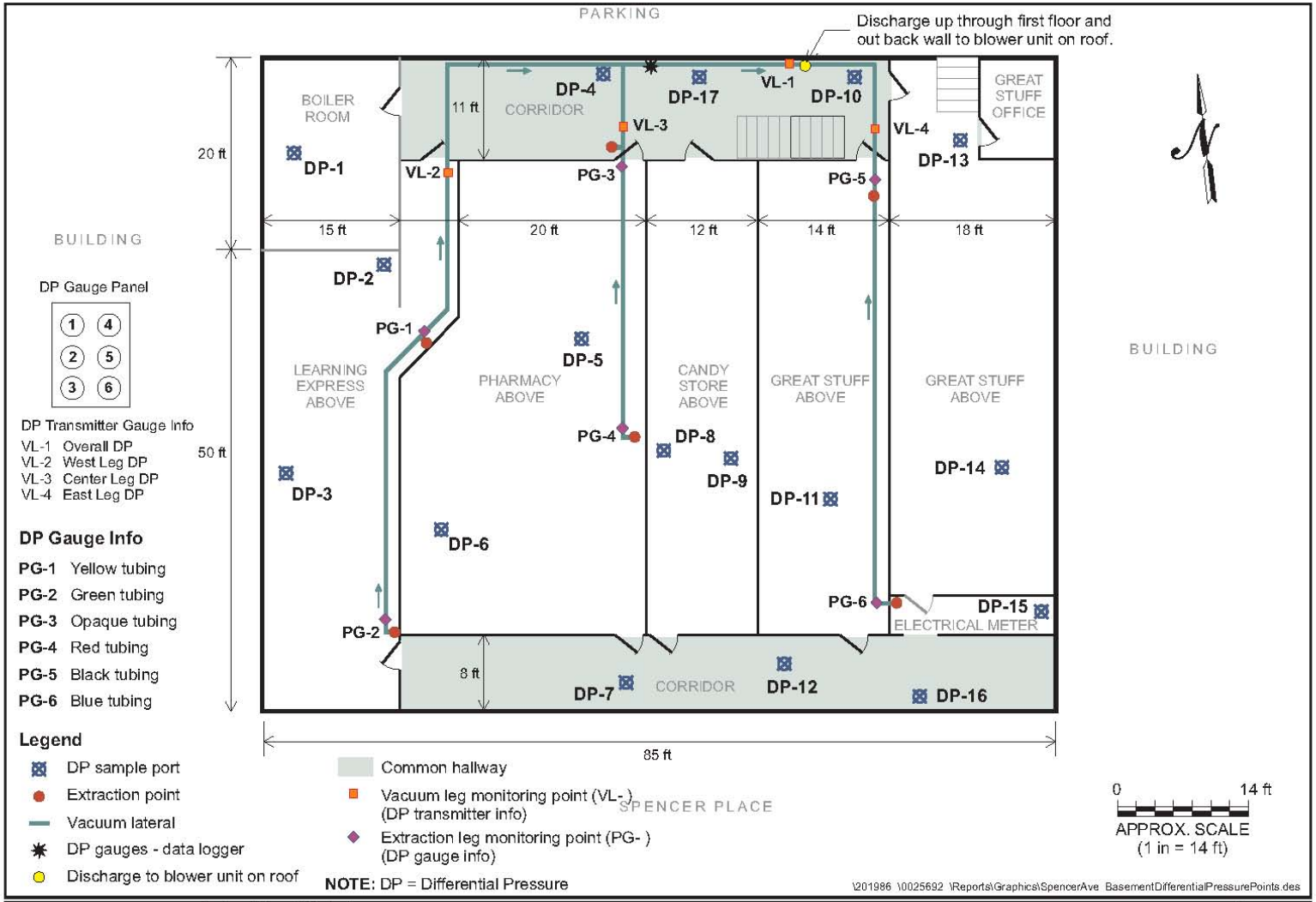
HDR

Henningson, Durham & Richardson Architecture and Engineering, P.C.
One Blue Hill Plaza
Pearl River, NY 10965

Location of Spencer Building

Former Mimi Dry Cleaners **Scarsdale, NY**

Figure 1



HDR

Henningson, Durham & Richardson Architecture and Engineering, P.C. in association with HDR Engineering, Inc.
One Blue Hill Plaza
Pearl River, NY 10965

Spencer Place Building Sub-Slab Depressurization System Layout

Former Mimi Dry Cleaners — **Scarsdale, NY**

Figure 2

F-3 HARWOOD BUILDING OPERATIONS & MAINTENANCE PLAN SUB-SLAB DEPRESSURIZATION SYSTEM

1.0 SYSTEM EQUIPMENT AND SPECIFICATIONS

1.1 Regenerative Blower Unit

1.1.1 Insulated Fiberglass Enclosure Unit (on roof)

- Insulated Fiberglass Blower Enclosure (on roof)
- Safety On/Off Switch on wall adjacent to enclosure
  (Siemens General Duty Enclosed Switch – Type VBII)
- Regenerative 300 SCFM Blower (Ametek Rotron Model DR757D89X)
  (5 HP, 220 VAC, 1-phase, TEFC)
- Air Bypass Valve Inlet Particulate Filter (Solberg Model FS-19P-15)
- Silencer/Muffler on discharge side of blower
- PVC Discharge Stack

1.2 Basement Floor System Components (in Salt Room)

1.2.1 System Control / Monitoring Panel

- **Panel - Inside Components**

- Moeller Motor Starter (Model DIL 1 A)
- IDEC SmartRelay Control (Model FL1D-H12RCC)
- Differential Pressure Transmitters (4)
  (Dwyer 616 Series; Model 616-3 [0-10 in. of water])
- Onset Hobo Data Logger ((Model U12 4-External Channel)
- Sola Power Supply (Model SDP-1-24-100T)

- **Panel Window**

- On/Off Switch (Hand-Off-Auto)
- High Liquid Alarm Indicator Light
- High Vacuum Indicator Light
- Low Vacuum Indicator Light
- Run Indicator Light
- Running Time Meter
- Differential Pressure Gauges (4)
  (Dwyer Minihelic II Series 2-5000 (0-10 in. of water)

1.2.2 Moisture Separator Tank

- 20-Gal. Moisture Separator Tank
- Moisture Separator Tank Float Switch
  (W.E. Anderson FlotecT Float Switch - Model L6EPB B930)

1.2.3 Miscellaneous Components (in Salt Room)

- Photohelic Pressure Switch/Gauge (Dwyer Series 3000 Model 3100A)

1.3 Extraction Points & Lateral Suction Legs

- 2-in. diameter schedule 40 PVC slotted well screen extraction point
  (well screen extends below floor slab)
- Schedule 80 PVC Lateral Leg Piping (2-in. diameter)
- Extraction Point / Suction Leg Control Valves
  (Milwaukee Valve Co. Model BB2FS100)
- ¼" Vacuum Lines
- Specified Technologies Inc. (STI) Specseal LLC Firestop Collar Model LCC150 UPC No. 03901 for through-wall penetrations
- Various wall supports and ceiling hangers to support piping
- Suction Leg from Moisture Separator Tank to Blower on roof is 3-in. diameter schedule 40 galvanized pipe

2.0 SYSTEM INSTALLATION

The SSDS for the HWB was designed and installed by INTEX Environmental Group, Inc. (INTEX) of Pipersville, PA under the direction of HDR. The SSDS for this building is similar in design to that at each of the buildings within the study area. A general description of the SSDS design is summarized below and details relevant to the building's specific layout follow. See Figure 1 for the location of the HWB in Scarsdale, New York. As mentioned previously, the HWB SSDS has been shut down since August 2012 as approved by NYSDEC and NYSDOH.

Prior to installation, the floor in the basement of the HWB floor was inspected for cracks or openings. The portions of the slab that were accessible in this building appeared to be in good condition with no major cracks. The basement area of this building is sectioned into a number of storage spaces for the tenants with access to each section from the center hallway in the basement (a few of these spaces are also retail spaces with access via stairs from the first floor), common spaces, and maintenance use spaces. HDR was not allowed access to a number of storage units due to the sensitivity of materials stored.

Communication testing was conducted to aid in the design of an effective SSDS (e.g., number of extraction points, blower size, radius of influence below the basement slab, piping size, etc.) A Shop-Vac® commercial/industrial use wet/dry vacuum (Model No. 925-50-10) with a suction pressure of 80 inches of water column was used to apply a vacuum at various pressures at a number of locations and to help determine the radius of influence below the basement slab by measuring the differential pressure at various locations around the vacuum point with a low-range differential pressure manometer (Love Controls Model HM28 digital manometer). INTEX used this data to design the SSDS. The SSDS for the HWB was designed so that additional extraction points could be added if necessary.

As part of the SSDS design for the HWB, extraction points for the SSDS were installed through the basement floor slab and piped to a blower mounted on the roof of the building. INTEX cored through the concrete floor at designated locations and installed a 2-in. diameter schedule 40 PVC well screen point approximately 1.5-2 feet below the slab. This screened section of PVC was sealed in place at the top of the slab with a concrete grout and coupled to PVC piping. There are three extraction points installed in the boiler room. The boiler room slab is about 10 ft below the elevation of the basement slab; the extraction points in the boiler room were installed flush with the bottom of the slab. A well screen was not used to extend below the slab due to the concern of encountering groundwater or perched water just below the slab in this area.

The PVC piping from the extraction point runs up to the ceiling or point on the wall and joins a PVC lateral suction leg. The piping from the extraction point to the lateral suction leg and the lateral suction leg piping is schedule 80 PVC to ensure it can be knocked into or disturbed on occasion without being damaged. All of the lateral suction legs, with the exception of the legs in the Boiler Room, run to the central hallway where they join with other lateral suction legs and run along the ceiling in the pipe gallery with the other piping for the building and they come together in the Salt Room in the basement. The piping from the extraction points in the Boiler Room come together and penetrate through the back wall of the Salt Room. The piping is

manifolded together and it goes into the moisture separator tank located in the Salt Room where the system control/monitoring panel is located. INTEX used 3-in. diameter schedule 40 galvanized steel pipe to run from the moisture separator tank up through the building's five floors to the blower on the roof. This steel piping ran up through the electrical closets on each floor to minimize the disruption to the tenant spaces and to minimize the noise from the system. In addition, closed-cell foam was wrapped around the exposed steel discharge pipe in the electrical closets on all the floors to further reduce the potential for noise from the system. All lateral suction leg piping penetrations through walls were sealed with fire-proof collars in accordance with applicable codes.

The steel pipe exits through a sealed penetration in the roof (completed by the building owner's roofing contractor) and is connected to the regenerative blower (5 HP). The blower is housed in a weather-tight insulated fiberglass enclosure with an enclosed safety on/off switch mounted on an adjacent wall. The blower controls including the PCL-based motor controls, are housed in the Salt Room. The system control/monitoring panel contains a Moeller motor starter, and an IDEC SmartRelay control for the panel components. The display window of this control/monitoring panel displays the 3-position on/off switch (Hand-Off-Auto), high/low pressure indicator lights, a high-level liquid indicator light, a reset button, and a running time meter. There is also a separately mounted differential pressure switch/gauge with adjustable high/low shutdown set points. The discharge pipe from the blower package contains a muffler/silencer.

Each extraction leg of the SSDS has an in-line gate valve to provide manual adjustment to be able to balance the suction rates from the individual points to adjust the radius of depressurization/influence at each of the points allowing the system to achieve proper depressurization under the HWB. In addition, the blower has a fresh air by-pass value on it to allow adjustment of the vacuum provided by the blower it self. There are four vacuum lines tapped into the lateral suction leg piping at various locations to monitor and document the differential pressure in the lateral legs of the system. Small diameter vacuum tubing is tapped into the pipe at these locations and it runs back along the piping to the system control/monitoring panel in the Salt Room. These vacuum lines are attached to differential pressure gauges (Dwyer Minihelic II gauges; 0-10 inches of water column) for real-time readings/documentation that the SSDS is providing sufficient vacuum in the lateral suction leg where it is attached.

These gauges are labeled below the gauges to indicate which lateral leg they are attached to:

- VL-1 (Northern Leg)
- VL-2 (Center Leg)
- VL-3 (Southern Leg)
- VL-4 (Lower or Boiler Room Leg)

This allows HDR personnel or a trained representative to periodically check the gauges and document the system is running properly. If it appears there is a problem or a significant decline in the differential pressure gauge readings HDR will be notified immediately so the issue can be investigated and corrected as required.

In addition, the vacuum lines are split in the system control/monitoring panel and the other leg of the vacuum line is attached to a differential pressure transmitter (Dwyer Series 616-3). The transmitters convert the reading into a 4-20 mA output signal which is sent to a 4-channel data logger (Hobo Model U12). The data logger can store the four channels of data for approximately 6 months. The data from the data logger are downloaded to a laptop computer to provide documentation that the SSDS has been working properly (continuous data and readings that remain fairly consistent).

There are permanent differential pressure sample ports (DPSPs) in the basement (and boiler room) floor that can be accessed periodically to measure and document the differential pressure under the slab throughout the basement of the building to ensure the SSDS is providing adequate negative pressure under the slab. There are a total of 19 DPSPs in the HWB. These sample ports are sealed with a threaded plug when not in use.

3.0 SYSTEM OPERATION

3.1 Regenerative Blower Operation

At the system control/monitoring panel in the Salt Room there is a Hand-Off-Auto switch for the regenerative blower that energizes the motor starter circuit to the blower. In order for the blower to operate the Hand/Off/Auto switch must be in the Hand or Auto setting. In the Hand position, the blower will operate while bypassing any alarm conditions (high level liquid, blower-high vacuum, and blower high pressure). With the switch set in the Auto position, all alarms are functional and the system will shut down the blower if a high liquid or high vacuum alarm condition occurs. A 60-second on delay is setup in the auto mode to allow other building mechanical system to normalize first in the event of a power outage when power is restored to the building. Power is supplied to the blower from the system control/monitoring panel containing the motor starter with thermal overload and 2-pole 35-amp circuit breaker. Power is supplied to the system control/monitoring panel from the adjacent the 60-amp fused safety disconnect; 40-amp fuses are installed in the safety disconnect panel. The safety disconnect panel is fed from the 50-amp main breaker located in the electrical sub-meter panel in the Electrical Room across the hallway from the Salt Room in the basement. There is also an emergency on/off switch for the system mounted on the chimney next the blower on the roof.

3.1.1 Motor Starter & Circuit Breakers

Power to the system control/monitoring panel is supplied by a 220 VAC 1-phase 2-pole 50-amp main breaker located in the sub-metering panel in the Electrical Room.

3.1.2 System Control/Monitoring Panel

3.1.2.1 Electrical Information

The system control/monitoring panel in the Salt Room houses the regenerative blower motor starter with overload protection. The motor starter is designed to interrupt power to the SSDS blower if the amperage draw is more than 25 amps. Power to the motor starter is supplied by a 220 VAC 1-Phase 2-pole 35-amp circuit breaker. Power to the system control/monitoring panel is protected by both the fused safety disconnect adjacent to the panel and the 50-amp main breaker in the buildings sub-metering panel. The blower motor amperage draw during normal operation is approximately 18.7 amps.

3.1.2.2 System Monitoring Sensors and Gauges

The system control/monitoring panel in the Salt Room contains differential pressure gauges, differential pressure transmitters, and a data logger. The monitoring system is powered through a 2-amp quick blow fuse located in the panel. The pressure transmitters receive DC power from the Sola power supply/transformer unit in the monitoring panel. The data logger is powered by a 3 volt “button” battery (Duracell DL 2032, or equivalent). When the data is downloaded from the data logger the voltage on the battery should be checked and replaced if necessary.

The system is also equipped with a Dwyer photohelic differential pressure switch/gauge (next to the system control/monitoring panel) which shows the operating pressure (vacuum) of the blower and it also displays the low-vacuum and high-vacuum set points.

3.2 Alarm Conditions

The system control/monitoring panel in the Salt Room contains indicator lights displayed through the clear door of the panel. The panel contains the Hand-Off-Auto switch with a system running indicator light (green). This panel also displays the high level liquid, blower high-pressure, and the blower low-pressure indicator lights (red) along with a manual reset button for the alarms. When the blower is running in the "Auto" position and an alarm condition occurs the indicator light will illuminate and the blower will shut down if high water or high vacuum conditions exist more than 30 seconds. If a low vacuum condition exists for more than 30 seconds the low vacuum indicator light will be illuminated and the system will remain running. See Section 5.5 in the troubleshooting and maintenance section for instructions on alarm condition remedies. If the system is running in the "Hand" position the indicator lights will illuminate if an alarm condition occurs, however, the blower will not shut down.

3.3 Moisture Separator

The moisture separator (located in the Salt Room) should be checked on a routine basis to determine if the system is collecting moisture from the extraction points. If the high liquid indicator light is on it indicates the float switch has sensed a high-liquid condition and the system will be shut down to protect it from pulling water through it. There is a manual drain valve at the bottom of the tank to drain the liquid. Once the tank is emptied, the switch will reset and normal operation can resume after resetting the alarm condition in the motor control panel.

4.0 SYSTEM MONITORING

If it is determined there is a potential for sub-slab vapors to impact building occupants and NYSDEC requires the resumption of an active mitigation at this location, the system will be turned back on and quarterly monitoring and inspections will be conducted to ensure the SSDS maintains a slight negative pressure under the building slab. The system will be monitored and inspected as outlined in this section if it is required to be restarted.

Differential pressure readings were collected from the DPSPs installed in the basement floor area throughout the building (in areas HDR is provided access) to document the negative pressure field under the slab. When necessary, the valves on the extraction legs can be adjusted to balance the system and ensure that a negative pressure field and proper coverage is maintained under the basement of the HWB.

As part of the quarterly inspections required when the system is in operation, the differential pressure gauge readings displayed in the system monitoring panel will be observed and documented on an inspection form for the HWB SSDS. The pressure gauge readings should be compared against previous readings. If there is a significant decrease in the readings it is possible that a change has occurred that may have affected the balance of the system or there is a problem with the vacuum in the lateral leg that is showing the significantly decreased reading. HDR will diagnose the issue or problem and provide the required maintenance and/or repairs (see Section 5.0, Troubleshooting and Maintenance).

Differential pressure transmitters convert the gauge readings into a 4-20 mA signal which is recorded on the Onset Hobo data logger. The data from the data logger will be downloaded on a quarterly basis. The data from the data logger provides documentation that the SSDS has been running consistently and is providing sufficient negative pressure at the four sections of the SSDS. The logged data recorded on the data logger will be downloaded to a laptop for review at another time. The battery on the logger will be replaced if necessary before starting it back up.

Where accessible, the extraction legs and the lateral suction leg piping will be inspected for any problems or damage. The blower unit on the roof will be inspected to document that the unit is running properly. If it appears there is a substantial amount of liquid in the moisture separator the system will be shut down and the tank inspected to determine how much water has collected in it. The inline particulate filter on the blower will be inspected for visible signs of dirt impregnation and replaced if necessary.

A handheld digital differential pressure gauge (Love Controls Model HM28 or equivalent) capable of reading differential pressure down to 0.001 inches of water column will be used to measure the differential pressures from the 19 DPSPs installed in the floor to document that sufficient negative pressure is being maintained under the slab in these areas. The differential pressure data will be reviewed and, if necessary, the system will be re-balanced by adjusting the control valves on the extraction points and/or adjustment of the blower intake by-pass valve to increase or reduce flow as required from the different sections of the lateral suction legs to maximize the system's capture under the slab of the building.

An annual maintenance inspection will be conducted during one of the quarterly inspection events. In addition to the tasks outlined for the quarterly inspection events, the accessible floor areas will be inspected for cracks or new penetrations in the floor or construction activities that could affect the SSDS's operational effectiveness. The building representative will be interviewed to determine if there have been any construction, renovation, or upgrade activities (e.g. installation of a new water main or gas lines or renovation of the heating system) that could have affected the performance or balance of the SSDS. The inspection will also include identification and repair of leaks within the piping and inspection of the exhaust, discharge pipe. Where necessary, repairs will be conducted and noted on the appropriate inspection form. Preventative maintenance shall be conducted as recommended by the manufacturer and for adherence to applicable warranties. Troubleshooting and maintenance is covered in more detail in Section 5.

5.0 TROUBLESHOOTING AND MAINTENANCE

5.1 Regenerative Blower Maintenance

The Ametek Rotron regenerative blower at this site is designed with maintenance-free, single stage dynamics, free of contacting moving parts other than the motor ball-bearings and the shaft seal. The blower motor ball-bearings are permanently sealed and the bearings are rated for 15,000 – 20,000 hours on average for continual maintenance-free operation.

If the by-pass valve on the blower is open the inline air filter should be inspected and cleaned if there are visible signs of dirt impregnation. Particle buildup on the filter element will reduce flow through the filter and an increase in vacuum will be noticed from the normal operating vacuum range. The filter can be cleaned by scrubbing it with a mild soap and water solution and allowing it to completely dry before inserting it back into the filter housing.

5.2 SSDS Moisture Accumulation

There is potential for moisture accumulation in the moisture separator tank and/or low sections of the lateral suction leg piping. This water should be drained as necessary to ensure the system operates properly. The moisture separator has a float switch on it such that the blower motor will be shut down when the tank is approximately half full to avoid water damage to the blower motor. Water accumulation in the lateral leg piping could restrict air flow and cause a reduction of vacuum on the upstream side of the restriction. Water that accumulates in the system is from condensate build-up. If necessary the condensate will be removed from the tank and/or the lateral legs to increase the effectiveness of the system.

5.3 Extraction Legs-Lateral Suction Legs–Discharge Piping to the Blower Unit

The PVC piping has glued joints for the most part and does not require any maintenance. At a few connection points rubber hose-clamp fittings were used to connect the system. If there appears to be a drop-off in the differential pressure reading at one of the four ports an inspection should be done to make sure there has been no damage to the extraction point(s) or the lateral suction leg piping in this area and all of the connection points are properly attached and sealed. The flow control valves at each extraction point should be checked to make sure they were not inadvertently closed off.

5.4 Pressure Monitoring Panel

The differential pressure gauges and transmitters are basically maintenance-free. The differential pressure gauges do not have any power requirements. The differential pressure transmitters receive DC power from the Sola power supply/transformer unit in the monitoring panel. If the Hobo data logger is not receiving data and it has a fresh battery in it check to make sure the transmitters are wired to the power source. The data logger is powered by a “button” battery; it has a red LED on it that flashes intermittently to indicate it is functioning normally and receiving data. Generally the batteries in these units will last more than a year. When the data logger is downloaded the software checks the battery condition. If the voltage on the battery appears to be

dropping or its level is marginal it should be replaced. If the transmitters are receiving power from the power supply and are still not sending data to the data logger they may be faulty and may need to be replaced.

If the readings from one or more of the differential pressure gauges is significantly lower than normal and the blower is running properly and the DPSP readings are similar to past readings check the following:

- Check and listen to the lateral suction legs to determine if they have water in them (drain if necessary)
- Check the tubing connection points in the monitoring panel; make sure they are properly attached and sealed to the gauges and transmitters
- Check the connection points where two sections of the vacuum tubing are joined together
- Check the locations where the tubing is attached to the piping (threaded fittings screwed into the lateral suction leg piping and connected to the tubing with a barbed fitting).

If the differential pressure readings from one or more of the DPSPs are significantly lower than normal or below the low-end guidance value provided in the NYSDOH guidance document for vapor intrusion (Guidance for Evaluating Soil Vapor Intrusion in the State of New York - October 2006) which is 0.002 inches of water column) check the following items:

- Check the blower to make sure it is running properly and the intake vacuum is within the operating range
- If the blower is running at a higher vacuum and is still not pulling sufficient air the particulate filter on the fresh air by-pass intake may need to be cleaned/replaced
- Check the extraction points and lateral suction legs to make sure they are not damaged
- Check the lateral suction leg control valves to make sure they are open and/or have not been significantly changed
- Check the floor for new cracks and/or penetrations to make sure they are not damaged
- Check the DPSPs to ensure they are not clogged due to moisture

5.5 Troubleshooting Guide

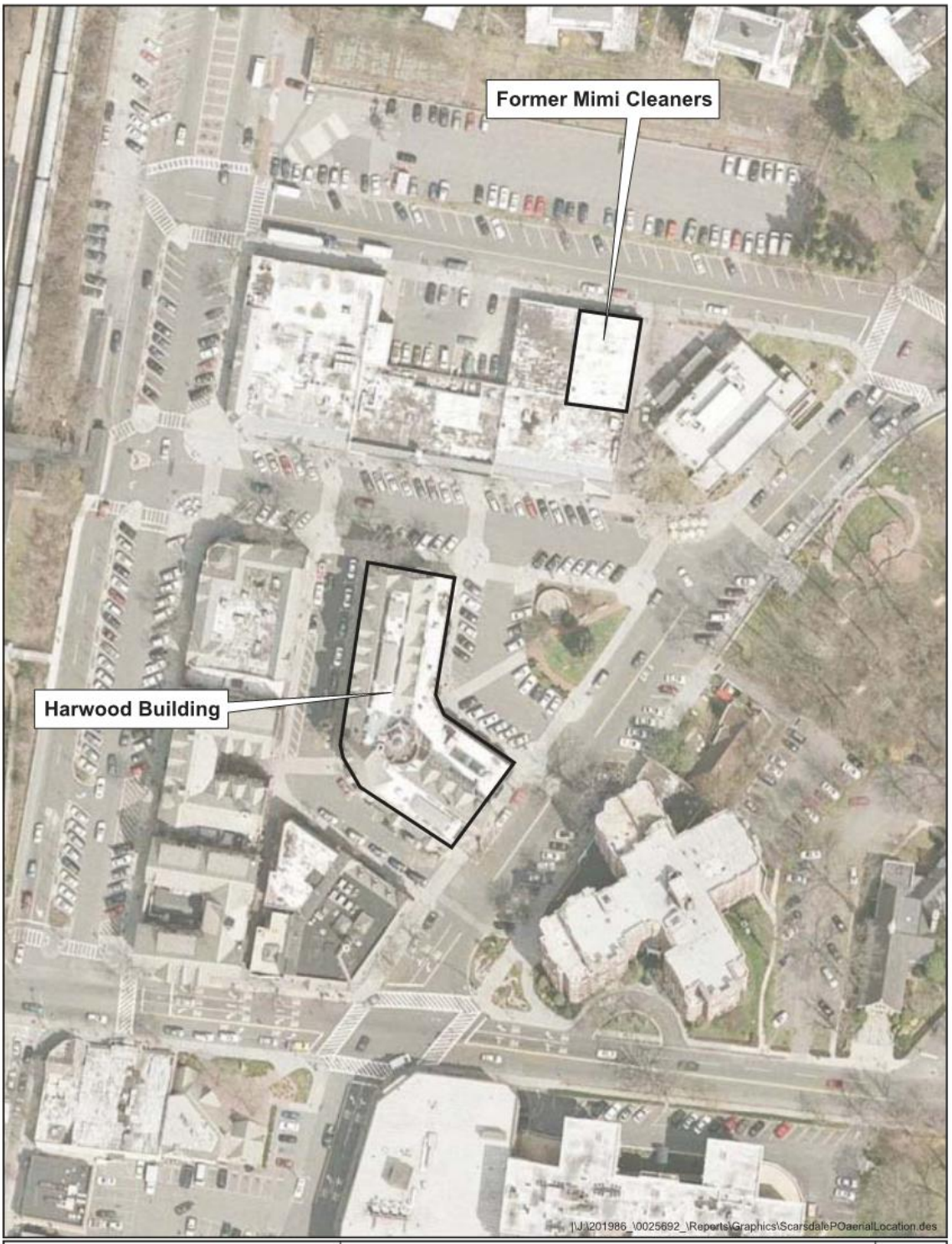
The following table lists procedures to correct system alarm conditions for the blower package when it is in operation:

Alarm Condition	Possible Cause	Remedy
Moisture Separator High-Level	Moisture separator is full & high-level switch tripped Liquid level switch could be faulty	Drain separator via manual drain at the bottom of the tank. Remove, check continuity while moving the float switch up and down
Blower High Vacuum	Extraction legs all closed? Is air flow restricted on the SSDS discharge piping to the blower	At least one extraction leg or bypass valve must be open. Check piping before blower for restriction
Blower High Pressure	Something blocking flow on discharge side of the blower	Check effluent piping for restrictions/blockage causing back pressure
Blower won't run	Motor Starter overload is tripped Fuses blown in roof mounted fused safety disconnect switch Control panel breaker is tripped Load center control panel breaker is tripped	Reset overload Check for continuity in power circuit to blower. If continuity good, check fuses, if fuses are bad replace. Reset breaker in control panel Reset breaker in load center
System Control / Monitoring Panel not working	2-amp control power fuse blown No power to system control/monitoring panel	Replace fuse Check fuses in adjacent safety disconnect, check 50-amp main breaker in the Electrical Room

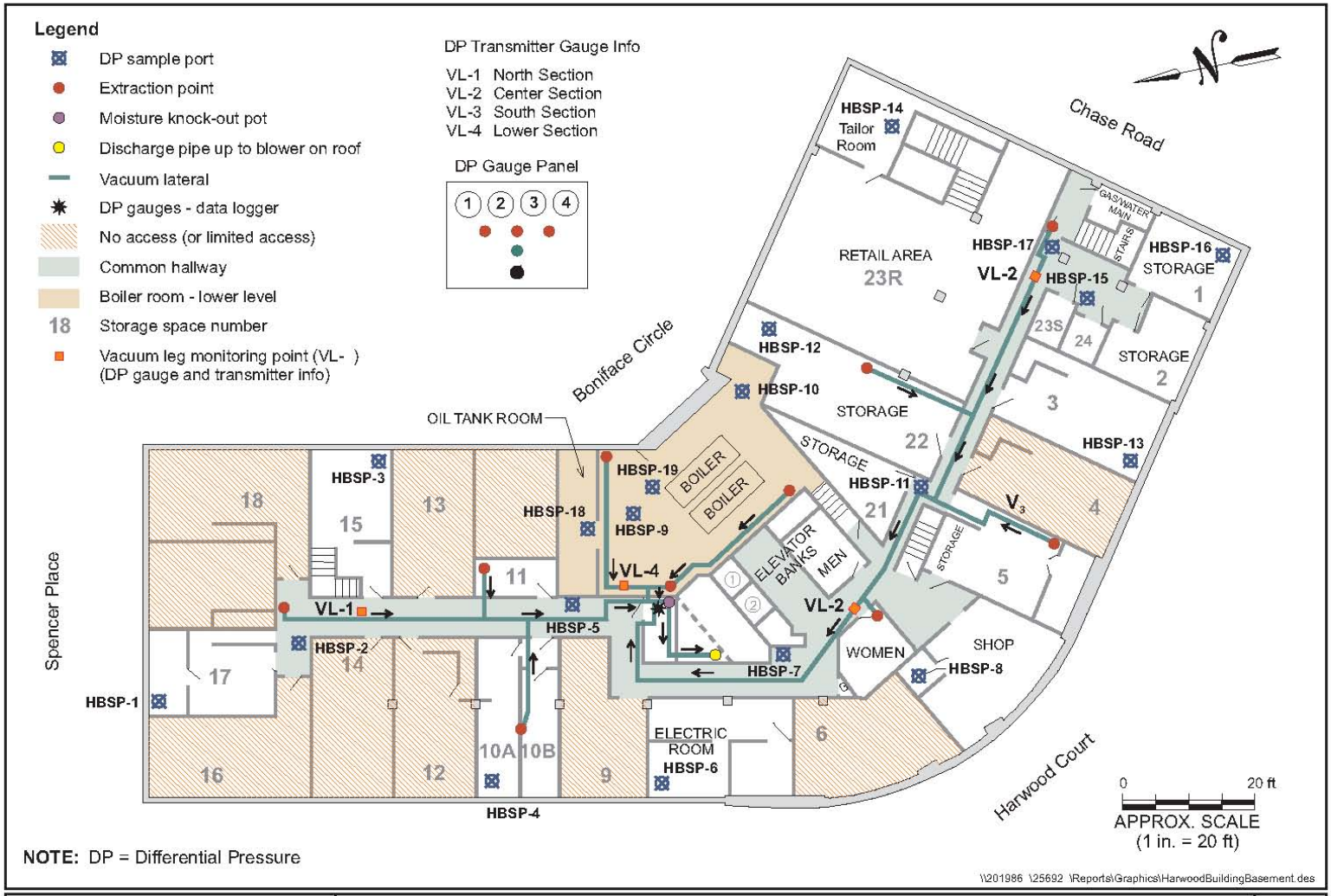
After the cause of an alarm condition has been corrected, pushing the alarm reset button will extinguish the alarm light and the blower can then be restarted.

5.6 Equipment Replacement

If any of the SSDS components fail or degrade because of a malfunction or they get worn out due to usage they will be replaced with compatible components to maintain the continued operation of the SSDS until NYSDOH indicates it can be shut down. This includes the components such as the regenerative blower, control panel switches, indicator lights, pressure gauges and transmitters, PVC piping, vacuum lines, etc.



HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Location of Harwood Building** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 1**



NOTE: DP = Differential Pressure

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HDR Henningson, Durham & Richardson Architecture and Engineering, P.C. in association with HDR Engineering, Inc. One Blue Hill Plaza Pearl River, NY 10965	**Harwood Building** **Sub-Slab Depressurization System Layout** **Former Mimi Dry Cleaners** — **Scarsdale, NY**	**Figure 2**

F-4 DECICCO BUILDING OPERATIONS & MAINTENANCE PLAN SUB-SLAB DEPRESSURIZATION SYSTEM

1.0 EQUIPMENT AND SPECIFICATIONS

1.1 Regenerative Blower Unit

1.1.1 Metal Enclosure Unit (on roof)

- **Outside Components**

- Safety On/Off Switch on outside of metal enclosure
  (Siemens General Duty Enclosed Switch – Type VBII)
- 110 VAC outdoor outlet on outside of metal enclosure

- **Inside Components**

- Regenerative 300 SCFM Blower (Ametek Rotron Model DR757D89X)
  (5 HP, 230 VAC, 3-phase, TEFC)
- Muffler
- 20-Gallon Moisture Separator Tank
- Moisture Separator Tank Float Switch
  (W.E. Anderson FlotecT Float Switch - Model L6EPB B930)
- Inlet Particulate Filter (Solberg Model CSL-851-200 HC)
- Air Bypass Valve Inlet Particulate Filter (Solberg Model FS-19P-15)
- Photohelic Pressure Switch/Gauge (Dwyer Series 3000 Model 3100A)
- Motor Control Panel Enclosure (Ultra Guard Model AM 1206)

1.1.2 Motor Control Panel (inside metal enclosure on roof)

- IDEC SmartRelay Control (Model FL1D-H12RCC)
- IDEC Contactors (Models YS1N-20 & YS1T-RHA25F)
- On/Off Switch (Hand-Off-Auto)
- High Liquid Alarm Indicator Light
- High Vacuum Indicator Light
- Low Vacuum Indicator Light
- Reset Button
- Running Time Meter

1.1.3 Inside Pressure Monitoring Panel (in Spencer Place Hallway)

- Aluminum Hinged Panel with Clear Cover (UltraLine Model AM-1648)
- Differential Pressure Gauges (4)
  (Dwyer Minihelic II Series 2-5000 [0-10 in. of water])
- Differential Pressure Transmitters (4)
  (Dwyer 616 Series; Model 616K-04 [0-10 in. of water])
- Onset Hobo Data Logger ((Model U12 4-External Channel)

- Sola Power Supply (Model SDP-06-24-100T)

1.2 Extraction Points & Lateral Suction Legs

- 2-in. Diameter schedule 40 PVC Slotted Well Screen Extraction Point (well screen extends below floor slab or through basement wall)
- Schedule 40 and 80 PVC Lateral Leg Piping (2-in. and 3-in. diameter)
- Extraction Point / Lateral Suction Leg Control Valves (Milwaukee Valve Co. Model BB2FS100)
- ¼" Vacuum Lines
- Fire-Proof Collars for through-wall penetrations
- Various wall supports and ceiling hangers to support piping

2.0 SYSTEM INSTALLATION

The SSDS for the DCB was designed and installed by INTEX Environmental Group, Inc. (INTEX) of Pipersville, PA under the direction of HDR. The SSDS for this building is similar in design to that at each of the buildings within the study area. A general description of the SSDS design is summarized below and details relevant to the building's specific layout follow. See Figure 1 for the location of the DCB in Scarsdale, New York. As mentioned previously, the DCB SSDS has been shut down since April 2011 as approved by NYSDEC and NYSDOH.

Prior to installation, the floor in the basement and the slab-on-grade portion of the DCB floor were inspected for cracks or openings. The slab-on-grade portion of the DeCicco store is completely tiled. In the basement, where necessary, cracks were sealed and any openings in the slab were sealed. There were two locations where a piece of diamond plate covered an opening in the slab in the basement. The diamond plates were sealed in place with silicone caulk. The slab-on-grade portion of the DCB is the DeCicco's grocery store and most of the basement area is used to stock the supplies for the grocery store. In addition, a portion of the basement area is used by a bank located above it (Washington Mutual) and this area includes their vault. These constraints limit access to some areas of this building. HDR attempted to keep disruptions to the normal operations of the store and bank to a minimum.

The communication testing data from the adjacent Spencer Place Building (SPB) was used to design the SSDS for the DCB. For the SPB the communication testing was conducted to aid in the design of an effective SSDS (e.g., number of extraction points, blower size, radius of influence below the basement slab, piping size, etc.). A Shop-Vac® commercial/industrial use wet/dry vacuum (Model No. 925-50-10) with a suction pressure of 80 inches of water column was used to apply a vacuum at various pressures at a number of locations to help determine the radius of influence below the basement slab by measuring the differential pressure at various locations around the vacuum point with a low-range differential pressure manometer (Gray Wolf Zephyr II digital micro-manometer, or equivalent). It was assumed the material under the DCM would be similar to that of the SPB. SSDS for the DCB was designed so that additional extraction legs could be added if necessary. Additional extraction legs were added to the SSDS after the data from the initial rounds differential pressure testing were reviewed.

As part of the SSDS design for the DCB, extraction points for the SSDS were installed through the basement or slab floor and piped to a blower mounted on the roof of the adjacent SPB. INTEX cored through the concrete floor at designated locations and installed a 2-in. diameter schedule 40 PVC well screen point approximately 1.5-2 feet below the slab. This screened section of PVC was sealed in place at the top of the slab with a concrete grout and coupled to PVC piping.

The PVC piping from the extraction point runs up to the ceiling and joins a PVC lateral suction leg. The piping from the extraction point to the lateral suction leg and the lateral suction leg piping is schedule 40 or schedule 80 PVC depending on the location and potential for it getting knocked into and/or disturbed. The lateral suction legs run to a point where they join with other lateral suction legs and eventually they are manifolded into two PVC discharge pipes. These

pipes exit the basement through the ceiling and run up through the first floor and up through a sealed penetration through the roof (completed by the building owner's roofing contractor). All lateral suction leg piping penetrations through walls were sealed with fire-proof collars in accordance with applicable codes. For the slab-on-grade portion of the DCB, INTEX installed horizontal extraction points through the basement walls at four locations to extend the influence of the SSDS under this portion of the building. They cored through the basement wall near the ceiling and augered in as far as they could to install a 2-foot section of PVC well screen attached to a solid piece of PVC piping. They were able to penetrate 5 to 9 ft past the basement wall at these locations. These horizontal extraction points were tied into the lateral suction legs.

The SSDS discharge piping exits through the roof and the two pipes are manifolded together and it runs over to a regenerative blower (5 HP) mounted on the adjacent roof of the SPB. The blower is housed in a weather-tight metal enclosure with an enclosed safety on/off disconnect switch mounted on the outside of it. The blower package inside the metal enclosure also contains a PCL-based motor control panel. The motor control panel contains IDEC Contactors/Starters and a IDEC SmartRelay control. The display window of this electronic control panel displays the 3-position on/off switch (Hand-Off-Auto), high/low pressure blower shutdown indicator lights, a high level liquid indicator light, a reset button, and a running time meter. The blower package inside the metal enclosure also contains intake air filters, a 20-gallon moisture separator tank with a float switch, and a differential pressure switch/gauge with adjustable high/low shutdown set points. The discharge pipe from the blower package contains a muffler/silencer.

Each vertical extraction leg of the SSDS has an in-line gate valve to provide manual adjustment to be able to balance the suction rates from the individual points to adjust the radius of depressurization/influence at each of the points allowing the system to achieve proper depressurization under the DCB. In addition, the blower has an ambient air by-pass value on it to allow adjustment of the vacuum provided by the blower it self. Due to the limited access to the bank area of the basement an in-line gate valve was installed in the Spencer Place hallway just outside the bank area that controls the two extraction points installed inside the bank space.

There are four vacuum lines tapped into the lateral suction leg piping at various locations to monitor and document the differential pressure in the lateral legs of the system. Small diameter vacuum tubing is tapped into the pipe at these locations and the tubing runs back along the piping to the pressure monitoring panel located on the wall in the DCB basement hallway along Spencer Place. These vacuum hoses are attached to differential pressure gauges (Dwyer Minihelic II gauges; 0-10 inches of water column) for real-time readings/documentation that the SSDS is providing sufficient vacuum in the lateral suction leg where it is attached. These gauges are labeled below the gauges to indicate which lateral leg they are attached to:

- VL-1 (Northern Leg)
- VL-2 (Mid-Point Leg)
- VL-3 (Bank Area Leg)
- VL-4 (Beverage Room Leg)

This allows HDR personnel or a trained representative to periodically check the gauges and document the system is running properly. If it appears there is a problem or a significant decline in the differential pressure gauge readings HDR will be notified immediately so the issue can be investigated and corrected as required.

In addition, the vacuum lines are split in the system control/monitoring panel and the other leg of the vacuum line is attached to a differential pressure transmitter (Dwyer Series 616). The transmitters convert the reading into a 4-20 mA output signal which is sent to a 4-channel data logger (Hobo Model U12). The data logger can store the four channels of data for approximately 6 months. The data from the data logger are downloaded to a laptop computer to provide documentation that the SSDS has been working properly (continuous data and readings that remain fairly consistent).

There are permanent differential pressure sample ports (DPSPs) in the basement floor or slab-on-grade portion of the building that can be accessed periodically to measure and document the pressure differential under the slab throughout the basement of the building to ensure the SSDS is providing adequate negative pressure under the slab. There are a total of 13 DPSPs installed in the DCB (there are five in the slab-on-grade portion and eight in the basement portion of the building). These sample ports are sealed with a threaded plug when not in use.

3.0 SYSTEM OPERATION

3.1 Regenerative Blower Operation

At the main blower control panel in the metal enclosure on the roof of the SPB there is a Hand-Off-Auto switch for the regenerative blower that energizes the motor starter circuit to the blower. In order for the blower to operate the Hand-Off-Auto switch must be in the Hand or Auto setting. In the Hand position, the blower will operate while bypassing any alarm conditions (high level liquid, blower high vacuum, and blower high pressure). With the switch set in the Auto position, all alarms are functional and the control panel will shut down the blower if an alarm condition occurs. Power is supplied to the blower from a 30-amp 3-pole breaker located in the dedicated 100-amp 3-phase main circuit breaker panel in the electric room of the SPB. There is also a fused emergency disconnect safety switch for the system mounted on the outside of the metal blower enclosure.

3.1.1 Motor Starter & Circuit Breakers

Power to the blower control panel is supplied by a 30-amp 3-pole breaker located in the dedicated 100-amp 3-phase main breaker panel in the electrical room of the SPB.

3.1.2 Blower Control Panel

The blower control panel houses the regenerative blower motor starter with overload protection. The motor starter overload relay is designed to interrupt power to the SSDS blower if the amperage draw is more than 15 amps. Power to the motor starter is supplied by a 230 VAC 30-amp 3-pole breaker. It is additionally protected by the 20-amp fuses in the fused safety disconnect enclosure mounted on the side of the metal blower housing. The blower motor amperage draw during normal operation should be 12.8 amps.

3.2 Alarm Conditions

The blower control panel contains the indicator lights displayed through the clear door of the enclosure panel inside the metal blower enclosure. The panel contains the Hand-Off-Auto switch with a system running indicator light (green). This panel also displays the high level liquid, blower high-pressure, and the blower low-pressure indicator lights (red) along with a manual reset button for the alarms. When the blower is running in the “Auto” position and an alarm condition occurs the indicator light will illuminate and the blower will shut down if high water or high vacuum conditions exist more than 30 seconds. If a low vacuum condition exists for more than 30 seconds the low vacuum indicator light will be illuminated and the system will remain running. See Section 5.5 in the troubleshooting and maintenance section for instructions on alarm condition remedies. If the system is running in the “Hand” position the indicator lights will illuminate if an alarm condition occurs, however, the blower will not shut down.

3.3 Blower Package Sensors and Gauges

The blower package is equipped with a photohelic differential pressure switch/gauge which shows the operating pressure (vacuum) of the blower and it also displays the adjustable low-vacuum and high-vacuum set points for the blower.

3.4 Moisture Separator

The moisture separator should be check on a routine basis to determine if the system is collecting moisture from the extraction points. If the high liquid indicator light is on it indicated the float switch has sensed a high-liquid condition and the blower will be shut down to protect it from pulling water through it. There is a manual drain valve at the bottom of the tank to drain the liquid. Once the tank is emptied, the switch will reset and normal operation can resume after resetting the alarm condition in the motor control panel.

3.5 Pressure Monitoring Panel

The pressure monitoring panel in the south hallway in the basement of the DCB contains differential pressure gauges, differential pressure transmitters, and a data logger. The power to the monitoring panel is supplied from the house 115 VAC outlet circuit located in the hallway. The power for the monitoring panel is protected by a 1-amp quick blow fuse located in the panel. The pressure transmitters receive DC power from the 200-watt Sola power supply/transformer unit in the monitoring panel. The data logger is powered by a 3 volt “button” battery (Duracell DL 2032, or equivalent). When the data is downloaded from the data logger the voltage on the battery should be checked and replaced if necessary.

4.0 SYSTEM MONITORING

If it is determined there is a potential for sub-slab vapors to impact building occupants and NYSDEC requires the resumption of an active mitigation at this location, the system will be turned back on and quarterly monitoring and inspections will be conducted to ensure the SSDS maintains a slight negative pressure under the building slab. The system will be monitored and inspected as outlined in this section if it is required to be restarted.

Differential pressure readings will be collected from the DPSPs installed in the basement floor area and slab-on-grade portion of the DCB (in areas that HDR has been provided access) to document the negative pressure field under the slab. When necessary, the valves on the extraction legs can be adjusted to re-balance the system and ensure that a negative pressure field and proper coverage is maintained under the basement and slab-on-grade floors of DCB.

As part of the quarterly inspections required when the system is in operation, the differential pressure gauge readings displayed in the system monitoring panel will be observed and documented on an inspection form for the DCB SSDS. The pressure gauge readings should be compared against previous readings. If there is a significant decrease in the readings it is possible that a change has occurred that may have affected the balance of the system or there is a problem with the vacuum in the lateral leg that is showing the significantly decreased reading. HDR will diagnose the issue or problem and provide the required maintenance and/or repairs (see Section 5.0, Troubleshooting and Maintenance).

Differential pressure transmitters convert the gauge readings into a 4-20 mA signal which is recorded on the Onset Hobo data logger. The data from the data logger will be downloaded on a quarterly basis. The data from the data logger provides documentation that the SSDS has been running consistently and is providing sufficient negative pressure at the four sections of the SSDS. The logged data recorded on the data logger will be downloaded to a laptop for review at another time. The battery on the logger will be replaced if necessary before starting it back up.

Where accessible, the extraction legs and the lateral suction leg piping will be inspected for any problems or damage. The blower package for the DCB, which is located on the SPB roof, will be inspected to document that the unit is running properly. If it appears there is a substantial amount of liquid in the moisture separator the system will be shut down and the tank inspected to determine how much water has collected in it. The inline particulate filter on the blower will be inspected for visible signs of dirt impregnation and replaced if necessary.

A handheld digital differential pressure gauge (Love Controls Model HM28 or equivalent) capable of reading differential pressure down to 0.001 inches of water column will be used to measure the differential pressures from the 13 DPSPs installed in the floor to document that sufficient negative pressure is being maintained under the slab in these areas. The differential pressure data will be reviewed and, if necessary, the system will be re-balanced by adjusting the control valves on the extraction points and/or adjustment of the blower ambient air by-pass valve to increase or reduce flow as required from the different sections of the lateral suction legs to maximize the system's capture under the slab of the building.

An annual maintenance inspection will be conducted during one of the quarterly inspection events. In addition to the tasks outlined for the quarterly inspection events, the accessible floor areas will be inspected for cracks or new penetrations, or construction activities that could affect the SSDS's operational effectiveness The building representative will be interviewed to determine if there have been any construction, renovation, or upgrade activities (e.g. installation of a new water main or gas lines or renovation of the heating system) that could have affected the performance or balance of the SSDS. The inspection will also include identification and repair of leaks within the piping and inspection of the exhaust, discharge pipe. Where necessary, repairs will be conducted and noted on the appropriate inspection form. Preventative maintenance shall be conducted as recommended by the manufacturer and for adherence to applicable warranties. Troubleshooting and maintenance is covered in more detail in Section 5.

5.0 TROUBLESHOOTING AND MAINTENANCE

5.1 Regenerative Blower Maintenance

The Ametek Rotron regenerative blower at this site is designed with maintenance-free, single stage dynamics, free of contacting moving parts other than the motor ball-bearings and the shaft seal. The blower motor ball-bearings are permanently sealed and the bearings are rated for 15,000 – 20,000 hours on average for continual maintenance-free operation.

The inline filter should be inspected and cleaned if there are visible signs of dirt impregnation. Particle buildup on the filter element will reduce flow through the filter and an increase in vacuum will be noticed from the normal operating vacuum range. The filter can be cleaned by scrubbing it with a mild soap and water solution and allowing it to completely dry before inserting it back into the filter housing.

5.2 SSDS Moisture Accumulation

There is potential for moisture accumulation in the moisture separator tank and/or low sections of the lateral suction leg piping. This water should be drained as necessary to ensure the system operates properly. The moisture separator has a float switch on it such that the blower motor will be shut down when the tank is approximately half full to avoid water damage to the blower motor. Water accumulation in the lateral leg piping could restrict air flow and cause a reduction of vacuum on the upstream side of the restriction. Water that accumulates in the system is from condensate build-up. If necessary the condensate will be removed from the tank and/or the lateral legs to increase the effectiveness of the system.

5.3 Extraction Legs-Lateral Suction Legs–Discharge Piping to the Blower Unit

The PVC piping has glued joints for the most part and does not require any maintenance. At a few connection points rubber hose-clamp fittings were used to connect the system. If there appears to be a drop-off in the differential pressure reading at one of the four ports an inspection should be done to make sure there has been no damage to the extraction point(s) or the lateral suction leg piping in this area and all of the connection points are properly attached and sealed including the flow control valves. The flow control valves at each extraction point should be checked to make sure they were not inadvertently closed off.

5.4 Pressure Monitoring Panel

The differential pressure gauges and transmitters are basically maintenance-free. The differential pressure gauges do not have any power requirements. The differential pressure transmitters receive DC power from the Sola power supply/transformer unit in the monitoring panel. If the Hobo data logger is not receiving data and it has a fresh battery in it check to make sure the transmitters are wired to the power source. The data logger is powered by a “button” battery; it has a red LED on it that flashes intermittently to indicate it is functioning normally and receiving. Generally the batteries in these units will last more than a year. When the logger is downloaded the software checks the battery condition. If the voltage on the battery appears to be

dropping it should be replaced. If the transmitters are receiving power from the power supply and are still not sending data to the data logger they may be faulty and may need to be replaced.

If the readings from one or more of the differential pressure gauges is significantly lower than normal and the blower is running properly and the DPSP readings are similar to past readings check the following:

- Check and listen to the lateral suction legs to determine if they have water in them (drain if necessary)
- Check the tubing connection points in the monitoring panel; make sure they are properly attached and sealed to the gauges and transmitters
- Check the connection points where two sections of the vacuum tubing are joined together
- Check the locations where the tubing is attached to the piping (threaded fittings screwed into the lateral suction leg piping and connected to the tubing with a barbed fitting).

If the differential pressure readings from one or more of the DPSPs are significantly lower than normal or below the low-end guidance value provided in the NYSDOH guidance document for vapor intrusion (Guidance for Evaluating Soil Vapor Intrusion in the State of New York - October 2006, which is 0.002 inches of water column) check the following items:

- Check the blower to make sure it is running properly and the intake vacuum is within the operating range
- If the blower is running at a higher vacuum and is still not pulling sufficient air the intake particulate filter(s) may need to be cleaned/replaced
- Check the extraction points and lateral suction legs to make sure they are not damaged
- Check the lateral suction leg control valves to make sure they are open and/or have not been significantly changed
- Check the floor for new cracks and/or penetrations to make sure they are not damaged
- Check the DPSPs to ensure they are not clogged due to moisture

5.5 Troubleshooting Guide

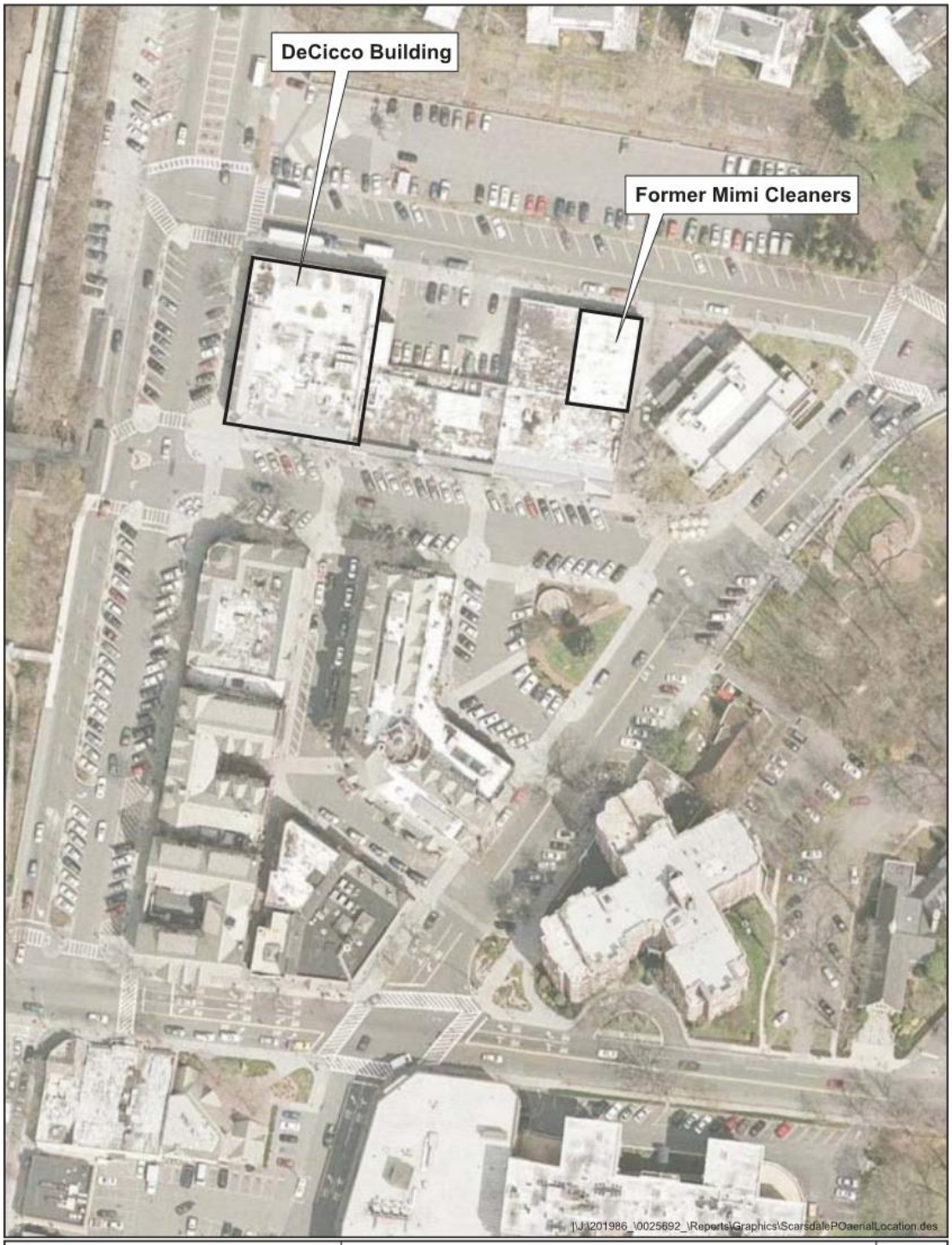
The following table lists procedures to correct system alarm conditions for the blower package when it is in operation:

Alarm Condition	Possible Cause	Remedy
Moisture Separator High-Level	Moisture separator is full & high-level switch tripped Liquid level switch could be faulty	Drain separator via manual drain at the bottom of the tank. Remove, check continuity while moving the float switch up and down
Blower High Vacuum	Extraction legs all closed? Is air flow restricted on the SSDS discharge piping to the blower Air filter restricting flow	At least one extraction leg or bypass valve must be open. Check piping before blower for restriction Clean or replace air filter
Blower High Pressure	Something blocking flow on discharge side of the blower	Check effluent piping for restrictions/blockage causing back pressure
Blower won't run	Overload Relay is tripped Motor Control Panel fuse is blown. Fuses blown in fused safety disconnect switch Load center control panel breaker is tripped	Reset overload relay Check for continuity in power circuit to blower. If continuity good, check fuses, if fuses are bad replace. Reset breaker in load center
Monitoring Panel not working	1-amp control power fuse blown No power to system control/monitoring panel	Replace fuse Check fuses in safety disconnect, check 50-amp main breaker in the Electrical Room

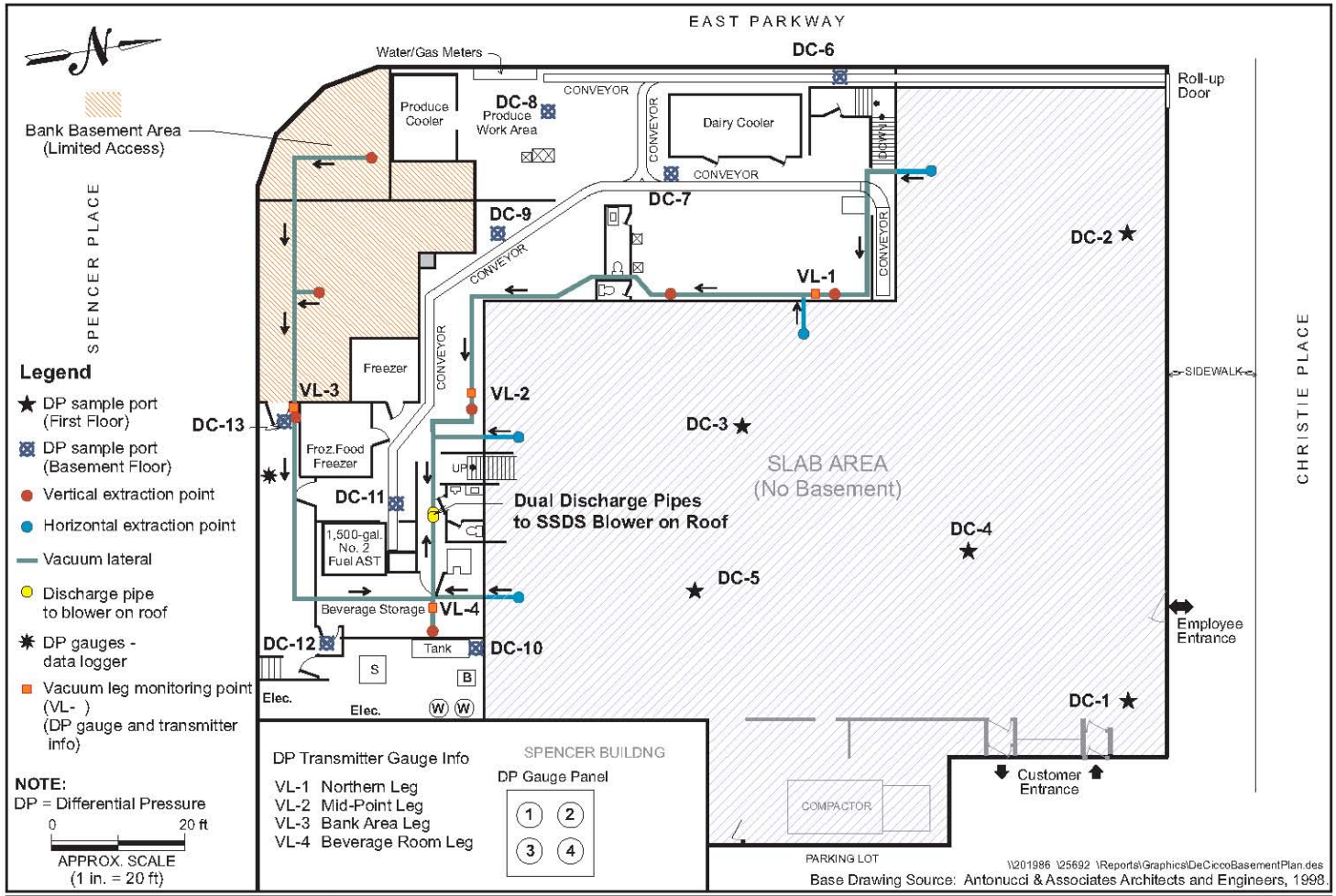
After the cause of the alarm condition has been corrected, pushing the alarm reset button will extinguish the alarm light and the blower will restart.

5.6 Equipment Replacement

If any of the SSDS components fail or degrade because of a malfunction or they get worn out due to usage they will be replaced with compatible components to maintain the continued operation of the SSDS until NYSDOH indicates it can be shut down. This includes the components such as the regenerative blower, control panel switches, indicator lights, pressure gauges and transmitters, PVC piping, vacuum lines, etc.



HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Location of DeCicco Building** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 1**



HDR Henningson, Durham & Richardson Architecture and Engineering, P.C. in association with HDR Engineering, Inc. One Blue Hill Plaza Pearl River, NY 10965	**DeCicco Building** **Sub-Slab Depressurization System Layout** Former Mimi Dry Cleaners — Scarsdale, NY	Figure 2

F-5 SCARSDALE POST OFFICE OPERATIONS & MAINTENANCE PLAN SUB-SLAB DEPRESSURIZATION SYSTEM

1.0 EQUIPMENT AND SPECIFICATIONS

1.1 Regenerative Blower Unit

1.1.1 Metal Enclosure Unit (on roof)

- **Outside Components**

- Safety On/Off Switch on outside of metal enclosure
  (Siemens General Duty Enclosed Switch – Type VBII)
- 110 VAC outdoor outlet on outside of metal enclosure

- **Inside Components**

- Regenerative 300 SCFM Blower (Ametek Rotron Model DR757D89X)
  (5 HP, 220 VAC, 3-phase, TEFC)
- Muffler
- 20-Gallon Moisture Separator Tank
- Moisture Separator Tank Float Switch
  (W.E. Anderson FlotecT Float Switch - Model L6EPB B930)
- Inlet Particulate Filter (Solberg Model CSL-851-200 HC)
- Air Bypass Valve Inlet Particulate Filter (Solberg Model FS-19P-15)
- Photohelic Pressure Switch/Gauge (Dwyer Series 3000 Model 3100A)
- Motor Control Panel (Ultra Guard Model AM 1206)

1.1.2 Motor Control Panel (inside metal enclosure on roof)

- IDEC SmartRelay Control (Model FL1D-H12RCC)
- IDEC Contactors (Models YS1N-20 & YS1T-RHA25F)
- On/Off Switch (Hand-Off-Auto)
- High Liquid Alarm Indicator Light
- High Vacuum Indicator Light
- Low Vacuum Indicator Light
- Reset Button
- Running Time Meter

1.1.3 Inside Pressure Monitoring Panel (in back office near building's electrical panel)

- Aluminum Hinged Panel with Clear Cover (UltraLine Model AM-1648)
- Differential Pressure Gauges (4)
  (Dwyer Minihelic II Series 2-5000 (0-20 in. of water)

- Differential Pressure Transmitters (4) (Dwyer 616 Series; Models 616-4 & 616-7 [0-10 & 0-200 in. of water, respectively])
- Onset Hobo Energy Pro Data Logger (Model H22)
- Sola Power Supply (Model SDP-06-24-100T)

1.2 Extraction Points & Lateral Suction Legs

- 2-in. Diameter schedule 40 PVC Slotted Well Screen Extraction Point (back portion of building's basement where there is a concrete floor slab)
- 3-in. Diameter Schedule 40 PVC Slotted Well Screen Extraction Point (front portion of building's basement where geotextile membrane was installed to seal the dirt floor)
- Schedule 40 and 80 PVC lateral suction legs (various diameters)
- Extraction Point / Lateral Suction Leg Control Valves (Milwaukee Valve Co. Model BB2FS100)
- ¼" Vacuum Lines
- Specified Technologies Inc. (STI) Specseal LLC Firestop Collar Model LCC150 UPC No. 03901 for through-wall penetrations
- Various wall supports and ceiling hangers to support piping

1.3 Geotextile Membrane Sealing Dirt Floor Area

- Transmissivity Layer (SKAPS Transnet 220 bi-planar geocomposite)
- Vapor Intrusion Barrier (Dura-Skrim Geotextile Membrane (12 mil)
- Protective Cover (Marifi 180N nonwoven geotextile)

2.0 SYSTEM INSTALLATION

The SSDS for the SPOB was designed and installed by INTEX Environmental Group, Inc. (INTEX) of Pipersville, PA under the direction of HDR. The SSDS for this building is similar in design to that at each of the buildings within the study area. A general description of the SSDS design is summarized below and details relevant to the building's specific layout follow. See Figure 1 for the location of the SPOB in Scarsdale, New York. Figure 2 shows the layout of the SSDS for the SPOB. As mentioned previously, the SPOB SSDS has been shut down since April 2011 as approved by NYSDEC and NYSDOH.

The front portion of the SPOB basement has a dirt floor. As part of the SSDS installation, this portion of the basement was sealed with a geotextile membrane as a vapor intrusion barrier. The floor area was leveled and sealed with a reinforced polyethylene 12-mil thick geotextile membrane liner. Beneath the geotextile membrane a bi-planer geocomposite material was installed in place of a stone sub-base to provide sufficient transmissivity for effective vacuum depressurization beneath the geo-membrane. The geocomposite material consists of a geonet bonded between two layers of nonwoven filter fabric (SKAPS Transnet 220 bi-planar geocomposite). After raking and regrading the bi-planar geocomposite was rolled out on the floor to provide some cushioning and abrasion resistance for the geotextile membrane and then geotextile membrane fabric was rolled out on top of the geonet. The geotextile membrane was brought up the walls a few inches and sealed to the walls with a mastic caulk sealant and physically secured furring strips that were fixed to the walls with hammerset anchors. The geotextile membrane was also sealed around the support columns in the same manner. An additional layer of polyethylene filter fabric material was rolled out on top of the geotextile membrane to provide protection of the geotextile liner and better traction for anyone that has to walk on the geotextile membrane in this area.

Prior to installation of the SSDS, the concrete floor area of the basement was inspected for cracks or openings. In the basement, where necessary, cracks were sealed and any openings in the slab were sealed. When the system was turned on there was a floor drain in a small office area in the northwest corner portion of the building that appeared to be compromised because air could be heard getting pulled through it from the SSDS. The SP representative approved of HDR sealing this floor drain with concrete. The SPOB concrete floor slab area of the basement is generally used for offices and storage. The dirt floor portion of the basement is generally not used by the Post Office personnel.

The communication testing data from the nearby Spencer Place Building (SPB) was used to design the SSDS for the SPOB. For the SPB the communication testing was conducted to aid in the design of an effective SSDS (e.g., number of extraction points, blower size, radius of influence below the basement slab, piping size, etc. A Shop-Vac® commercial/industrial use wet/dry vacuum (Model No. 925-50-10) with a suction pressure of 80 inches of water column was used to apply a vacuum at various pressures at a number of locations and determining the radius of influence below the basement slab by measuring the differential pressure at various locations around the vacuum point with a low-range differential pressure manometer (Gray Wolf Zephyr II digital micro-

manometer or equivalent). It was assumed the material under the SPOB would be similar to that of the SPB. In addition, a slightly larger blower was specified for this system to provide additional suction if needed. The SSDS for the SPOB was designed so that additional extraction legs could be added if necessary.

As part of the SSDS design for the SPOB, six extraction points were installed through the concrete slab portion of the basement and six extraction points were installed through the geotextile membrane in the dirt floor portion of the basement. The extraction legs join together and are piped to a blower mounted on the roof of the SPOB.

In the concrete slab portion of the building INTEX cored through the concrete floor at designated locations and installed a 2-in. diameter Schedule 40 PVC well screen point approximately 1-2 feet below the slab. This screened section of PVC was sealed in place at the top of the slab with a concrete grout and coupled to PVC piping. For the dirt floor portion of the basement INTEX dug out 1-ft diameter holes approximately 2-ft deep and filled them with pea-gravel and installed the extraction points to provide a larger zone of influence for the extraction points in this area. The geotextile membrane was sealed around the extraction leg piping. The PVC piping from the extraction point runs up to the ceiling area in the basement and joins a PVC lateral suction leg. The piping from the extraction points to the lateral suction leg and the lateral suction leg piping is schedule 40 or schedule 80 PVC depending on the location and potential for it getting knocked into and/or disturbed. The lateral suction legs run to a point where they join with other lateral suction legs and eventually they are manifolded to a PVC discharge pipe that exits through the basement wall in the southwest corner area of the building where it runs up the exterior wall to the blower unit on roof. All lateral suction leg piping penetrations through interior walls were sealed with fire-proof collars in accordance with applicable codes.

The SSDS discharge piping is connected to a regenerative blower (5 HP) mounted on the roof of the SPOB. The blower is housed in a weather-tight metal enclosure with a safety on/off disconnect switch mounted on the outside of it. The blower package inside the metal enclosure also contains a PLC-based motor control panel. The motor control panel contains IDEC Contactors/Starters and an IDEC SmartRelay control. The display window of this electronic control panel displays the 3-position on/off switch (Hand-Off-Auto), high/low pressure blower shutdown indicator lights, a high level liquid indicator light, a reset button, and a running time meter. The blower package inside the metal enclosure also contains intake air filters, a 20-gallon moisture separator tank with a float switch, and a differential pressure switch/gauge with adjustable high/low shutdown set points. The discharge pipe from the blower package contains a muffler/silencer.

Each vertical extraction leg of the SSDS has an in-line gate valve to provide manual adjustment to be able to balance the suction rates from the individual points to adjust the radius of depressurization/influence at each of the points allowing the system to achieve proper depressurization under the SPOB. In addition, the blower has an ambient air by-pass valve on it to allow adjustment of the vacuum provided by the blower itself.

There are four vacuum lines tapped into the main lateral suction leg piping at various locations to monitor and document the differential pressure in the lateral legs of the system. Small diameter vacuum tubing is tapped into the pipe at these locations and the tubing runs back along the piping to the pressure monitoring panel located in the back office area (Office # 3) on the wall near the main electrical panel for the building. These vacuum hoses are attached to differential pressure gauges (Dwyer Minihelic II gauges; 0-10 inches of water column) for real-time readings/documentation that the SSDS is providing sufficient vacuum in the lateral suction leg where it is attached. These gauges are labeled below the gauges to indicate which lateral leg they are attached to:

- VL-1 (Southern-Most Leg) (top left gauge)
- VL-2 (South-Center Leg) (top right gauge)
- VL-3 (North-Center Leg) (bottom left gauge)
- VL-4 (Northern-Most Leg) (bottom right gauge)

This allows HDR personnel or a trained representative to periodically check the gauges and document the system is running properly. If it appears there is a problem or a significant decline in the differential pressure gauge readings HDR will be notified immediately so the issue can be investigated and corrected as required.

In addition, the vacuum lines are split in the system control/monitoring panel and the other leg of the vacuum line is attached to a differential pressure transmitter (Dwyer Series 616). The transmitters convert the reading into a 4-20 mA output signal which is sent to a multi-channel data logger (Hobo Model H22). The data logger can store data for approximately 2 years. The data from the data logger are downloaded to a laptop computer to provide documentation that the SSDS has been working properly (continuous data and readings that remain fairly consistent).

Since this building does not have a service disconnect panel for the main electrical service coming into the building the system could not be set-up with a separate electrical meter panel to document electrical usage by the SSDS. An unused 70-amp circuit breaker in the building's power distribution panel was used to provide power to the SSDS. Current transformer coils (CTs) are installed on the three legs supplying the power to the blower system allowing the Continental Control Systems Wattnode to monitor the instantaneous power usage and produce a pulse proportional to the watt-hours. The power consumption for the SSDS is recorded by the Onset Hobo data logging system. In addition to monitoring the differential pressure from the four transducers, this data logger has an additional module on it (kWh Assistant) that logs pulsed output data from the WattNode. This data can be converted to kWh, average kW and energy costs with the Hobo software when the data logger is downloaded.

There are permanent differential pressure sample ports (DPSPs) in the concrete floor portion of the basement that can be accessed periodically to measure and document the pressure differential throughout the slab portion of the basement to ensure the SSDS is providing adequate negative pressure under the slab. There are a total of 7 DPSPs in the

SPOB. These sample ports are sealed with a threaded plug when not in use. The dirt floor area that is sealed with the geotextile membrane does not have any DPSPs in it. The SSDS is physically pulling the geotextile membrane to the dirt which can be observed during inspections.

3.0 SYSTEM OPERATION

3.1 Regenerative Blower Operation

At the main blower control panel in the metal enclosure on the roof of the SPOB there is a Hand-Off-Auto switch for the regenerative blower that energizes the motor starter circuit to the blower. In order for the blower to operate the Hand-Off-Auto switch must be in the Hand or Auto setting. In the Hand position, the blower will operate while bypassing any alarm conditions (high level liquid, blower-high vacuum, and blower high pressure). With the switch set in the Auto position, all alarms are functional and the control panel will shut down the blower if an alarm condition occurs. Power is supplied to the blower from a 70-amp 3-pole breaker located in the 400-amp 3-phase power distribution panel in the basement in the back office area (Office #3). There is also a fused emergency disconnect safety switch for the system mounted on the outside of the metal blower enclosure on the roof. In addition, there is an emergency safety shut-off switch for the system mounted in the window of the monitoring panel in the room where the main breakers are located.

3.1.1 Motor Starter & Circuit Breakers

Power to the blower control panel is supplied by a 70-amp 3-pole breaker located in the main breaker panel in the building's electrical panel.

3.1.2 Blower Control Panel

The blower control panel houses the regenerative blower motor starter with overload protection. The motor starter overload relay is designed to interrupt power to the SSDS blower if the amperage draw is more than 15 amps. Power to the motor starter is supplied by a 230 VAC 30-amp 3-pole breaker. It is additionally protected by the 20-amp fuses in the fused safety disconnect enclosure mounted on the side of the metal blower housing. The blower motor amperage draw during normal operation should be 12.8 amps.

3.2 Alarm Conditions

The blower control panel contains the indicator lights displayed through the clear door of the enclosure panel inside the metal blower enclosure. The panel contains the Hand-Off-Auto switch with a system running indicator light (green). This panel also displays the high level liquid, blower high-pressure, and the blower low-pressure indicator lights (red) along with a manual reset button for the alarms. When the blower is running in the "Auto" position and an alarm condition occurs the indicator light will illuminate and the blower will shut down if high water or high vacuum conditions exist more than 30 seconds. If a low vacuum condition exists for more than 30 seconds the low vacuum indicator light will be illuminated and the system will remain running. See Section 5.5 in the troubleshooting and maintenance section for instructions on alarm condition remedies. If the system is running in the "Hand" position the indicator lights will illuminate if an alarm condition occurs, however, the blower will not shut down.

3.3 Blower Package Sensors and Gauges

The blower package is equipped with a photohelic differential pressure switch/gauge which shows the operating pressure (vacuum) of the blower and it also displays the adjustable low-vacuum and high-vacuum set points for the blower.

3.4 Moisture Separator

The moisture separator should be checked on a routine basis to determine if the system is collecting moisture from the extraction points. If the high liquid indicator light is on it indicated the float switch has sensed a high-liquid condition and the blower will be shut down to protect it from pulling water through it. There is a manual drain valve at the bottom of the tank to drain the liquid. Once the tank is emptied, the switch will reset and normal operation can resume after resetting the alarm condition in the motor control panel.

3.5 Pressure Monitoring Panel

The pressure monitoring panel located in the back office area (Office # 3) contains differential pressure gauges, differential pressure transmitters, and a data logger. As mentioned previously, it also contains an emergency shut-off switch in case the system needs to be shut down from inside the building. The monitoring system is powered through a 2-amp quick blow fuse located in the panel. The pressure transmitters receive DC power from the Sola power supply/transformer unit in the monitoring panel. The data logger is powered from the 200-watt Sola power supply/transformer unit in the monitoring panel as well.

4.0 SYSTEM MONITORING

If it is determined there is a potential for sub-slab vapors to impact building occupants and NYSDEC requires the resumption of an active mitigation at this location, the system will be turned back on and quarterly monitoring and inspections will be conducted to ensure the SSDS maintains a slight negative pressure under the building slab. The system will be monitored and inspected as outlined in this section if it is required to be restarted.

Differential pressure readings will be collected from the seven DPSPs installed in the concrete floor portion of the SPOB basement (in areas that HDR has been provided access) to document the negative pressure field under the slab. In addition, the geotextile membrane that was installed over the dirt portion of the basement to seal it will be inspected. If necessary, the valves on the extraction legs can be adjusted to ensure that a negative pressure field and even coverage is maintained under the concrete slab floor and the geotextile membrane in the basement of the SPOB.

As part of the quarterly inspections required when the system is in operation, the differential pressure gauge readings displayed in the system monitoring panel will be observed and documented on an inspection form for the SPOB SSDS. The pressure gauge readings should be compared against previous readings. If there is a significant decrease in the readings it is possible that a change has occurred that may have affected the balance of the system or there is a problem with the vacuum in the lateral leg that is showing the significantly decreased reading. HDR will diagnose the issue or problem and provide the required maintenance and/or repairs (see Section 5.0, Troubleshooting and Maintenance).

Differential pressure transmitters convert the gauge readings into a 4-20 mA signal which is recorded on the Onset Hobo data logger. The data from the data logger will be downloaded on a quarterly basis. The data from the data logger provides documentation that the SSDS has been running consistently and is providing sufficient negative pressure at the four sections of the SSDS. The logged data recorded on the data logger will be downloaded to a laptop for review at another time. The port for downloading the data logger is located in a small plastic NEMA box mounted on the outside wall of the building along the south side near the southwest corner (behind the mail drop-boxes).

Where accessible, the extraction legs and the lateral suction leg piping will be inspected for any problems or damage. The blower package on the SPOB roof will be inspected to document that the unit is running properly. If it appears there is a substantial amount of liquid in the moisture separator the system will be shut down and the tank inspected to determine how much water has collected in it. The inline particulate filter on the blower will be inspected for visible signs of dirt impregnation and replaced if necessary.

A handheld digital differential pressure gauge (Love Controls Model HM28 or equivalent) capable of reading differential pressure down to 0.001 inches of water column will be used to measure the differential pressures from the seven DPSPs installed in the floor to document that sufficient negative pressure is being maintained under the slab in these areas. The differential pressure data will be reviewed and, if necessary, the system will be re-balanced by adjusting the control valves on the extraction points and/or

the adjustment of the blower ambient air by-pass valve to increase or reduce flow as required from the different sections of the lateral suction legs to maximize the system's capture under the slab of the building. The geotextile membrane will be inspected to ensure it is still being pulled down to the dirt floor and the seal at the walls and around the columns will be inspected to document a good seal is being maintained in this area.

An annual maintenance inspection will be conducted during one of the quarterly inspection events. In addition to the tasks outlined for the quarterly inspection events, the accessible floor areas will be inspected for cracks or new penetrations, or construction activities that could affect the SSDS's operational effectiveness. The building representative will be interviewed to determine if there have been any construction, renovation, or upgrade activities (e.g. installation of a new water main or gas lines or renovation of the heating system) that could have affected the performance or balance of the SSDS. The inspection will also include identification and repair of leaks within the piping and inspection of the exhaust, discharge pipe. In addition, the geotextile membrane will be inspected to ensure it has not be compromised or damaged including the seals along the walls, columns, and extraction leg piping. Where necessary, repairs will be conducted and noted on the appropriate inspection form. Preventative maintenance shall be conducted as recommended by the manufacturer and for adherence to applicable warranties. Troubleshooting and maintenance is covered in more detail in Section 5.

5.0 TROUBLESHOOTING AND MAINTENANCE

5.1 Regenerative Blower Maintenance

The Ametek Rotron regenerative blower at this site is designed with maintenance-free, single stage dynamics, free of contacting moving parts other than the motor ball-bearings and the shaft seal. The blower motor ball-bearings are permanently sealed and the bearings are rated for 15,000 - 20,000 hours on average for continual maintenance-free operation.

The inline filter should be inspected and cleaned if there are visible signs of dirt impregnation. Particle buildup on the filter element will reduce flow through the filter and an increase in vacuum will be noticed from the normal operating vacuum range. The filter can be cleaned by scrubbing it with a mild soap and water solution and allowing it to completely dry before inserting it back into the filter housing.

5.2 SSDS Moisture Accumulation

There is potential for moisture accumulation in the moisture separator tank and/or low sections of the lateral suction leg piping. This water should be drained as necessary to ensure the system operates properly. The moisture separator has a float switch on it such that the blower motor will be shut down when the tank is approximately half full to avoid water damage to the blower motor. Water accumulation in the lateral leg piping could restrict air flow and cause a reduction of vacuum on the upstream side of the restriction. Water that accumulates in the system is from condensate build-up. If necessary the condensate will be removed from the tank and/or the lateral legs to increase the effectiveness of the system.

5.3 Extraction Legs-Lateral Suction Legs–Discharge Piping to the Blower Unit

The PVC piping has glued joints for the most part and does not require any maintenance. At a few connection points rubber hose-clamp fittings were used to connect the system. If there appears to be a drop-off in the differential pressure reading at one of the four ports an inspection should be done to make sure there has been no damage to the extraction point(s) or the lateral suction leg in this area and all of the connection points are properly attached and sealed including the flow control valves. The flow control valves at each extraction point should be checked to make sure they were not inadvertently closed off.

5.4 Pressure Monitoring Panel

The differential pressure gauges and transmitters are basically maintenance-free. The differential pressure gauges do not have any power requirements. The differential pressure transmitters receive DC power from the Sola power supply/transformer unit in the monitoring panel. If the Hobo data logger is not receiving data check to see if it is connected properly to the transmitters and check to see if it is receiving power from the Sola power supply; the power to the data logger and the transmitters are wired to the Sola power supply. The data logger is powered by the power supply in the monitoring panel. The data logger has a red LED on it that flashes intermittently to indicate it is functioning

normally and receiving data. If the transmitters are receiving power from the power supply and are still not sending data to the data logger they may be faulty and may need to be replaced.

If the readings from one or more of the differential pressure gauges is significantly lower than normal and the blower is running properly and the DPSP readings are similar to past readings check the following:

- Check and listen to the lateral suction legs to determine if they have water in them (drain if necessary)
- Check the tubing connection points in the monitoring panel; make sure they are properly attached and sealed to the gauges and transmitters
- Check the connection points where two sections of the vacuum tubing are joined together
- Check the locations where the tubing is attached to the piping (threaded fittings screwed into the lateral suction leg piping and connected to the tubing with a barbed fitting).

If the differential pressure readings from one or more of the DPSPs are significantly lower than normal or below the low-end guidance value provided in the NYSDOH guidance document for vapor intrusion (Guidance for Evaluating Soil Vapor Intrusion in the State of New York - October 2006) which is 0.002 inches of water column) checked the following items:

- Check the blower to make sure it is running properly and the intake vacuum is within the operating range
- If the blower is running at a higher vacuum and is still not pulling sufficient air the intake particulate filter may need to be cleaned/replaced
- Check the extraction points and lateral suction legs to make sure they are not damaged
- Check the lateral suction leg control valves to make sure they are open and/or have not been significantly changed
- Check the floor for new cracks and/or penetrations to make sure they are not damaged
- Check to make sure the DPSP ids not clogged or possibly compromised due to moisture.

5.5 Troubleshooting Guide

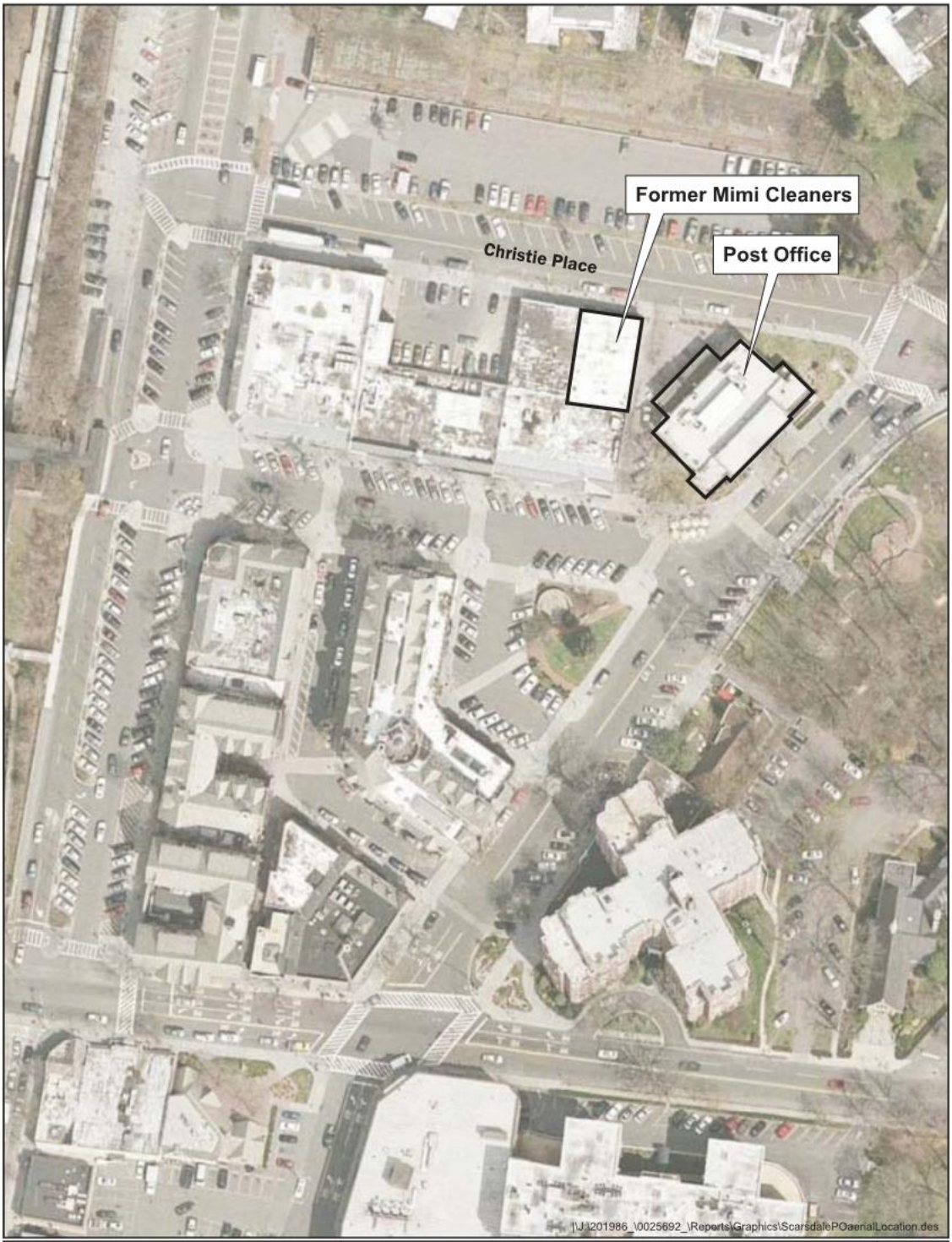
The following table lists procedures to correct system alarm conditions for the blower package when it is in operation:

Alarm Condition	Possible Cause	Remedy
Moisture Separator High-Level	Moisture separator is full & high-level switch tripped Liquid level switch could be faulty	Drain separator via manual drain at the bottom of the tank. Remove, check continuity while moving the float switch up and down
Blower High Vacuum	Extraction legs all closed? Is air flow restricted on the SSDS discharge piping to the blower Air filter restricting flow	At least one extraction leg or bypass valve must be open. Check piping before blower for restriction Clean or replace air filter
Blower High Pressure	Something blocking flow on discharge side of the blower	Check effluent piping for restrictions/blockage causing back pressure
Blower won't run	Overload Relay is tripped Motor Control Panel fuse is blown. Fuses blown in fused safety disconnect switch Load center control panel breaker is tripped	Reset overload relay Check for continuity in power circuit to blower. If continuity good, check fuses, if fuses are bad replace. Reset breaker in load center
Monitoring Panel not working	2-amp control power fuse blown No power to system control/monitoring panel	Replace fuse Check 20 amp fuses in safety disconnect, check 70-amp main breaker in the main electrical panel in Office #3

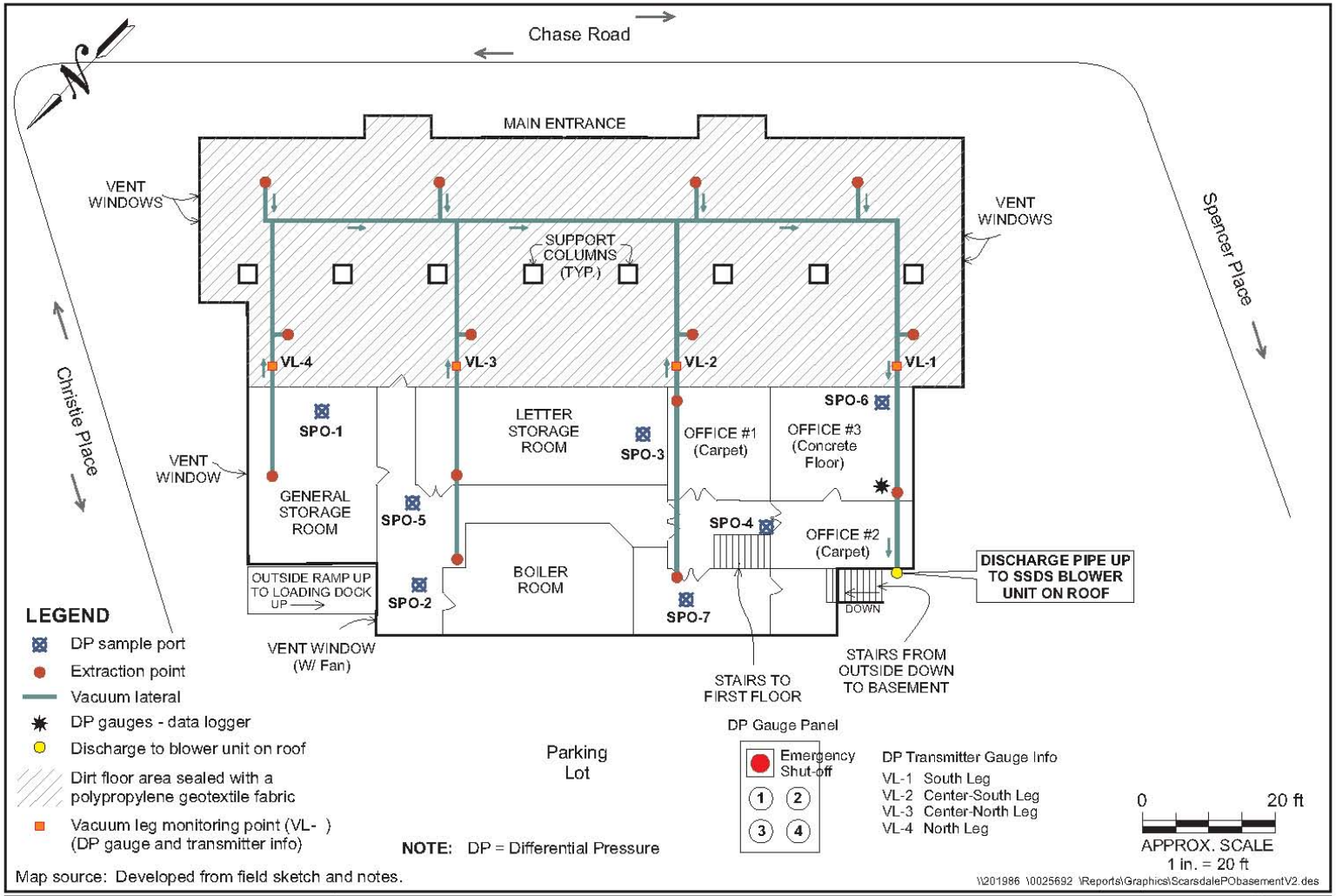
After the cause of the alarm condition has been corrected, pushing the alarm reset button will extinguish the alarm light and the blower will restart.

5.6 Equipment Replacement

If any of the SSDS components fail or degrade because of a malfunction or they get worn out due to usage they will be replaced with compatible components to maintain the continued operation of the SSDS until NYSDOH indicates it can be shut down. This includes the components such as the regenerative blower, control panel switches, indicator lights, pressure gauges and transmitters, PVC piping, vacuum lines, etc.



HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. One Blue Hill Plaza Pearl River, NY 10965	**Location of Post Office Building** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 1**



HDR Henningson, Durham & Richardson Architecture and Engineering, P.C. in association with HDR Engineering, Inc. One Blue Hill Plaza Pearl River, NY 10965	**Post Office Building** **Sub-Slab Depressurization System Layout** **Former Mimi Dry Cleaners** — **Scarsdale, NY**	**Figure 2**

F-6 EAST PARKWAY BUILDING OPERATIONS & MAINTENANCE PLAN SUB-SLAB DEPRESSURIZATION SYSTEM

1.0 SYSTEM EQUIPMENT AND SPECIFICATIONS

1.1 Regenerative Blower Unit

1.1.1 Insulated Enclosure/Vault Unit (below grade outside of building)

- Blower Enclosure (modified window well below grade on outside of east wall of building)
- Regenerative Blower (200 SCFM)

(GAST Regenair Model R6335A-2)(3.5 HP, 208-460 VAC, 3-phase, TEFC)

- 30-Gallon Steel Moisture Separator Tank
- Moisture Separator Tank Float Switch

(W.E. Anderson FlotecT Float Switch - Model L6EPB BS30)

- Inlet Particulate Filter (Solberg Model CSL-851-200 HC)
- Air Bypass Valve Inlet Particulate Filter (Solberg Model FS-19P-150)
- Photohelic Pressure Switch/Gauge (Dwyer Series 3000 Model 3100A)
- Galvanized steel 2.5-in. schedule 40 discharge piping from blower to PVC discharge stack piping attached to side of building.
- Galvanized steel diamond plate cover for vault enclosure

1.1.2 Discharge Piping to Roof Level

- Discharge stack piping from galvanized steel pipe from blower up to roof level is 3.0-in. schedule 40 PVC pipe enclosed in copper downspout piping to match existing piping on building.

1.2 System Components (in basement bathroom adjacent to vault)

The window below the window well (it allowed filtered light into the small bathroom) was removed and replaced with a sound-proofed door to allow access into the vault from inside the building. The system control/monitoring panel and emergency shut-off switch is installed in the bathroom outside the vault.

1.2.1 System Control / Monitoring Panel

- **Panel - Inside Components**

- IDEC SmartRelay Control (Model FL1D-H12RCC)
- IDEC Contactor (Model YC1U-16)
- IDEC Overload Relay (Model YZ9Z-RHN10)
- IDEC Power Supply (Model PS5R-A12; 7.5 watt output)
- Square D Industrial Control Transformer (Model 9070TF150D1)

- Differential Pressure Transmitters (4)

(Dwyer 616 Series; Model 616-3 & 616-4 [0-10 & 0-20 in. of water])

- Onset Hobo Data Logger (Model U12 4-External Channel)

    - **Panel Window**

- On/Off Switch (Hand-Off-Auto)
- High Liquid Alarm Indicator Light
- High Vacuum Indicator Light
- Low Vacuum Indicator Light
- Run Indicator Light
- Running Time Meter
- Differential Pressure Gauges (4)
  (Dwyer Minihelic II Series 2-5000 (0-10 and 0-20 in. of water)

    - **Emergency Switch Adjacent to Control / Monitoring Panel**

- Safety On/Off Switch on wall adjacent to enclosure
  (Siemens General Duty Enclosed Switch – General Duty Model # GF321NF)

1.3 Extraction Points & Lateral Suction Legs

- 2-in. diameter schedule 40 PVC slotted well screen extraction point
  (well screen extends below floor slab)
- Schedule 80 PVC Lateral Leg Piping (2-in. and 3-in. diameter)
- Extraction Point / Suction Leg Control Valves
  (Milwaukee Valve Co. Model BB2FS100)
- ¼” Polypropylene Vacuum Lines
- Various wall supports and ceiling hangers to support piping
- Specified Technologies Inc. (STI) Specseal LLC Firestop Collar Model LCC150 UPC No. 03901 for through-wall penetrations

2.0 SYSTEM INSTALLATION

The SSDS in the EPB was designed and installed by INTEX Environmental Group, Inc. (INTEX) of Pipersville, PA under the direction of HDR. The SSDS for this building is similar in design to that at each of the buildings within the study area. A general description of the SSDS design is summarized below and details relevant to the building's specific layout follow. As mentioned previously, the EPB SSDS has been shut down since August 2012 as approved by NYSDEC and NYSDOH.

Results from the sub-slab vapor and indoor air sampling events conducted in the EPB in December 2008 & February 2009 indicated elevated concentrations of PCE were present under the southern portion of the building. Sub-slab sample results from the northern portion of the building revealed much lower concentrations of PCE. HDR received approval from NYSDEC and NYSDOH to install a SSDS to mitigate PCE vapors below the slab in the southern half of the building. Indoor air samples collected from this building revealed no detectable TCE concentrations and PCE concentrations in the indoor air ranged from 2.7 to 8.8 $\mu g/m^3$ indicating vapor intrusion into the building of these contaminants of concern is rather low. As shown on the building drawings, this building was constructed in two sections (Unit A is the southern half and Unit B is the northern half) such that there is a load bearing wall along the middle of the building and most likely footings that partition the two sections of the building. As part of the approval to construct and operate a partial SSDS in this building, sub-slab and indoor air samples were collected from the northern portion of the building to verify that soil vapor and indoor air concentrations of the contaminants of concern remained below acceptable concentrations in the northern portion of the building. After several sampling events were conducted in the northern portion of the building which continued to show the CVOC concentrations met NYSDOH criteria, the NYSDEC and NYSDOH indicated no additional sampling, monitoring, or inspections were required in the northern portion of the EPB.

Prior to installation of the SSDS in the southern portion of the building, the floor in the basement of the EPB in the southern portion of the building was inspected for cracks or openings. The portions of the slab that were accessible in this building appeared to be in good condition with no major cracks. The basement area of this building is sectioned into a storage spaces for the commercial tenants on the first floor of the building.

Communication testing data from the adjacent Harwood Building (HWB) was used to design the SSDS for the EPB. For the HWB the communication testing was conducted to aid in the design of an effective SSDS (e.g., number of extraction points, blower size, radius of influence below the basement slab, piping size, etc.). A Shop-Vac® commercial/industrial use wet/dry vacuum (Model No. 925-50-10) with a suction pressure of 80 inches of water column was used to apply a vacuum at various pressures at a number of locations to help determine the radius of influence below the HWB basement slab by measuring the differential pressure at various locations around the vacuum point with a low-range differential pressure manometer (Gray Wolf Zephyr II digital micro-manometer, or equivalent). It was assumed the material under the EPB would be similar to that of the HWB. The SSDS for the EPB was designed such that additional extraction legs could be added if necessary, including extending into the northern half of the EPB.

As part of the SSDS design for the southern portion of the EPB, extraction points for the SSDS were installed through the basement floor slab and piped to a blower mounted in a below-grade level vault on the east side of the building (converted basement window well). For the extraction points, INTEX cored through the concrete floor at designated locations and installed a 2-in.

diameter schedule 40 PVC well screen point approximately 1.5-2 feet below the slab. This screened section of PVC was sealed in place at the top of the slab with a concrete grout and coupled to PVC piping. There are seven extraction points installed in the basement hallways. PVC piping from the extraction point runs up to the ceiling or point on the wall and joins a PVC lateral suction leg. Piping from the extraction point to the lateral suction leg piping is schedule 80 PVC to ensure it can be knocked into or disturbed on occasion without being damaged. All of the lateral suction legs run down the common hallways where they join with other lateral suction legs and run along the ceiling in the pipe gallery with the other piping for the building. The lateral piping comes together where the hallways join just west of the bathroom (and blower vault).

Piping goes into the moisture separator tank and to the blower located in the vault. INTEX used 3.0-in. diameter schedule 40 PVC pipe to run from the blower unit up the outside wall to the roof level where the air is discharged. As requested by the building owner, the PVC discharge pipe running up the outside wall was installed inside copper downspout piping to mimic the existing drainage pipe on the wall of the building.

Blower controls including the PCL-based motor controls, are housed in the system control/monitoring panel located in the small bathroom just above the access panel to the blower vault. The system control/monitoring panel contains IDEC Contactors/Starters and an IDEC SmartRelay control. The display window of this control/monitoring panel displays the 3-position on/off switch (Hand-Off-Auto), high/low pressure indicator lights, a high-level liquid indicator light, a reset button, and a running time meter. Just inside the vault door there is also a separately mounted differential pressure switch/gauge with adjustable high/low shutdown set points for the blower.

Each extraction leg of the SSDS has an in-line gate valve to provide manual adjustment to balance the suction rates from the individual points and adjust the radius of depressurization/influence at each of the points allowing the system to achieve proper depressurization under the southern portion of the EPB. In addition, the blower has a fresh air by-pass value on it to allow adjustment of the vacuum provided by the blower for the system. There are four vacuum lines tapped into the lateral suction leg/extraction leg piping at various locations to monitor and document the differential pressure in the lateral legs and/or extraction legs of the system. Small diameter vacuum tubing is tapped into the pipe at these locations and run back along the piping to the system control/monitoring panel in the small bathroom outside the vault. These vacuum lines are attached to differential pressure gauges (Dwyer Minihelic II gauges; 0-10 and 0-20 inches of water column) for real-time readings/documentation that the SSDS is providing sufficient vacuum in the piping where it is attached. These gauges are labeled to indicate which lateral leg they are attached to:

- VL-1 (Northern-most Extraction Leg)
- VL-2 (Eastern-most Extraction Leg near Blower Vault)
- VL-3 (Southern-most Lateral Leg)
- VL-4 (Western-most Extraction Leg near Electrical Room)

This allows HDR personnel or a trained representative to periodically check the gauges and document the system is running properly. If it appears there is a problem or a significant decline in the differential pressure gauge readings HDR will be notified immediately so the issue can be investigated and corrected as required.

In addition, the vacuum lines are split in the system control/monitoring panel and the other leg of the vacuum line is attached to a differential pressure transmitter (Dwyer Series 616-3 and 616-4). The transmitters convert the reading into a 4-20 mA output signal which is sent to a 4-channel data logger (Hobo Model U12). The data logger can store the four channels of data for approximately 6 months. The data from the data logger are downloaded to a laptop computer to provide documentation that the SSDS has been working properly (continuous data and readings that remain fairly consistent).

There are permanent differential pressure sample ports (DPSPs) in the basement floor that can be accessed periodically to measure and document the differential pressure under the slab throughout the basement of the building to ensure the SSDS is providing adequate negative pressure under the slab. There are a total of 5 DPSPs in the southern portion of the EPB. These sample ports are sealed with a threaded plug when not in use.

3.0 SYSTEM OPERATION

3.1 Regenerative Blower Operation

The system control/monitoring panel in the small bathroom adjacent to the blower vault contains a Hand-Off-Auto switch for the regenerative blower that energizes the blower motor starter circuit. In order for the blower to operate the Hand/Off/Auto switch must be in the Hand or Auto position. In the Hand position, the blower will operate while bypassing any alarm conditions (high level liquid, blower-high vacuum, and blower high pressure). With the switch set in the Auto position, all alarms are functional and the system will shut down the blower if a high liquid or high vacuum alarm condition occurs. A 60-second on delay is setup in the auto mode to allow other building mechanical system to normalize first in the event of a power outage when power is restored to the building. Power is supplied to the blower from the system control/monitoring panel containing the motor starter with thermal overload. Power is supplied to the system control/monitoring panel from the adjacent 30-amp fused safety disconnect; 30-amp fuses are installed in the safety disconnect panel. The safety disconnect panel is fed from a remote 30-amp breaker located in the electrical distribution breaker panel immediately adjacent to the sub-meter located in the electrical area of the Unit B portion of the building north of the system. The fused safety disconnect switch which is mounted adjacent to the system control/monitoring panel on the wall of the bathroom also serves as an emergency on/off switch.

3.1.1 Motor Starter & Circuit Breakers

Power to the system control/monitoring panel is supplied by a 208 VAC 3-phase 3-pole 30-amp breaker located in the electrical area of the Unit B portion of the building north of the system.

3.1.2 System Control/Monitoring Panel

3.1.2.1 Electrical Information

The system control/monitoring panel in the bathroom adjacent to the blower vault houses the regenerative blower motor starter with overload protection. The motor starter is designed to interrupt power to the SSDS blower if the amperage draw is more than 15 amps. Power to the motor starter is supplied by a 208 VAC 3-Phase 3-pole 30-amp circuit breaker. Power to the system control/monitoring panel is protected by the fused safety disconnect adjacent to the panel, a 30 amp breaker, and the 60-amp main breaker in the dedicated electrical distribution panel immediately adjacent to the sub meter located in the electrical area of the Unit B portion of the building north of the system. The blower motor amperage draw during normal operation is approximately 12.8 amps.

3.1.2.2 System Monitoring Sensors and Gauges

The system control/monitoring panel in the bathroom adjacent to the blower vault contains differential pressure gauges, differential pressure transmitters, and a data logger. The monitoring system is powered from a control transformer power supply protected by a 2-amp quick blow fuse located in the monitoring panel. Pressure transmitters receive DC power from the IDEC power supply unit in the monitoring panel. The data logger is powered by a 3 volt “button” battery (Duracell DL 2032, or equivalent). When data are downloaded from the data logger voltage on the battery should be checked and battery replaced as necessary. Generally data logger batteries will last a minimum of 6 months.

The system is also equipped with a Dwyer Photohelic differential pressure switch/gauge (next to the system control/monitoring panel) which shows the operating pressure (vacuum) of the blower and it also displays the low-vacuum and high-vacuum set points for the alarms.

3.2 Alarm Conditions

The system control/monitoring panel in the bathroom adjacent to the blower vault contains indicator lights displayed through the clear door of the panel. The panel contains the Hand-Off-Auto switch with a system running indicator light (green). This panel also displays high level liquid, blower high-pressure, and blower low-pressure indicator lights (red) along with a manual reset button for the alarms. When the blower is running in the "Auto" position and an alarm condition occurs the indicator light will illuminate and the blower will shut down if high water or high vacuum conditions exist for more than 30 seconds. If a low vacuum condition exists for more than 30 seconds the low vacuum indicator light will be illuminated; however, the system will remain running. See Section 5.5 in the troubleshooting and maintenance section for instructions on alarm condition remedies. If the system is running in the "Hand" position the indicator lights will illuminate if an alarm condition occurs, however, the blower will not shut down. The system should not be operated in the "Hand" position for long periods of time when it is unattended as the system will not shut down if an alarm condition occurs.

3.3 Moisture Separator

The moisture separator tank located in the blower vault should be checked on a routine basis to determine if the system is collecting moisture. If the high liquid indicator light is on it indicates the float switch has sensed a high-liquid condition and the system will shut down to protect it from pulling water through it and possibly causing damage to the regenerative blower. There is a manual drain valve at the bottom of the tank to drain the liquid. Once the tank is emptied, the switch will reset and normal operation can resume after resetting the alarm condition in the motor control panel.

4.0 SYSTEM MONITORING

If it is determined there is a potential for sub-slab vapors to impact building occupants in the southern portion of the building and NYSDEC requires the resumption of an active mitigation at this location, the system will be turned back on and quarterly monitoring and inspections will be conducted to ensure the SSDS maintains a slight negative pressure under the southern portion of the building slab. The system will be monitored and inspected as outlined in this section if it is required to be restarted.

Differential pressure readings will be collected from the DPSPs installed in the basement floor area of the southern portion of the building (in areas that HDR has been provided access) to document the negative pressure field under the slab. When necessary, the valves on the extraction legs can be adjusted to re-balance the system and ensure that a negative pressure field and proper coverage is maintained under the basement of the EPB.

As part of the quarterly inspections required when the system is in operation, the differential pressure gauge readings displayed in the system monitoring panel will be observed and documented on an inspection form for the EPB SSDS. The pressure gauge readings should be compared against previous readings. If there is a significant decrease in the readings it is possible that a change has occurred that may have affected the balance of the system or there is a problem with the vacuum in the lateral leg that is showing the significantly decreased reading. HDR will diagnose the issue or problem and provide the required maintenance and/or repairs (see Section 5.0, Troubleshooting and Maintenance).

Differential pressure transmitters convert the gauge readings into a 4-20 mA signal which is recorded on the Onset Hobo data logger. The data from the data logger will be downloaded on a quarterly basis. The data from the data logger provides documentation that the SSDS has been running consistently and is providing sufficient negative pressure at the four sections of the SSDS. The logged data recorded on the data logger will be downloaded to a laptop for review at another time. The battery on the logger will be replaced if necessary before starting it back up.

Where accessible, extraction legs and lateral suction leg piping will be inspected for any problems or damage. The blower unit in the vault will be inspected to document that the unit is running properly. If it appears there is a substantial amount of liquid in the moisture separator the system will be shut down and the tank inspected to determine how much water has collected in it.

A handheld digital differential pressure gauge (Love Controls Model HM28 or equivalent) capable of reading differential pressure down to 0.001 inches of water column will be used to measure the differential pressures from the 5 DPSPs installed in the floor of the southern portion of the building to document that sufficient negative pressure is being maintained under the slab in these areas. Differential pressure data collected will be reviewed and, if necessary, the system will be re-balanced by adjusting the control valves on the extraction points and/or adjustment of the blower intake by-pass valve to increase or reduce flow as required from the different sections of the lateral suction legs to maximize the system's capture under the slab of the building.

An annual maintenance inspection will be conducted in the southern portion of the building during one of the quarterly inspection events. In addition to the tasks outlined for the quarterly inspection events, the accessible floor areas will be inspected for cracks or new penetrations, or construction activities that could affect the SSDS's operational effectiveness. The building

representative will be interviewed to determine if there have been any construction, renovation, or upgrade activities (e.g. installation of a new water main or gas lines or renovation of the heating system) that could have affected the performance or balance of the SSDS. The inspection will also include identification and repair of leaks within the piping and inspection of the exhaust, discharge pipe. Where necessary, repairs will be conducted and noted on the appropriate inspection form. Preventative maintenance shall be conducted as recommended by the manufacturer and for adherence to applicable warranties. Troubleshooting and maintenance is covered in more detail in Section 5.

5.0 TROUBLESHOOTING AND MAINTENANCE

5.1 Regenerative Blower Maintenance

The GAST Regenair regenerative blower installed at this site is designed with maintenance-free, single stage dynamics, free of contacting moving parts other than the motor ball-bearings and the shaft seal. The blower motor ball-bearings are permanently sealed and the bearings are rated for 15,000 – 20,000 hours on average for continual maintenance-free operation.

The inline particulate air filter prior to the blower should be inspected on a quarterly basis and cleaned and/or replaced if there are visible signs of dirt impregnation. Particle buildup on the filter element will reduce flow through the filter and an increase in vacuum will be noticed from the normal operating vacuum range. The filter can be cleaned by scrubbing it with a mild soap and water solution and allowing it to completely dry before inserting it back into the filter housing. If the by-pass valve on the blower is open the inlet filter on the by-pass valve should be inspected as described for the inline filter.

5.2 SSDS Moisture Accumulation

There is potential for moisture accumulation in the moisture separator tank and/or low sections of the lateral suction leg piping. This water should be drained as necessary to ensure the system operates properly. The moisture separator has a float switch on it such that the blower motor will be shut down when the tank is approximately half full to avoid water damage to the blower motor. Water accumulation in the lateral leg piping could restrict air flow and cause a reduction of vacuum on the upstream side of the restriction. Water that accumulates in the system is from condensate build-up. If necessary the condensate will be removed from the tank and/or the lateral legs to increase the effectiveness of the system.

5.3 Extraction Legs - Lateral Suction Legs – Discharge Piping to the Blower Unit

The PVC piping has glued joints for the most part and does not require any maintenance. At a few connection points rubber hose-clamp fittings were used to connect the system. If there appears to be a drop-off in the differential pressure reading at one of the four ports an inspection should be conducted to make sure there has been no damage to the extraction point(s) or the lateral suction leg piping in this area and all of the connection points are properly attached and sealed. The flow control valves at each extraction point should be checked to make sure they were not inadvertently closed off.

5.4 Pressure Monitoring Panel

The differential pressure gauges and transmitters are basically maintenance-free. The differential pressure gauges do not have any power requirements. The differential pressure transmitters receive DC power from the IDEC power supply/transformer unit in the monitoring panel. If the Hobo data logger is not receiving data and it has a fresh battery in it check to make sure the transmitters are wired to the power source. The data logger is powered by a “button” battery; it has a red LED on it that flashes intermittently to indicate it is functioning normally and receiving data. Generally the batteries in these units should last more than a year. When the data logger is downloaded the software checks the battery condition. If the voltage on the battery appears to be dropping or its level is marginal it should be replaced. If the transmitters are receiving power

from the power supply and are still not sending data to the data logger they may be faulty and may need to be replaced.

If the readings from one or more of the differential pressure gauges is significantly lower than normal and the blower is running properly and the DPSP readings are similar to past readings check the following:

- Check and listen to the lateral suction legs to determine if they have water in them (drain if necessary)
- Check the tubing connection points in the monitoring panel; make sure they are properly attached and sealed to the gauges and transmitters
- Check the connection points where two sections of the vacuum tubing are joined together
- Check the locations where the tubing is attached to the piping (threaded fittings screwed into the lateral suction leg piping and connected to the tubing with a barbed fitting).

If the differential pressure readings from one or more of the DPSPs are significantly lower than normal or below the low-end guidance value provided in the NYSDOH guidance document for vapor intrusion (Guidance for Evaluating Soil Vapor Intrusion in the State of New York - October 2006) which is 0.002 inches of water column) check the following items:

- Check the blower to make sure it is running properly and the intake vacuum is within the operating range
- If the blower is running at a higher vacuum and is still not pulling sufficient air the particulate filter on the fresh air by-pass intake may need to be cleaned/replaced
- Check the extraction points and lateral suction legs to make sure they are not damaged
- Check the lateral suction leg control valves to make sure they are open and/or have not been significantly changed
- Check the floor for new cracks and/or penetrations to make sure they are not damaged
- Check the DPSPs to ensure they are not clogged due to moisture

5.5 Troubleshooting Guide

The following table lists procedures to correct system alarm conditions for the blower package when the SSDS is in operation:

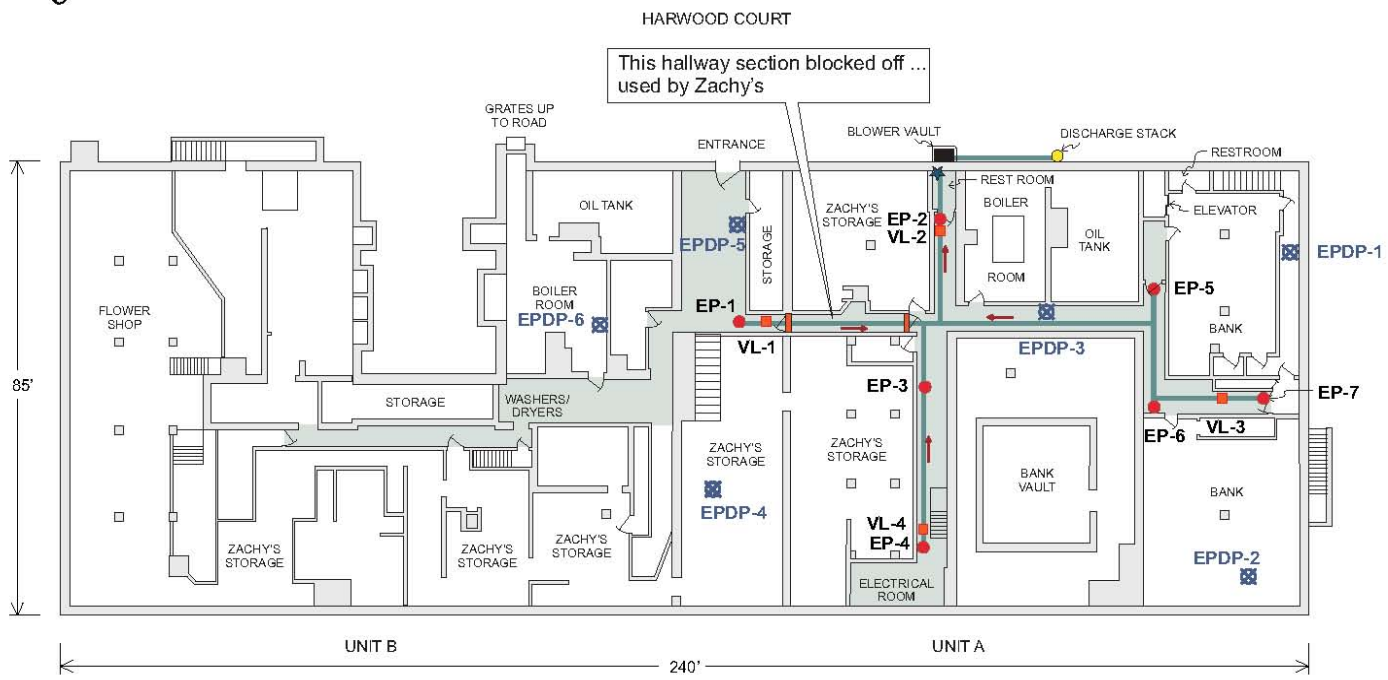
Alarm Condition	Possible Cause	Remedy
Moisture Separator High-Level	Moisture separator is full & high-level switch tripped Liquid level switch could be faulty	Drain separator via manual drain at the bottom of the tank. Remove, check continuity while moving the float switch up and down
Blower High Vacuum	Extraction legs all closed? Is air flow restricted on the SSDS discharge piping to the blower	At least one extraction leg or bypass valve must be open. Check piping before blower for restriction
Blower High Pressure	Something blocking flow on discharge side of the blower	Check effluent piping for restrictions/blockage causing back pressure
Blower won't run	Motor Starter overload is tripped Fuses blown in roof mounted fused safety disconnect switch Control panel breaker is tripped Load center control panel breaker is tripped	Reset overload Check for continuity in power circuit to blower. If continuity good, check fuses, if fuses are bad replace. Reset breaker in control panel Reset breaker in load center
System Control / Monitoring Panel not working	2-amp control power fuse blown No power to system control/monitoring panel	Replace fuse Check fuses in adjacent safety disconnect, check 60-amp main breaker in the Electrical Room

After the cause of an alarm condition has been corrected, pushing the alarm reset button will extinguish the alarm light and the blower can then be restarted.

5.6 Equipment Replacement

If any of the SSDS components fail or degrade because of a malfunction or they get worn out due to usage they will be replaced with compatible components to maintain the continued operation of the SSDS until NYSDOH indicates it can be shut down. This includes the components such as the regenerative blower, control panel switches, indicator lights, pressure gauges and transmitters, PVC piping, vacuum lines, etc.

HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. in association with HDR Engineering, Inc. One Blue Hill Plaza Pearl River, NY 10965	**Location of East Parkway Building and Mimi Cleaners** **Former Mimi Dry Cleaners** **Scarsdale, NY**	**Figure 1**



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HDR
Henningson, Durham & Richardson Architecture and Engineering, P.C. in association with HDR Engineering, Inc.
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Pearl River, NY 10965

East Parkway Building Sub-Slab Depressurization System Layout

Former Mimi Dry Cleaners — **Scarsdale, NY**

Figure 2

F-7 INSPECTION FORM

Former Mimi Cleaners Site - _____ Building
Inspecting Company:
Inspector:
Date & Time:
Floor condition (report any cracks or penetrations).
Wall condition (report any cracks or penetrations).
Piping condition (report any damage).
Are system extraction (suction) points sealed?
Any noted odors or liquids?
Any complaints from contact person?
Comments:

APPENDIX G

SUB-SLAB VAPOR AND INDOOR AIR SAMPLING AND ANALYSIS PLAN

APPENDIX G - SUB-SLAB VAPOR AND INDOOR AIR SAMPLING AND ANALYSIS PLAN

Sampling Locations and Schedule

Sub-Slab vapor and indoor air monitoring are required by the Site Management Plan at and near the Former Mimi Dry Cleaners Site. The Christie Place Building (CPB) (which includes the Mimi site) has an operating SSDS to mitigate potential vapor intrusion. When an evaluation is to be made pertaining to the continued operation of the SSDS at the CPB, samples from the sub-slab vapors and indoor air will be collected and analyzed as part of the assessment. Offsite buildings' names and locations with SSDSs installed, but shut down, where monitoring is required by NYSDEC and NYSDOH include:

- Harwood Building
- East Parkway Building (southern portion).

These buildings will be monitored for sub-slab vapor and indoor air contaminants biennially; one additional building (HBSC Bank Building) will be sampled for indoor air contaminants on a biennial basis as well, with the next monitoring event scheduled for the 2015-2016 heating season. During each survey one ambient outdoor air sample will be collected in the vicinity of the buildings being sampled.

Sampling locations are illustrated on Figures G-1 through G-4. The following samples are to be collected:

- Christie Place Building – two sub-slab and co-located indoor air locations,
- Harwood Building – sample one sub-slab and a co-located indoor air location,
- East Parkway Building - sample one sub-slab and indoor air location,
- HBSC Bank Building – sample two indoor air locations.

Based on the historical sample results the following locations which had operating SSDSs do not require routine sampling:

- Scarsdale Post Office Building,
- Spencer Place Building,
- DeCicco Market Building,

In addition, sub-slab vapor and indoor air samples were collected at the 28 Popham Road Building from August 2009 through December 2013. A SSDS was never installed at this location. No additional sampling is scheduled for this location as approved by NYSDEC and NYSDOH.

Sampling Procedures

Monitoring of sub-slab vapors at the CPB has been performed with the system shut down for one week prior to sampling. This procedure will be continued to provide comparable data to the previous sampling events. For the sub-slab vapor sample locations in all buildings, permanent sample ports have already been installed as part of previous sampling activities. The sample ports are constructed of a brass tube threaded to a brass coupler. The brass tube extends below the bottom of the slab so that the brass coupler is flush with the top of the slab. The brass coupler accepts a threaded plug to seal the port when it is not in use.

On the day of sampling at each sub-slab location, the threaded plug will be removed from the sub-slab vapor sample port and a temporary NPT thread to compression fitting coupler will be used to connect the probe to a section of Teflon® tubing outfitted with compression fittings. The tubing and point will be purged and attached to an air sample canister. For the purging process, the tubing will be connected to a

personal air sampling pump which will be run at a flowrate of <0.2 L/min to purge a minimum of three volumes of air from the core hole through the floor or the soil vapor implant area. The air will be purged into a Tedlar® bag so it cannot possibly contaminate the indoor air. After purging, the tubing will be connected to a laboratory-supplied flow control regulator attached to an air sample canister (6-L capacity). Negative pressure in the canister will be recorded, and the valve on the canister will be opened to collect the sub-slab vapor. The flow regulator will be set by the laboratory to collect the sample over a 4-5 hour period (~20-25 ml/min).

The indoor and outdoor ambient air samples will be collected using laboratory-supplied flow control regulator attached to an air canister following the procedures listed in the NYSDOH October 2006 Guidance. The negative pressure in each canister will be recorded, and the valve on the canister will be opened to collect the indoor air. The flow control valve on the Summa canister will be set by the laboratory to collect the sample over a 4-5 hour period (~20-25 ml/min).

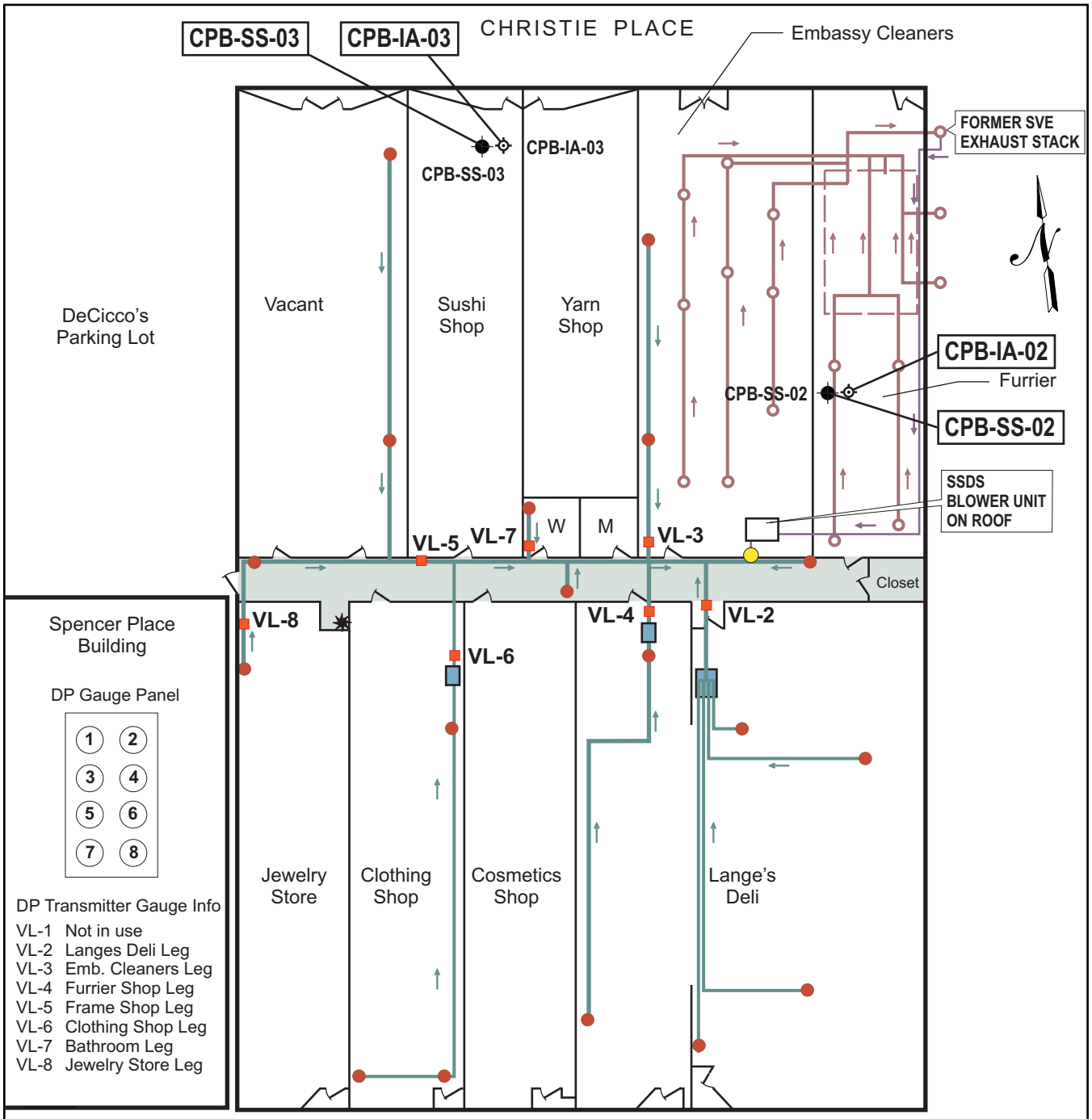
During the sampling, the negative pressure in each canister will be periodically recorded. At the end of the targeted 4-5 hour sampling period, but before the negative pressure in the canister is completely exhausted, the canister valve will be closed. The final pressure reading will be recorded, the tubing will be disconnected, and the canister will be prepared for shipment.

The field notes and documentation for the sampling will include the following, where applicable:

- sample identification,
- date and time of sample collection,
- sampling depth,
- identity of samplers,
- sampling methods and devices,
- volume of soil vapor extracted,
- canisters pressure before and after samples collected,
- chain of custody protocols and records used to track samples from sampling point to analysis.

Analysis of Samples and Reporting

Samples will be shipped via overnight courier under proper chain-of-custody to a NYSDOH-certified laboratory for VOC analyses (chlorinated solvents only) by EPA TO-15. Based on a 4-5 hour sample collection the practical quantitation limit is less than 1 $\mu g/m^3$ for PCE. The Quality Assurance requirements outlined in Appendix I of the Site management Plan will be followed. Analytical results of the sub-slab vapor and indoor air sampling investigation will be summarized and submitted to NYSDEC and NYSDOH in a data summary report submitted according to the requirements of Section 5.0 of the Site Management Plan.



Legend

- Sub-slab vapor sample location
- Indoor air sample location
- Extraction point
- Discharge pipe to blower on roof
- Vacuum lateral
- DP gauges - data logger
- Common hallway
- Hidden ceiling-mounted mixing valves and sample port

SPENCER PLACE

- SVE system piping
- Discharge pipe from SVE system
  NOTE: The exhaust stack from the SVE system was tied into SSDS system to provide capture from under the slab in this corner area of building
- Vacuum leg monitoring point (VL-) (DP gauge and transmitter info)

0 20 ft
APPROX. SCALE
1 in. = 20 ft

ALL LOCATIONS ARE APPROXIMATE
Map developed from field notes

|\SMPgraphicsApr13\AppG\G1_ChristiePlSubSlabAndIndoorAirLocs-newLayout.des

HDR
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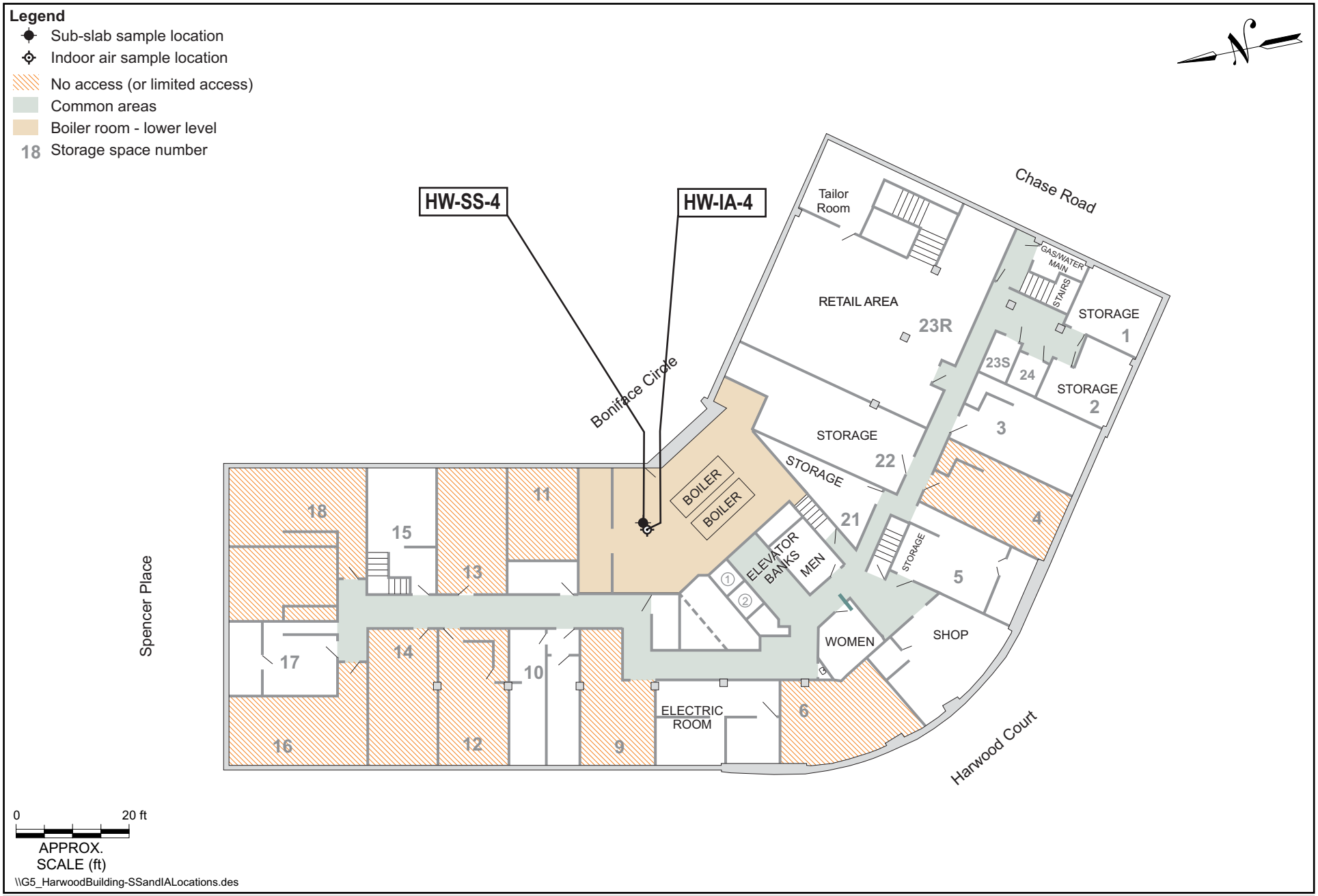
One Blue Hill Plaza
Pearl River, NY 10965

Christie Place Building
Sub-Slab Indoor Air Sample Locations
Former Mimi Dry Cleaners **Scarsdale, NY**

Figure G-1



\\G5_HarwoodBuilding-SSandIALocations.des

HDR

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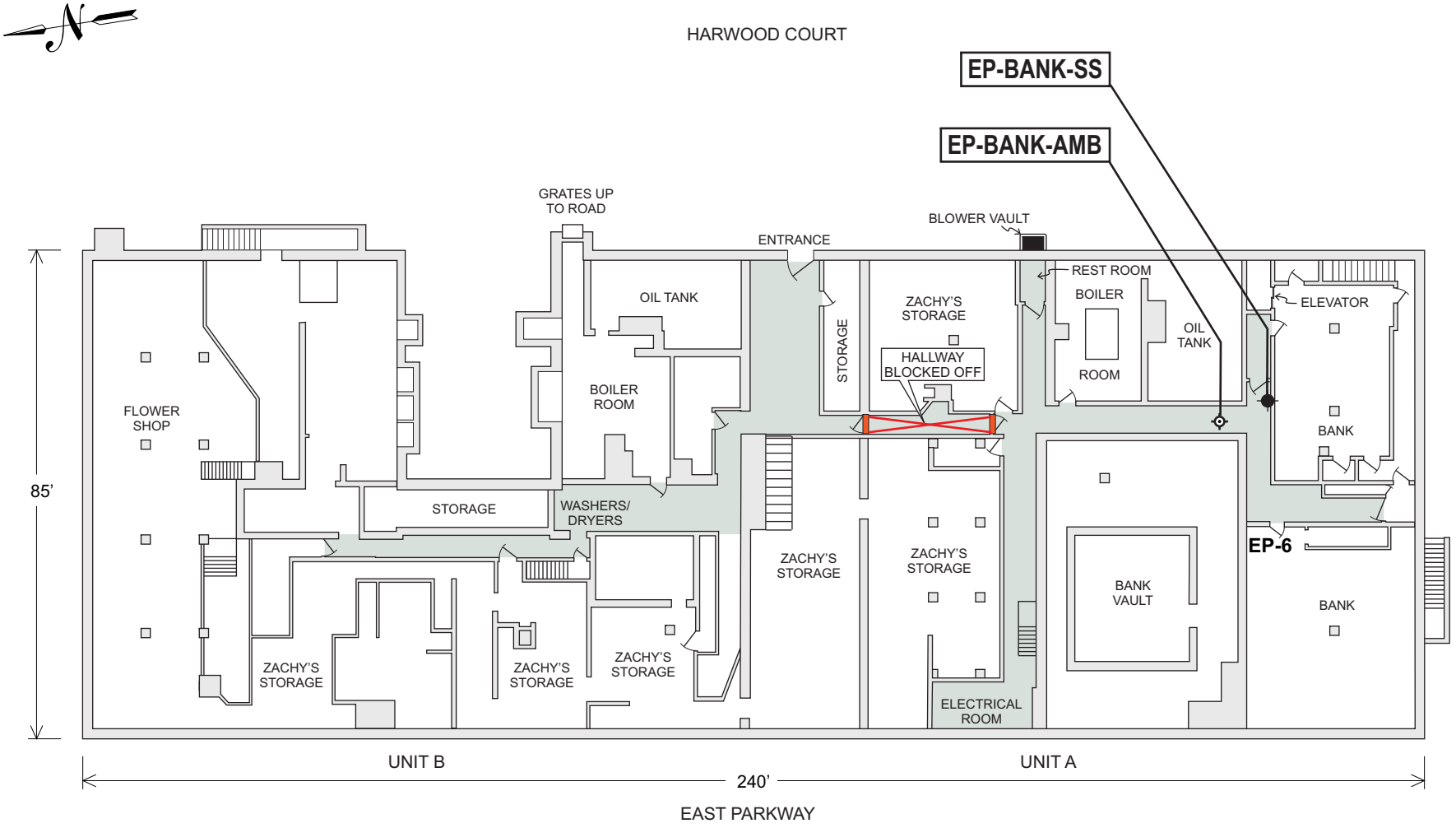
in association with HDR Engineering, Inc.
One Blue Hill Plaza
Pearl River, NY 10965

Former Mimi Dry Cleaners

Harwood Building Basement
Sub-Slab and Indoor Air Sample Locations

Scarsdale, NY

Figure G-2



Legend

- Sub-slab vapor sample location
- Indoor air sample station
- Common hallway

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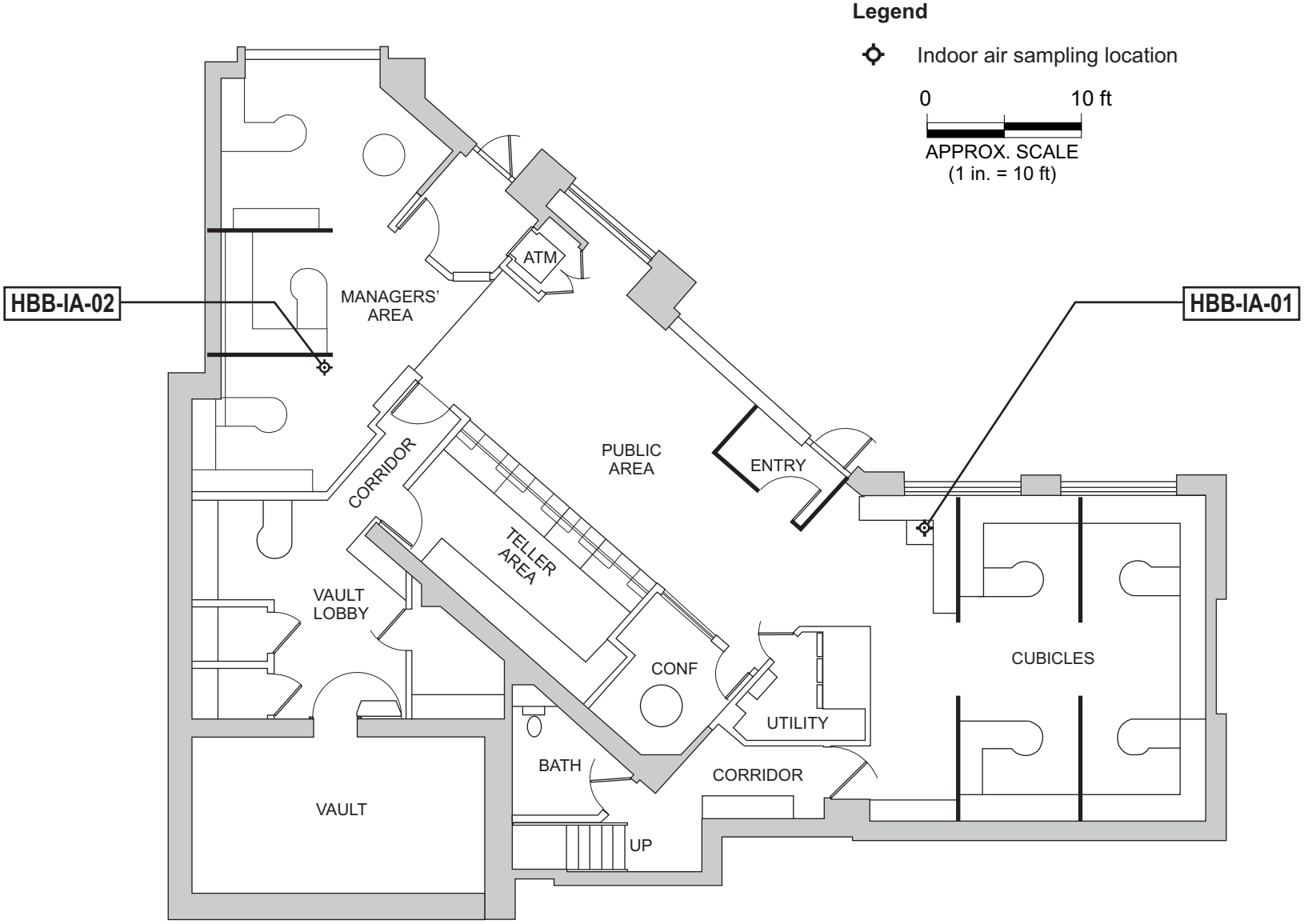
East Parkway Building Basement
Sub-Slab and Indoor Air Sample Locations

Former Mimi Dry Cleaners — **Scarsdale, NY**

Figure G-3



\\Mimi\SMPgraphics\AppG\HSBCbank_IALocations.des

Base Drawing Source: Antonucci & Associates Architects and Engineers, 1998.

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Former Mimi Dry Cleaners

HSBC Bank Building
Indoor Air Sample Locations

Scarsdale, NY

Figure G-4

APPENDIX H

GROUNDWATER SAMPLING AND ANALYSIS PLAN

APPENDIX H - GROUNDWATER SAMPLING AND ANALYSIS PLAN

Sampling Procedures

The following sampling procedures have been developed for the two monitoring wells located in the vicinity of the Former Mimi Cleaners site (the Site). MW-1 is located in the DeCicco's Market parking lot, between the trash compactor and the Christie Place Building. MW-2 is located on the north side of Spencer Place, adjacent to the sidewalk. Figure 1 of the Site Management Plan depicts the monitoring well locations. Well construction logs are attached to this document.

The wells will be purged three times the well volume (or until dry) with dedicated polyethylene bailers. As the yield and recharge rate in these monitoring wells is rather low; they are likely to both be purged dry. Field chemistries including temperature, pH, and specific conductivity will be collected during both the purging process and sample collection; data will be recorded on well sampling logs. After the wells are purged, they will be allowed to recover prior to sampling.

Groundwater samples will be collected with dedicated polyethylene bailers from the top of the water column. The bailer will be gently lowered and raised in the water column to minimize sample turbidity.

Groundwater samples will be shipped via overnight courier under proper chain-of-custody to a NYSDOH-certified laboratory for Target Compound List (TCL) Volatile Organic Compounds analysis (VOCs-EPA Method 8260B). Analytical results of the groundwater sampling will be summarized and submitted to NYSDEC and NYSDOH in a data summary report.

MONITORING WELL COMPLETION LOG

PROJECT NUMBER: 783-001

PROJECT NAME: Mimi Cleaners

WELL No.: MW-1

CLIENT:

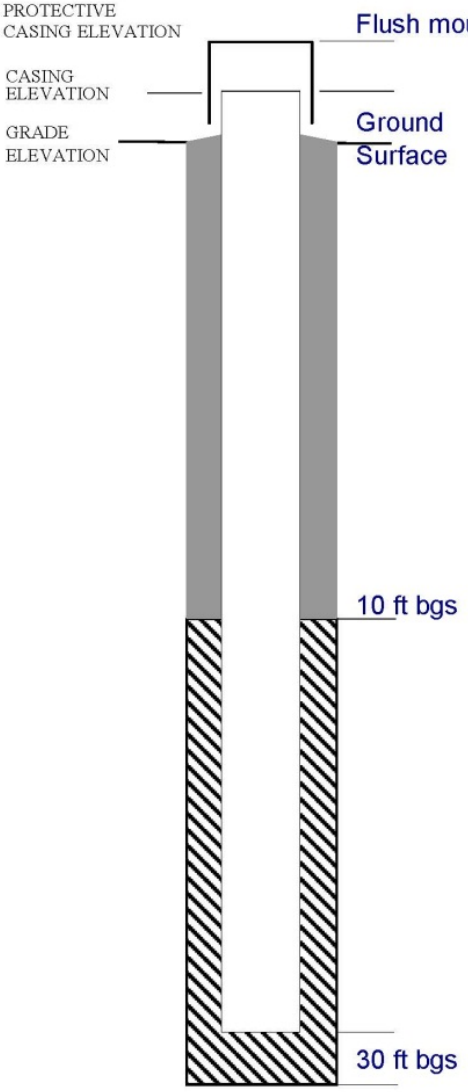
LOCATION: Parking area - Christie Place, Scarsdale, Westchester County

DATE DRILLED: 7-May-03

DATE DEVELOPED: May 6 & 7, 2003

WELL CONSTRUCTION COMPLETED: 6-May-03

DEVELOPING METHOD: whale pump/bailer



NOT TO SCALE

INSPECTOR: MSF, BCW

DATE: 5/6/2003

DRILLING CONTRACTOR: Miller Environmental

STATIC WATER LEVEL:

TYPE OF WELL: 2"

MEASURING POINT:

TOTAL DEPTH OF WELL: 30 ft

TOTAL DEPTH OF BORING: ~ 30 ft

DRILLING METHOD

TYPE: air rotary

DIAMETER: 4"

CASING:

SAMPLING METHOD

TYPE:

DIAMETER:

WEIGHT:

FALL:

INTERVAL:

RISER PIPE LEFT IN PLACE

MATERIAL:

DIAMETER:

LENGTH:

JOINT TYPE:

CASING

MATERIAL: PVC

INTERVAL: 10-30 ft

DIAMETER: 2"

STRATIGRAPHIC UNITS SCREENED: bedrock

SLOT SIZE:

SEAL(s)

Portland Cement	INTERVAL:	0-8 ft	AMOUNT:
Bentonite Slurry	INTERVAL:	8-10 ft	AMOUNT:
Bentonite Pellets	INTERVAL:		AMOUNT:
Other: gravel & sand	INTERVAL:	10-30 ft	AMOUNT:

NOTES:

LOCKING CASING: ☐ YES ☐ NO KEY NO:

MONITORING WELL COMPLETION LOG

PROJECT NUMBER: 783-001

PROJECT NAME: Mimi Cleaners

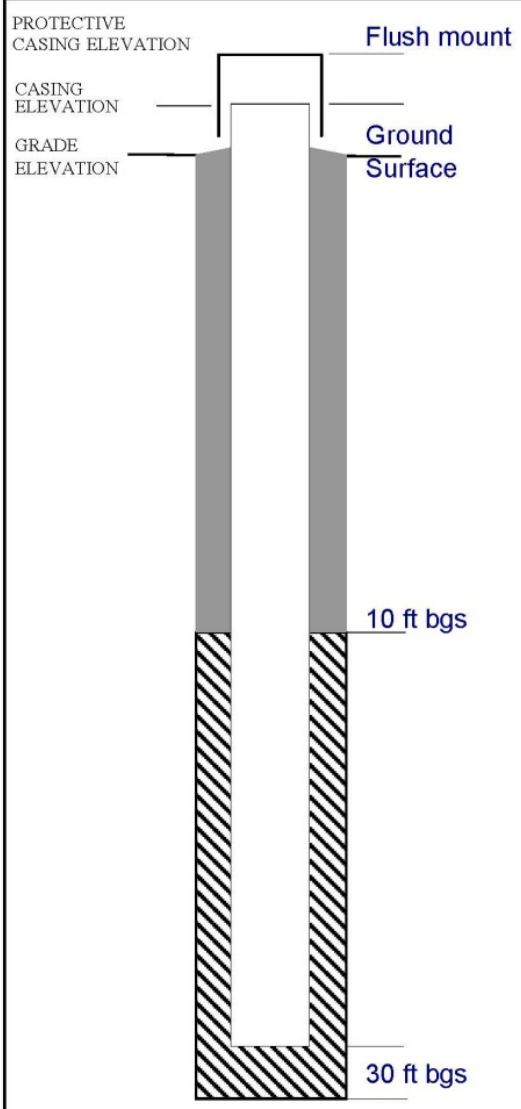
WELL No.: MW-2

CLIENT:

LOCATION: Parking space in front of Candy & Cards - Spencer Street, Scarsdale, Westchester County

DATE DRILLED:	DATE DEVELOPED:	WELL CONSTRUCTION COMPLETED:
7-May-03	7-May-03	7-May-03

DEVELOPING METHOD: whale pump/bailer



NOT TO SCALE

INSPECTOR: MEL

DATE: 5/7/2003

DRILLING CONTRACTOR: Miller Environmental

STATIC WATER LEVEL:

TYPE OF WELL: 2"

MEASURING POINT:

TOTAL DEPTH OF WELL: 30 ft

TOTAL DEPTH OF BORING: ~ 30 ft

DRILLING METHOD

TYPE: air rotary

DIAMETER: 4"

CASING:

SAMPLING METHOD

TYPE:

DIAMETER:

WEIGHT:

FALL:

INTERVAL:

RISER PIPE LEFT IN PLACE

MATERIAL:

DIAMETER:

LENGTH:

JOINT TYPE:

CASING

MATERIAL: PVC

INTERVAL: 10-30 ft

DIAMETER: 2"

STRATIGRAPHIC UNITS SCREENED: bedrock

SLOT SIZE:

SEAL(s)

Portland Cement	INTERVAL:	0-6 ft	AMOUNT:	
Bentonite Slurry	INTERVAL:	6-8 ft	AMOUNT:	
Bentonite Pellets	INTERVAL:		AMOUNT:	
Other: gravel & sand	INTERVAL:	8-30 ft	AMOUNT:	

NOTES:

LOCKING CASING: ☐ YES ☐ NO KEY NO:

APPENDIX I

QUALITY ASSSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

Table of Contents

List of Tables

1.0 PURPOSE AND OBJECTIVES

1.1 Purpose

The principal purpose of this document is to specify quality assurance/quality control (QA/QC) procedures for the collection, analysis, and evaluation of data that will be legally and scientifically defensible.

1.2 Quality Assurance Project Plan Objectives

The QAPP provides general information and references standard operating procedures (SOPs) applicable to the analytical sampling program. This information includes definitions and goals for data quality and required types and quantities of QA/QC samples. The procedures address field documentation; sample handling, custody, and shipping; instrument calibration and maintenance; auditing; data reduction, validation, and reporting; corrective action requirements; and QA reporting specific to the analyses performed by the certified analytical laboratories under a subcontract agreement with HDR.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

2.1 Analytical Laboratories

The analytical laboratories will perform chemical analyses of environmental samples collected for each sampling event. The laboratories are capable of providing a complete range of analytical services consistent with NYSDEC ASP CLP. These laboratories will maintain their certification by the New York State Department of Health Environmental Laboratory Approval Program.

The laboratories will have their own provisions for conducting an internal QA/QC review of the data before they are released to HDR. The Laboratory Project Managers will contact HDR's Project Managers with any sample discrepancies or data concerns.

Hardcopy and electronic data deliverables formatted QA/QC reports will be filed by the analytical laboratories when data are submitted to HDR. Corrective actions will be reported to the HDR Project Managers along with the QA/QC reports. The laboratories may be contacted directly by HDR or NYSDEC personnel to discuss QA concerns.

3.0 QUALITY ASSURANCE/QUALITY CONTROL OBJECTIVES FOR DATA MEASUREMENT

3.1 Overview

- This section discusses QA objectives for the project. QA objectives are met in part with the development of data quality objectives (DQOs). DQOs are qualitative and quantitative statements that specify the quality of data required to support decisions, and are therefore based on the end uses of the data. DQOs will ensure that data will be extensive enough and of sufficient quality to allow for the determination of the nature and extent of contaminated media present

DQOs are met with the development of QA/QC procedures which are designed to maintain data quality and adherence to established protocol.

Quality data can be assured if the QA objectives set forth in this QAPP are realized. Data quality is measured by how well the data meet the QA/QC goals of the project. In this plan, "Quality Assurance" and "Quality Control" are defined as follows:

- Quality assurance is the total integrated program for assuring reliability of monitoring and measurement data.
- Quality control is the routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process.

QA elements to be evaluated include accuracy, precision, sensitivity, representativeness, and completeness. The data must be accurate enough to assess potential environmental impacts. Reporting of the data must be clear, concise, and comprehensive. QC elements that are important to this project are blank contamination, instrument calibration, completeness of data packages, sample holding times, and sample custody.

3.2 Laboratory Quality Assurance Objectives

The fundamental mechanisms that will be employed to achieve these quality goals in laboratory analyses can be categorized as prevention, assessment, and correction. These include:

- Prevention of defects in the quality through planning and design; documented instructions and procedures; and careful selection of skilled, qualified personnel.

- Quality assessment through a program of regular audits and inspections to supplement continual informal review.
- Permanent correction of conditions adverse to quality through a closed-loop corrective action system.

Overall compliance with laboratory QC procedures will be evaluated against the criteria specified for each method. Deviations will be reported in the narrative, which contains comments or problems encountered during fractional analyses of the samples. The narrative includes the laboratory's assessment of the impact on data usability and will address QC issues related to the following:

- ***Laboratory Method Performance*** - QC criteria for method performance must be met for target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, surrogates, and laboratory control samples.
- ***Sample Matrix Effects*** - QC samples are analyzed to determine measurement bias due to the sample, and may include surrogates, matrix spikes, matrix spike duplicates, and laboratory duplicates. If criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the laboratory control sample results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

3.3 Field Parameters and Quality Assurance Objectives

Water quality parameters consisting of pH, conductivity, and temperature will be measured to provide general groundwater quality information.

Soil vapor and indoor/outdoor air sampling locations will be located relative to building features.

Similar samples will be collected using consistent sampling methods, analyzed using consistent analytical procedures, and reported in conventional units (e.g., mcg/L, mcg/kg, and mcg/m^3 for analytical results). Therefore, the data will be comparable throughout the project.

3.4 Detection and Quantitation Levels

In addition, analytical sensitivity is an important component of data quality, and is evaluated using analyte detection and quantitation levels.

3.4.1 Detection Limits

A detection limit has been defined by the Committee on Environmental Improvement of the American Chemical Society (Anal. Chem. 55:2210-2218 [1983]) as "the lowest concentration that can be determined to be statistically different from a blank." Various methods are available for determining detection limits, most of which are based on the standard deviation of measurements in the region near the blank responses. The following detection limits are determined routinely in the laboratory.

Instrument Detection Limits (IDLs) are determined using the protocols given in the inorganic and organic statements of work for the EPA Contract Laboratory Program (CLP). A standard deviation is calculated from replicate measurements of a low level standard and multiplied by 3 to give the IDL. IDLs are used as an index of instrument performance that does not include sample effects and, therefore, represent the lowest detection limit achievable. IDLs can vary between instruments of the same type and can change when redetermined.

Method Detection Limits (MDLs) are determined using the EPA procedure published in 40 Code of Federal Regulations 136 Appendix B. The MDL is defined as "the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte." This procedure requires that "sample processing steps of the analytical method be included in the determination of the method detection limit." Therefore, the sample matrix and sample preparation process, as well as the analytical instrumentation influence MDLs. A minimum of 7 replicate spikes at 1-5 times the expected MDL are analyzed. The MDL is calculated by multiplying the standard deviation of the measurements by the Student *t* value for a 99 percent confidence level. Because of the wide variety of matrix types analyzed by the laboratory, MDLs are routinely determined in reagent water or standard solid matrix. These MDLs represent, therefore, the optimum values, and the MDLs for actual sample matrices are likely to be higher. MDLs can be determined for specific matrices when requested by the client.

Unless superseded by other program, project, or client requirements, IDLs and MDLs are determined annually. In addition, IDLs and MDLs are redetermined after an instrument is moved or modified, and MDLs are redetermined after a method has been significantly changed. Where more than one instrument is used in sample analyses by a given technique (e.g., gas chromatograph/mass spectrometry, gas chromatograph, graphite furnace atomic absorption [GFAA], or inductively coupled plasma), detection limit studies are performed for each instrument. A standard laboratory reporting limit is determined for each analyte based on the highest detection limit determined. Data for instruments are maintained for use in reporting data when project-specific requirements dictate lower detection limits.

A detection limit measured at a given time is an estimate of the true detection limit because the measured standard deviation used to calculate the detection limit is subject to random error and is an estimate of the population standard deviation. The confidence limits on the standard deviation and, hence the detection limit, can be determined using the chi-square (X^2) distribution (40 Code of Federal Regulations 136 Appendix B). The 95 percent confidence limits for an MDL determined from 7 replicates are 0.64 MDL and 2.20 MDL. A re-determination of the detection limit could produce a value between the chi-square limits, even if the conditions remain the same. Day-to-day changes in instrument performance can further produce changes in the measured detection limit.

When interpreting data and detection limits, it is important to remember that, when a measured concentration is greater than the detection limit, the analyte has the specified probability of actually being present (i.e., of having a true concentration greater than zero); however, the detection limit cannot be used to say anything about the presence or absence of an analyte that has a measured concentration less than the detection limit. From the definition of the MDL, there is a 1 percent chance that a sample with no analyte will produce a concentration greater than or equal to the MDL (false-positive). The probability is 50 percent, however, that a sample with a concentration at the MDL will be measured at less than the MDL (false-negative).

3.4.2 Quantitation Levels

To ensure better precision in low level data and to reduce the false-negative error rate, quantitation limits have been proposed as the minimum concentration at which an analyte can be quantified with an acceptable degree of confidence. The American Chemical Society Committee on Environmental Improvement has recommended that quantitation limits be calculated by multiplying 10 times the standard deviation, giving a relative standard deviation of 10 percent.

The Committee further advised that quantitative interpretation, decision making, and regulatory actions should be limited to data at or above the limit of quantitation. The laboratories will use the term “Reporting Limit” for the laboratory quantitation limit.

3.4.3 Project-Specific Quality Control and Reporting Limits

Reporting limits applicable to the project are the most current required quantitation limits for both CLP and SW-846 found in the NYSDEC Analytical Services Protocol (ASP) July 2005.

3.5 Field Sampling Operations

The handling of samples in the field and in the laboratory must conform with the sample custody procedures established in this QAPP. Field custody procedures will involve proper handling of the laboratory-supplied sampling containers, sample identification, chain-of-custody forms, and packaging and shipping procedures. Laboratory custody will begin with the receipt of samples at the laboratory and continue through sample storage, analysis, data reporting, and data archiving. This section provides the procedures that will be followed during the course of this project to ensure proper sample custody.

3.5.1 Sample Bottle Preparation

Chain-of-custody procedures begin with preparation of sample containers and preservatives to be used in sample collection. The laboratories will provide cleaned sample containers. Batch-certified clean air sample canisters will be provided by the laboratories. Sample kits (coolers containing chain-of-custody forms, custody seals, sample containers, preservatives, and packing materials) will be prepared by the laboratories in response to receipt of an analytical task order submitted by HDR.

3.5.2 Sampling Procedures

Sampling protocols include standard sampling procedures for sample collection, accurate sample identification, and packing of samples for shipment. During sample collection, a chain-of-custody form is initiated, which accompanies the samples during shipment to the analytical laboratory.

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

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

Sample labels will be attached to all sampling bottles before field activities begin; each label will contain an identifying number that has a suffix identifying the site and where the sample was taken. Approximate sampling locations will be marked on a map with a description of the sample location. The number, type of sample, and sample identification will be entered into the field log book.

A chain-of-custody form will be initiated at the laboratory and accompany the sample bottles from the laboratory into the field. Upon receipt of the bottles and cooler, the sampler will sign and date the first "Received" blank space. After each sample is collected and appropriately identified, entries will be made on the chain-of-custody form which will include:

- Site name and address
- Samplers' names and signatures
- Names and signatures of persons involved in chain of possession
- Sample number
- Number of containers
- Sampling station identification
- Date and time of collection
- Type of sample and the analyses requested
- Preservative used
- Pertinent field data (pH, temperature, turbidity, etc.)
- Condition of samples upon arrival at laboratory

After sampling has been completed, the sampler will deliver the samples to the laboratory, overnight currier, or laboratory supplier currier. The sampler will sign and date the next

"Relinquished" blank space. One copy of the custody form will remain in the field and the remaining copies will accompany the samples to the laboratory. All samples will be received by the laboratory within 48 hours of collection. Samples will be received by the laboratory personnel who will assume custody of the samples, and sign and date the next "Received" blank.

3.6 Laboratory Sample Receipt

Upon receipt at the laboratory, a laboratory representative inspects the samples for integrity, checks the shipment against the chain-of-custody/analytical task order form, and signs the chain-of-custody. Discrepancies are addressed at this point and documented on the chain-of-custody form. Discrepancies are reported to the Laboratory Project Manager who contacts the designated HDR project staff as shown on the chain-of-custody for resolution.

When the shipment and the chain-of-custody are in agreement, the custodian enters the samples into the Laboratory Information Management System (LIMS) and assigns each sample a unique laboratory number. This number is affixed to each sample bottle. The custodian then enters the sample and analysis information into the laboratory computer system.

During the time the sample is in the laboratory’s custody the laboratory must satisfy the sample chain-of-custody requirements by implementing a number of specific measures and standard operating procedures (SOPs). The specific SOPs the laboratory will follow are described in the individual laboratories QAPP.

4.0 CALIBRATION PROCEDURES AND FREQUENCY

Instruments and equipment used during the data collection efforts associated with the individual work assignments are controlled by a formal calibration program, which verifies that equipment is of the proper type, range, accuracy, and precision to provide data compatible with specified requirements. Instruments and equipment that measure a quantity, or whose performance is expected at a stated level, are subject to calibration. Calibration is performed using reference standards or externally by calibration agencies or equipment manufacturers. In the case of any subcontracted analytical services the calibration procedures for the analytical equipment used by the analytical laboratory will follow the NYSDEC ASP guidelines.

4.1 Calibration System

The following sections contain a discussion of the elements comprising the calibration system.

4.1.1 Calibration Procedures

Written procedures are used for all instruments and equipment subject to calibration. Whenever possible, recognized procedures, such as those published by the American Society of Testing and Materials or EPA, or procedures provided by manufacturers, are adopted. If established procedures are not available, a procedure is developed considering the type of equipment, stability characteristics of the equipment, required accuracy, and the effect of operational error on the quantities measured.

4.1.2 Calibration Frequency

Calibration frequency is based on the type of equipment, inherent stability, manufacturer's recommendations, values provided in recognized standards, intended data use, specified analytical methods, effect of error upon the measurement process, and prior experience.

4.1.3 Calibration Reference Standards

Two types of reference standards will be used by the standby laboratories for calibration:

- ***Physical standards***, such as weights for calibrating balances and certified thermometers for calibrating working thermometers, refrigerators and ovens, are generally used for periodic calibration.
- ***Chemical standards***, such as Standard Reference Materials provided by the National Institute of Standards and Technology or EPA. These may include vendor-certified materials traceable to National Institute of Standards and Technology or EPA Standard Reference Materials. These are primarily used for operational calibration.

4.1.4 Calibration Failure

Equipment that cannot be calibrated or becomes inoperable is removed from service. Such equipment must be repaired and satisfactorily recalibrated before re-use. For laboratory equipment that fails calibration, analysis cannot proceed until appropriate corrective action is taken and the analyst achieves an acceptable calibration. This is documented in a Non-Conformance Record.

Laboratory managers are responsible for development and implementation of a contingency plan for major equipment failure. The plan includes guidelines on waiting for repairs, use of other instrumentation, subcontracting analyses, and evaluating scheduled priorities.

4.1.5 Calibration Records

Records are prepared and maintained for each piece of equipment subject to calibration. Records demonstrating accuracy of preparation, stability, and proof of continuity of reference standards are also maintained. Copies of the raw calibration data are kept with the analytical sample data.

4.2 Operational Calibration

Operational calibration is generally performed as part of the analytical procedure and refers to those operations in which instrument response (in its broadest interpretation) is related to analyte concentration. Included is the preparation of a standard response (calibration) curve and often the analysis of blanks.

4.2.1 Preparation of Calibration Curve

Preparation of a standard calibration curve is accomplished by the analysis of calibration standards, which are prepared by adding the analyte(s) of interest to the solvent that is introduced into the instrument. The concentrations of the calibration standards are chosen to cover the working range of the instrument or method. Sample measurements are made within this working range. The calibration curve is prepared by plotting or regressing the instrument responses versus the analyte concentrations. Concentrations of the analyzed samples are back calculated from the calibration curve.

4.2.2 Blanks

Reagent and/or solvent blanks are analyzed to assess if the materials used to prepare the standards are free from interfering substances that could affect the analysis. A method blank is prepared whenever samples are processed through steps that are not applied to the calibration standards.

4.3 Periodic Calibration

Periodic calibrations are performed for equipment (e.g., balances, thermometers) that is required in the analytical method, but that is not routinely calibrated as part of the analytical procedure. The periodic calibration requirements used by the standby laboratories is found in their QAPP which will be appended to this document once the laboratories are procured and approved.

4.4 Field Equipment Calibration

The procedures and frequencies for the calibration of field equipment and their associated quality control objectives are found in Tables 1 and 2 respectively.

Table 1
Field Instrumentation Calibration Frequency

Instrument	Frequency of Calibration Check	Calibration Standard
pH Meter	Prior to use – daily	Commercially prepared pH buffer solutions (4.00, 7.00, 10.00)
Conductivity Meter	Prior to use – daily	Commercially prepared saline solution (12.9 mS/cm)
Water Level Meter	Prior to initiating field work	.1-ft graduated engineer's tape
Photoionization Detector	Prior to use – daily	100 ppm isobutylene

Table 2
Field Measurement Quality Control Objectives

Field Parameter	Precision[(a)]	Accuracy
Water Temperature	±1°C	±1°C (instrument capability)
pH	±1 pH Standard Unit	±1 pH Standard Unit (instrument capability)
Conductivity	±1 mS/cm	±5% standard
Water Level	±0.1 ft	±0.01 ft

Note: [(a)] Precision units presented in applicable significant figures.

5.0 ANALYTICAL PROCEDURES

5.1 Field Analytical Procedures

Field analytical procedures include the measurement of temperature, conductivity and pH, turbidity, and groundwater levels. Field measurement QC limits in terms of precision and accuracy are presented in Table 2.

5.2 Laboratory Analytical Procedures

Laboratory analytical requirements presented in the subsections below include a general summary of project-specific requirements related to each sample matrix to be analyzed.

Concentrations of target compounds and analytes will be analyzed according to the laboratory specific method SOPs developed for the NYSDEC Analytical Services Protocol (ASP) (2005) and EPA SW-846 Methods listed in the table below.

Analyte List	**Matrices**	**Method No.**
EPA CLP Target Compound List organics (VOCs/)	Groundwater	Or EPA SW-846 Method 8260B for VOCs
CVOCs	Air and Soil Vapor	EPA TO-15

Samples will be analyzed by the laboratory within the required holding times.

5.3 Sample Matrices

5.3.1 Water

No filtering of groundwater samples will be performed. Analytical results for analyses will be reported in µg/L.

5.3.2 Soil Vapor and Indoor/Outdoor Air

Analytical results for soil vapor and indoor/outdoor air samples will be reported as mcg/m^3.

5.4 Standard Operating Procedures

The laboratories will maintain a manual of procedures other than laboratory-specific analytical methods in a document controlled SOP Manual. Laboratory Method SOPs will be maintained as controlled documents in the laboratory's Methods Manuals.

5.5 Recordkeeping

The requirements for laboratory recordkeeping are given in the laboratory's SOP Manual. Data entries are made in indelible, water-resistant ink. The date of the entry and the observer are clear on each entry. The observer uses his/her full name or initials. An initial and signature log is maintained so that the recorder of every entry can be identified. Information is recorded in a notebook or on other records at the time the observations are made. Recording information on loose pieces of paper is not allowed.

When a mistake is made, the wrong entry is crossed out with a single line initialed and dated by the person making the entry, and the correct information recorded. Obliteration of an incorrect entry or writing over it is not allowed; neither is the use of correction tape or fluid on any laboratory records.

6.0 FIELD AND LABORATORY QUALITY CONTROL CHECKS AND FREQUENCY

Quality control checks will be performed to ensure the collection of representative and valid data. Internal quality control refers to all data compilation and contaminant measurements. QC checks will be used to monitor project activities to determine if quality assurance objectives are being met. QC measurements for analytical protocols are designed to evaluate laboratory performance and measurement biases resulting from the sample matrix and field collection/sample management procedures.

- ***Laboratory Method Performance*** - QC criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, laboratory control samples, and Standard Reference Materials.
- ***Sample Performance*** - The accuracy and precision of sample analyses are influenced by both internal and external factors. Internal factors are those associated with sample preparation and analysis. Internal factors are monitored by the use of laboratory QC samples. QC field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes, matrix spike duplicates, and laboratory duplicates.
- ***Field Performance*** - QC samples are used to evaluate the effectiveness of the sampling program to obtain representative samples, eliminating any cross contamination.

6.1 Laboratory Quality Control Samples

Laboratory QC samples are included in each analysis to provide information on both method performance and sample measurement bias, and are included in each analytical batch. A batch is defined as a group of field samples of similar matrix, not to exceed 20, which are processed as a unit using the same method and the same lots of standards and reagents. The laboratory QC samples discussed in the following sections are not counted in the maximum batch size of 20.

6.1.1 Method Blank

The method blank is used to monitor laboratory contamination. This is usually a sample of laboratory reagent water, or a standard solid matrix, processed through the same analytical procedure as the sample (i.e., digested, extracted, distilled). One method blank is prepared and analyzed with each analytical batch.

6.1.2 Laboratory Control Sample

A fortified method blank is analyzed with each analysis. These samples generally consist of a standard solid matrix fortified with the analytes of interest for single-analyte methods and selected analytes for multi-analyte methods according to the appropriate analytical method. The analyte recovery from each is used to monitor analytical accuracy and precision.

6.1.3 Matrix Spike

A matrix spike is an aliquot of a field sample, which is fortified with the analyte(s) of interest and analyzed to monitor measurement bias associated with the sample matrix. A matrix spike duplicate and matrix spike blank will be performed for every analytical batch.

6.1.4 Surrogates Spike Analysis

Surrogates are organic compounds that are similar to analytes of interest in chemical composition, extraction, and chromatography, but are not normally found in environmental samples. Surrogates are added to field and QC samples in every batch. These compounds are used to monitor system performance as well as sample measurement bias. Percent recoveries are calculated for each surrogate, and evaluated against acceptance criteria.

6.2 Field Quality Control Samples

These samples are not included specifically as laboratory QC samples but are analyzed when submitted to provide quality control data relative to the field sampling and sample management procedures. Data for these QC samples are reported with associated samples.

6.2.1 Field Blanks

Field blanks are collected to evaluate the cleanliness of aqueous sampling equipment and sampling bottles, and the potential for cross-contamination of samples due to equipment handling and/or contaminants in the air. Dedicated equipment will be used for groundwater sampling such that field blanks will not be required for the groundwater sampling program. In addition, batch cleaned air sample canisters are used for the sub-slab vapor and air sampling such that field blanks will not be collected in conjunction with soil vapor or air sampling programs.

6.2.2 Trip Blanks

The trip blank will be used to determine if any volatile organic cross-contamination occurs between aqueous samples during shipment. They are only appropriate for aqueous volatile organic samples. Trip blanks will be supplied by the analytical laboratory as aliquots of distilled, deionized water that will be sealed in a sample bottle that travels with the set of sample bottles during the field sampling effort and subsequent shipment to the analytical laboratory. Glass vials (40 ml) with Teflon®-lined lids will be used for trip blanks. The sealed trip blank bottles will be placed in a cooler with the empty sample bottles and shipped to the site by laboratory personnel. If multiple coolers are necessary to store and transport aqueous volatile organic compound samples, then each cooler must contain an individual trip blank. Trip blanks are typically not collected in conjunction with the soil vapor or air sampling programs.

6.2.3 Field Duplicates

Field duplicates are two samples of the same matrix, which are collected, to the extent possible, from the same location at the same time using the same techniques. Field duplicates will be collected for the groundwater samples collected at the site. Field duplicate samples will not be collected for the air sampling conducted at the site. The data from the air sampling will be validated by and independent auditor.

6.2.4 Temperature Blanks

Laboratory will use either 1) an infrared instrument to measure the temperature of liquid samples or 2) a temperature blank will be used to measure the temperature of liquid samples. If used, temperature blanks will be supplied by the analytical laboratory. If multiple coolers are

necessary to store and transport aqueous samples, then each cooler must contain an individual temperature blank (if used).

6.3 Office Quality Control

6.3.1 Technical Checks

A minimum of two qualified professionals will proof and check all final reports and workplans for technical errors and/or inconsistencies. Checks will be made of all references and protocol cited to ensure they will be correct. Procedural descriptions will be reviewed to ensure they are accurate with referenced protocol. After technical review is complete, each document will be reviewed by the editorial staff for grammar and punctuation.

6.3.2 Numerical Checks

A minimum of two qualified professionals will proof and check all final reports and workplans for transcription and/or calculation errors. All data tables will be checked to ensure no transcription errors have occurred. Data tables will also be checked to see that criteria cited for comparison purposes is appropriate and correctly referenced. All calculations will be checked to ensure that they will be properly presented and that resulting values are achievable. If any results can not be duplicated the calculations will be independently checked for accuracy.

7.0 PREVENTIVE MAINTENANCE

Periodic preventive maintenance is required for all sensitive equipment. Instrument manuals will be kept on file for reference if equipment needs repair. The troubleshooting chapter of factory manuals may be used in assisting personnel in performing maintenance tasks. The frequency of preventive maintenance for field equipment is indicated in each operating instruction manual. Manually operated sampling equipment will be routinely checked to ensure proper operation and that excessive wear has not occurred. If necessary, equipment will be taken out of service for repair or replacement.

Field equipment is checked by field personnel under the supervision of the project manager. It is the responsibility of HDR's Environmental Measurements Section to conduct preventive maintenance on HDR-owned equipment that maybe used in sampling efforts. A summary of general preventative maintenance schedule is provided in Table 3.

Table 3
Preventive Maintenance Summary

Maintenance	Frequency
Conductivity/Temperature, pH Meters	
Store in protective casing	Daily
Inspect equipment after use	Daily
Clean probes	Daily
Keep logbook in instrument	Daily
Have replacement meter available	Daily
Replace probes	X
Return to manufacturer for service	X
Calibration/Check	Daily
Water Level Meter	
Store in protective covering	Daily
Inspect equipment after use	Daily
Check indicators/batteries	Daily
Keep logbook on instrument	Daily
Have replacement meter available	X

8.0 QUALITY ASSURANCE PERFORMANCE AND SYSTEM AUDITS

Audits are systematic checks to determine the quality of operation of some activity or function in the field or laboratory. One field audit will be conducted by the Project Quality Assurance Officer to assure adherence to proper field and sampling procedures. Audits are of two types:

Performance audits are independent safety and health, procedure, and/or sample checks made by a supervisor or auditor to arrive at a **quantitative** measure of the quality of the data produced by one section or the entire measurement process.

System audits are onsite **qualitative** inspections and reviews of the QA system used by some part of or the entire measurement system. The audits are performed against the QAPP. A checklist is typically generated from the requirements and becomes the basis for the audit. The results of any deficiencies noted during the audit are summarized in an audit report.

Analytical laboratory performance and system audits are performed by the laboratory QA staff to assess the effectiveness of the quality system. These internal audits are performed on a routine basis. Audits are also performed by certifying agencies.

8.1 Responsibility, Authority, And Timing

QA audits to be conducted for the project may include system, performance, and data audits. The Program QAO working with the Project Quality Assurance Officer will keep a tentative schedule on record that details the number and types of audits.

8.2 Field Audits

Field performance audits will be conducted on an ongoing basis during the project as field data are generated, reduced, and analyzed. All numerical manipulations, including manual calculations, will be documented. All records of numerical analyses will be legible, of reproduction quality, and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator.

Indicators of the level of field performance include the analytical results of the blank and replicate samples. Each blank analysis will be considered an indirect audit of the effectiveness

of measures taken in the field to ensure sample integrity (e.g., field decontamination procedures). The results of the field replicate analyses are an indirect audit of the ability of each field team to collect representative sample portions of each matrix type.

System audits of site activities will be accomplished by an inspection of all field site activities. During this audit, the auditor(s) will compare current field practices with standard procedures. The following elements will be evaluated during a field system audit:

- All activities conducted in accordance with the Work Plan
- All procedures and analyses conducted according to procedures outlined in the QAPP and Addendum
- Sample documentation
- Working order of instruments and equipment
- Level of QA conducted per each field team
- Contingency plans in case of equipment failure or other event preventing the planned activity from proceeding
- Decontamination procedures
- Level of efficiency with which each team conducts planned activities at one site and proceeds to the next
- Sample packaging and shipment.

After completion of the audit, any deficiencies will be discussed with the field staff and necessary corrections identified. If any of these deficiencies could affect the integrity of the samples being collected, the auditor(s) will inform the field staff and corrections will be implemented immediately. The audit will be performed by the Project Quality Assurance Officer or the assigned task manager.

8.3 Laboratory Performance And System Audits

The New York State Department of Health Environmental Laboratory Analytical Program Contract Laboratory Program certified laboratory that has satisfactorily completed performance audits and performance evaluation samples will be used for all sample analysis. The results of the most recent performance audits and performance evaluations will be made available upon request.

8.4 Audit Procedures

Prior to an audit, the designated lead auditor prepares an audit checklist. During an audit and upon its completion, the auditor(s) will discuss the findings with the individuals audited and discuss and agree on corrective actions to be initiated. The auditor will then prepare and submit an audit report to the manager of the audited group and the project manager.

The manager of the audited group will then prepare and submit, to the Program QAO, Project Quality Assurance Officer and the Project Manager, a plan for implementing the corrective action to be taken on non-conformances indicated in the audit report, the date by which such corrective action will be completed, and actions taken to prevent reoccurrence. If the corrective action has been completed, supporting documentation should be attached to the reply. The auditor will ascertain (by re-audit or other means) if appropriate and timely corrective action has been implemented.

Records of audits will be maintained in the project files.

8.5 Documentation

To ensure that the previously defined scope of the individual audits is accomplished and that the audits follow established procedures, a checklist will be completed during each audit. The checklist will detail the activities to be executed and ensure that the auditing plan is accurate. Audit checklists will be prepared in advance and will be available for review. Following each system, performance, and data audit, the Program QAO will prepare a report to document the findings of the specific audit.

9.0 DATA REDUCTION, VALIDATION, AND REPORTING

9.1 Overview

The process of data reduction, validation, and reporting will ensure that assessments, designs, or conclusions based on the final data accurately reflect actual site conditions. This section of the QAPP presents the specific procedures, methods, and formats that will be employed for data reduction, validation and reporting of each measurement parameter determined in the laboratory and field. Also described in this section is the process by which all data, reports, and work plans will be proofed and check for technical and numerical errors prior to final submission.

9.1.1 Field and Technical Data Reduction

Field personnel will record all field data in bound field logbooks and on standard forms. After checking the validity of the data in the field notes, the project manager or his/her designee will reduce the data to tabular form, when possible, by entering the data into data files. Where appropriate, the data files will be set up for direct input into the project database. Subjective data will be filed as hard copies for later review by the Project Manager and incorporation into technical reports, as appropriate.

9.1.2 Laboratory Data Reduction

Data reduction is the process by which raw analytical data generated from laboratory instrument systems is converted into usable concentrations. The raw data, which may take the form of area counts, instrument responses, or observations, are processed by the laboratory and converted into concentrations expressed in the parts per million or parts per billion range. Raw data from these systems include compound identifications, concentrations, retention times, and data system print-outs. Raw data are usually reported in graphic form, bar graph form, or tabular form.

The laboratory will follow standard operating procedures consistent with the data handling requirements of the applicable methods. The laboratory reporting limits for each work assignment must be less than or equal to those stipulated by this QAP.

All analytical data will be reported by the laboratory with NYSDEC ASP Category B deliverables. Electronic data deliverables (EDD) provided by the laboratory will also be consistent with the current ASP requirements and NYSDEC standards for electronic data delivery.

9.2 Validation

9.2.1 Field and Technical Data Validation

Validation of objective field and technical data will be performed at two different levels. The first level of data validation will be performed at the time of collection by following standard procedures and QC checks. The task manager, who will review the data to ensure that the correct codes and units have been included, will complete the second level of data validation. After data reduction into tables and arrays is complete, the task manager will review data sets for anomalous values. The Project Manager, who will review field reports for reasonableness and completeness, will validate subjective field and technical data. In addition, the Project Manager will conduct random checks of sampling and field conditions.

9.2.2 Analytical Data Validation

Data validation is performed to establish the data quality for all data, which are to be considered when making project decisions. Laboratories will submit results that are supported by sufficient back-up data and QA/QC results to enable the reviewer to conclusively determine the quality of the data. The laboratory will review data prior to its release from the laboratory. Outlying data will be flagged in accordance with laboratory standard operating procedures, and corrective action will be taken to rectify the problem.

A NYSDEC-approved qualified independent third party data validator will review the sub-slab and indoor air sample data package in accordance with the NYSDOH guidance document to determine completeness and compliance.

A narrative describing how the data did or did not meet the validation criteria is part of the data validation procedure. The validation assessment will describe the overall quality of the data and the data validation report will provide a written statement upon completion of the validation indicating whether or not the data are valid and usable, and include a percent completeness value of usable data.

9.2.3 Data Usability Summary Report

A Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data without the third party data validation. The primary objective of a DUSR is to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use. A DUSR will not be required for the data collected as part of the SMP. The indoor air and sub-slab vapor data will be reviewed and validated by a qualified independent third party data validator in accordance with the NYSDOH guidance document to determine completeness and compliance of the data.

9.3 Reporting

9.3.1 Field Measurements

Any field analysis results will be recorded in a dedicated field logbook at the time the results are available. The results will be tabulated and plotted in the office as part of the reporting tasks. Reports also will consist of the field logbook, required standard forms, photographic documentation, and daily QC Reports.

9.3.2 Analytical Data

The content of analytical laboratory data packages designed for work conducted at the project site are work assignment specific and will include the following information:

- Pertinent physical data presented in concise, easy to follow formats (i.e., sample number, client, date of sample preparation, date analyzed, percent moisture, etc.)
- Reference for analytical methodology used
- General discussion including a description of sample types, tests performed, any problems encountered, and general comments
- Data from each discrete sample reported using cross-referencing between normal samples and QC samples and including all pertinent dates, information, and reporting limits
- Reported data to include associated QC samples such as blanks, spikes and spike duplicates, laboratory duplicates, field duplicates, and appropriate check standards
- Copies of chain-of-custody sheets
- Raw data.

9.3.3 Data Deliverables

All analytical data obtained will be submitted to the NYSDEC in a as a standardized format as requested by the NYSDEC project case manager.

10.0 CORRECTIVE ACTION PROCEDURE DESCRIPTION

10.1 Objectives

The objectives of the corrective action procedures presented below are to ensure that recognized errors in performance of sample and data acquisition lead to effective remedial measures and that those steps are documented to provide assurance that any data quality deficiencies are recognized in later interpretation and are not recurrent.

10.2 Rationale

Many times corrective measures are undertaken in a timely and effective fashion but go undocumented. In other cases, corrective actions are of a complex nature and may require scheduled interactions between departmental groups. In either case, documentation in a formal or informal sense can reinforce the effectiveness and duration of the corrective measures taken.

10.3 Corrective Action Methods

10.3.1 Immediate Corrective Actions

Immediate corrective actions are of a minor or routine nature such as correcting malfunctioning equipment, correction of data transcription errors, and other such activities routinely made in the field, laboratory, or office by technicians, analysts, and other project staff.

10.3.2 Long-Term Corrective Actions

Long-term corrective action will be used to identify and eliminate causes of non-conformances which are of a complex nature and that are formally reported between management groups.

10.3.3 Corrective Action Steps

For long-term corrective actions, steps comprising closed-loop corrective action system are as follows:

- Define the problem
- Assign responsibility for investigating the problem
- Investigate and determine the cause of the problem
- Determine a corrective action to eliminate the problem
- Assign and accept responsibility for implementing the corrective action
- Verify that the corrective action has eliminated the problem.

Non-conformance events associated with analytical work are documented by the laboratories' Non-Conformance Records, which are reviewed and approved by the QAO.

10.3.4 Audit-Based Non-Conformances

Following audits, corrective action is initiated by documenting the audit finding and recommended corrective action on an Audit Finding Report.

10.4 Corrective Action Report Review and Filing

Immediate and long-term corrective actions require review to assure that, during the time of non-conformance, erroneous data were not generated or that, if possible, correct data were acquired instead. Such confirmation and review is the responsibility of the supervisor of the staff implementing the corrective action. Confirmation will be acknowledged by notation and dated signature on the affected data record or appropriate form or by memorandum to cognizant project management.

10.5 Corrective Action Reports To Management

The QAO will provide project management with corrective action reports. The Project Manager is informed verbally of non-conformance events as soon as possible and decisions made after evaluation is documented in the Non-Conformance Records. A copy of each Non-Conformance Record is maintained in the report.

11.0 QUALITY ASSURANCE REPORTS

Fundamental to the success of this QA/QC is the active participation of the Project Manager and the Project Quality Assurance Office. The Program QAO will be advised of project activities and will participate in development, review, and operation of the project. Project management will be informed of QA activities through the receipt, review, and/or approval of:

- Project-specific QA project plans
- Corporate and project-specific QA/QC plans and procedures
- Corrective action notices
- Non-conformance records.

Periodic assessment of field and laboratory QA/QC activities and data accuracy, precision, and completeness will be conducted and reported by the laboratory. Items to be included in the QA reports are the summary of results for the performance or the system audit and, where applicable:

- Assessment of adherence to work scope and schedule for the audited task
- Assessment of the precision, accuracy, and completeness of sample batches and
- subsequent status of data processing and analyses
- Significant QC problems and the status of any ongoing corrective actions
- Changes to the site-specific Work Plan
- Status of implementation of the site-specific Work Plan.

APPENDIX J

SAMPLE
SITE-SPECIFIC HEALTH AND SAFETY PLAN

SAMPLE
PROJECT SPECIFIC HEALTH AND SAFETY PLAN

For

Former Mimi Cleaners
Village of Scarsdale,
Westchester County, New York

NYSDEC VCA Site Number: V00306-3

May 2013

Prepared by:

HDR Engineering, Inc.
One Blue Hill Plaza, Floor 12
Pearl River, New York 10965

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PROJECT NAME: Former Mimi Cleaners	PROJECT CLIENT: Hausman Realty Company, Inc.
JOB SITE ADDRESS: 58 Christie Place, Scarsdale, NY	JOB NUMBER: 147-111388
PROJECT MANAGER: John Guzewich, HDR	PHONE NO.: Office: (845) 735-8300 / Cell: (845) 548-5493
SITE CONTACT: N/A	PHONE NO.: (845) 735-8300

( ) AMENDMENT NO. 0

OBJECTIVES OF FIELD WORK:
Perform ongoing monitoring and inspection/maintenance in accordance with the Site Management Plan.
Field Activities Include:
1. Site Visits;
2. Air and Groundwater Sampling;

SITE TYPE: *Check as many as applicable*

(**X**) Active	( ) Landfill	( ) Natural
( ) Inactive	( ) Uncontrolled	( ) Military
(**X**) Secure	( ) Industrial	**X**) Other specify**:** commercial
( ) Unsecured	( ) Residential	
( ) Enclosed space	( ) Well Field	

DESCRIPTION AND FEATURES: *Summarize below. Include principal operations and unusual features (containers, buildings, dikes, power lines, hills, slopes, rivers)*

Location: The site is located in the Scarsdale, Westchester County, New York and is identified as the northeast corner of Christie Place Building (CPB), which is designated as Section 2, Block 5, Lot 12 on the Tax Map. The site is an approximately 0.06-acre area. CPB is bounded by Christie Place to the north, Spencer Place to the south, the Scarsdale Post Office to the east, and a parking lot and the Spencer Place Building to the west.

Site Features: The Christie Place Building is a slab-on-grade structure with a center hallway. The southern portion of the building floor slab is about 4 ft lower than the northern portion with the center hallway at the same grade as the northern portion of the building. The two sections of the building are divided into tenant spaces; currently there are five tenant spaces in the southern portion and five tenant spaces in the northern portion of the building. In July 2000, contaminated soil and concrete were removed from beneath the CPB; a soil vapor extraction (SVE) system was installed and operated for four years. Down gradient investigations revealed that groundwater was contaminated and that contaminant vapors were present beneath adjacent buildings.

Current Zoning/Use: The site is located in the business district of Scarsdale and was developed in 1936 or earlier.

Historic Use: The Christie Place Building on the site was erected prior to 1938; dry cleaners had reportedly operated in the space since approximately 1955. Mimi Cleaner, which leased the space until 1999, used PCE as its cleaning fluid. There was a historical release of dry cleaning fluids to soil and groundwater from the former Mimi Cleaners business in the CPB, 58 Christie Place. High concentrations of sub-slab soil contamination by perchloroethene (PCE) were discovered in 1999.

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Site Geology and Hydrogeology: The site is located in the business district of Scarsdale and was developed in 1936 or earlier. Topography is gently sloping to the southwest, towards the Bronx River, which runs from north to south about 100 yards west of the site. The site is underlain by 2-7 ft. of construction fill, which overlays metamorphic mica schist of the Manhattan Formation, which tends to slope southwest from the site. Groundwater has been encountered in site investigations near the top of bedrock. The area is served by municipal water and use of groundwater is prohibited by Westchester County regulations. Two groundwater monitoring wells have been installed into the top of bedrock near the site. Groundwater flows to the southwest, as would be expected from the topography and nearby Bronx River.

Investigation Activities: Remedial Investigation (RI) tasks were performed to characterize the nature and extent of contamination at the site and surrounding areas from 1999 through 2013. The excavation to the extent practicable of source area soils, and operation of the SVE system removed a large mass of PCE contamination; the residual contamination has produced sub slab vapor concentrations of PCE above the NYSDOH mitigation guidance of 1,000 mcg/m^3 in the CPB and several nearby buildings.

Site borings in 1999 determined that PCE from the Former Mimi Cleaners had contaminated soil and the top of bedrock beneath the dry cleaners rental space, and extended beneath the adjacent shops in the CPB. Traces of PCE degradation products (trichloroethene [TCE] and 1,2 dichloroethene) have been found occasionally. The primary contaminant (PCE) migrated southwest, east and west at the top of bedrock, and in groundwater flowing southwest. Surrounding soils and underlying bedrock retain PCE at sufficient concentrations to contaminate the shallow groundwater.

Ground water monitoring wells were first installed near the site in 2003. Concentrations have generally declined from then until the latest sampling in 2012. At the nearest well, MW-1, PCE concentrations have declined from 1,300 µg/l in 2004 to 28 µg/l in 2012, remaining above the groundwater standard of 5 µg/l. TCE concentrations at MW-1 have declined from 42 to 1.7 µg/l, below the standard of 5 µg/l. At MW-2, further down gradient, contaminant concentrations had a brief increase from 2003 to 2006, but have generally declined: PCE increased slightly from 50 to 54 µg/l, then declined to 4.8 µg/l, while TCE climbed from 3.1 to 6.4 µg/l then declined to 1.3 µg/l. In summary, at the last sampling event in 2012, only MW-1 exceeded the groundwater quality standard (for PCE only). Traces of gasoline constituents and other volatile contaminants have occasionally been detected.

Soil vapor testing has been performed under the CPB and later under surrounding and down gradient buildings. Sub-slab vapor testing has revealed concentrations under the CPB above the 1,000 mcg/m^3 NYSDOH guideline for PCE mitigation, and above the 250 mcg/m^3 guideline for TCE. Indoor air concentrations do not exceed concentrations acceptable to NYSDOH. Sub-slab testing beneath nearby buildings, down gradient of CPB, progressed from 2004 until 2010. Sub-slab vapor and indoor air samples are currently collected from

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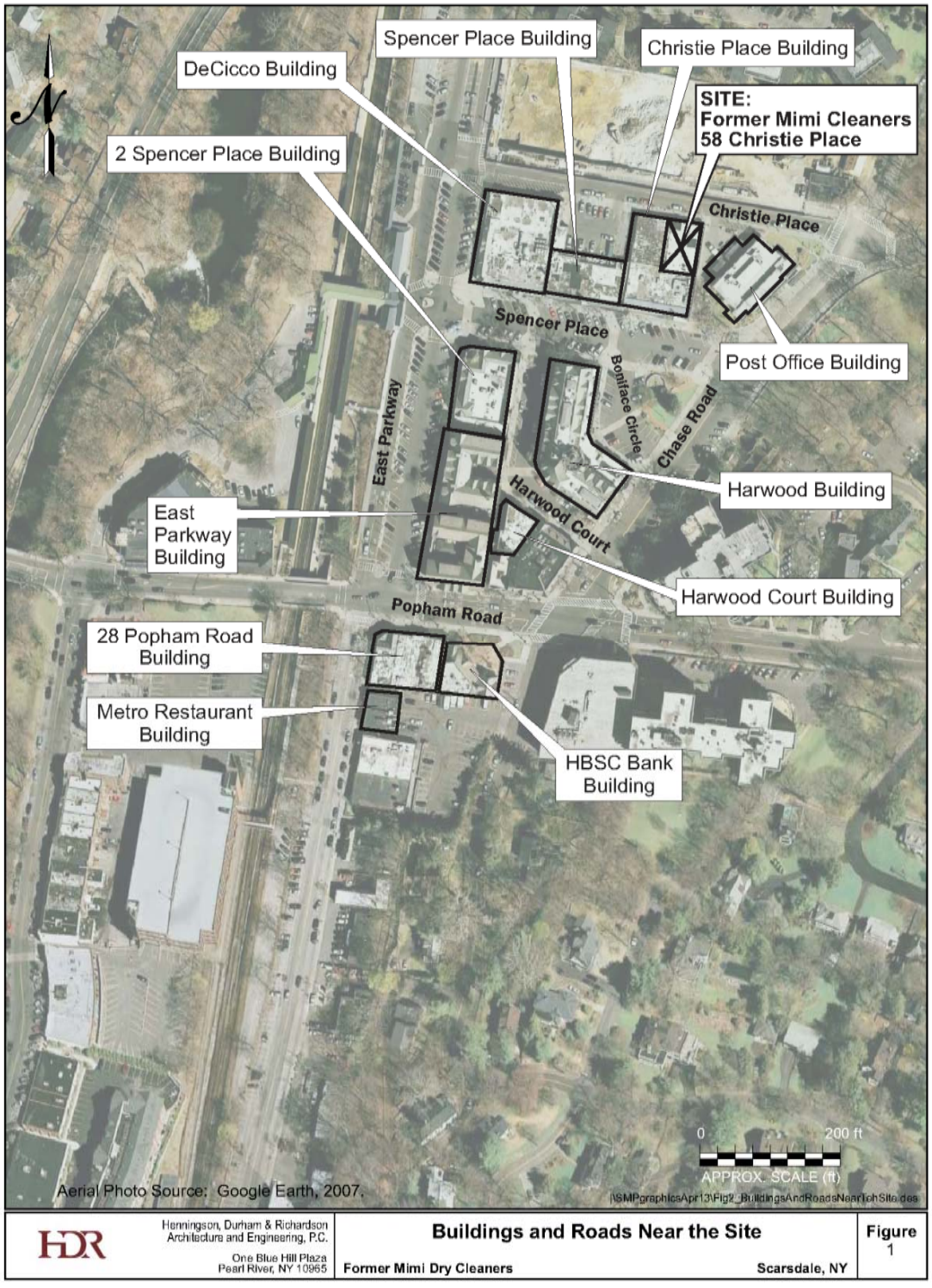
several of these locations on an annual or biennial schedule as approved by NYSDEC and NYSDOH. A total of seven buildings contained sub-slab PCE vapors exceeding the NYSDOH guidance concentration triggering mitigation (<1,000 mcg PCE/m^3) during the initial sampling events. None of these building's sub-slab vapors exceeded the NYSDOH guidance for mitigation of TCE, a degradation product of PCE, with the exception of one building. The indoor air samples collected from all the buildings indicate indoor air concentrations meet NYSDOH's guidelines for indoor air and is not being impacted significantly by the sub-slab vapors. The latest testing shows that all down gradient buildings have decreased sub-slab vapor concentrations since the SSDSs have been operating. As approved by the agencies, the SSDSs in these locations have been turned off and routine monitoring is being conducted.

SURROUNDING POPULATION: ( ) Residential ( ) Industrial ( ) Rural ( ) Urban **(X) Commercial** ( ) Other:

SITE SPECIFIC HEALTH & SAFETY PLAN
SITE LOCATION PLAN/SITE SKETCH
Henningson, Durham & Richardson Architecture & Engineering, P.C.

The overall site plan.

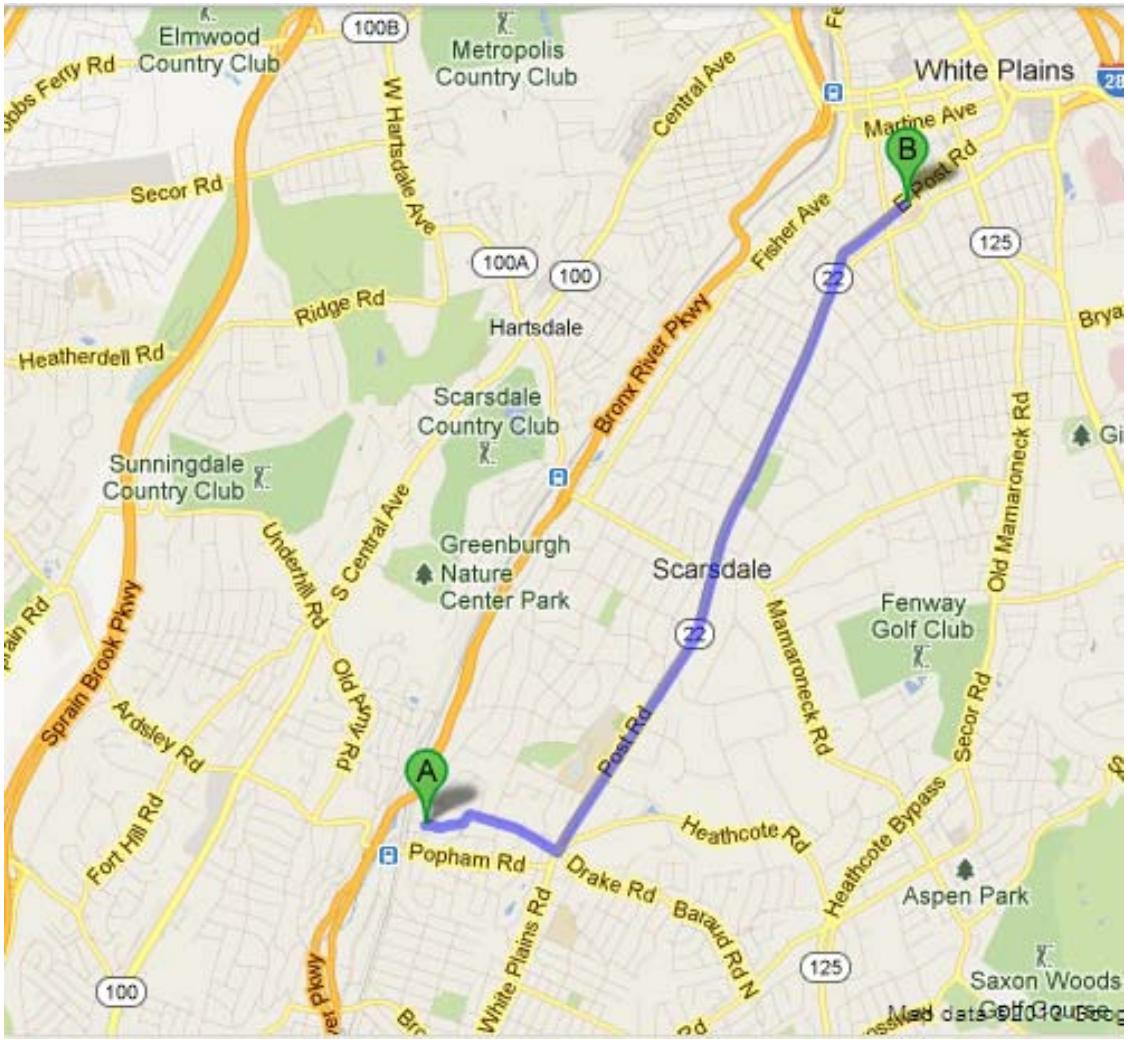


SITE SPECIFIC HEALTH & SAFETY PLAN
EMERGENCY CONTACTS AND APPROVAL PAGE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

EMERGENCY CONTACTS			**EMERGENCY CONTACTS**	**NAME**	**PHONE**
EPA Region 2		(800) 223-0425	Project Manager	John Guzewich	(845) 735-8300 x252
NYDEC Region 3 Office		(845) 256-3000	Office Safety Coordinator (OSC)	John Guzewich	(845) 735-8300 x252
Site Telephone		TBD	QA/QC Coordinator	Michael Pantliano	(845) 735-8300
Poison Control Center	National	(800)-962-1253			(845) 735-8300
WorkCare, Inc.	Sheila Nghe	(800) 455-6155 x423			
National Response Center		(800)-424-8802			
NY State Spill Hotline		(800)-457-7362	Fire Department		911
1. Evacuation Routes will be specified by the HSO and communicated to all personnel on site. 2. Personnel will evacuate under conditions specified by air monitoring or as directed by the HSO. 3. An INCIDENT REPORT form will be completed for all accidents (see Appendix A).			Police Department		911
QA REVIEW: _____ Date: Office Safety Coordinator			**Nearest Hospital Emergency Room Number:**	White Plains Hospital	(914) 681-0600
HEALTH AND SAFETY PLAN APPROVALS			**Number of 24-Hour Ambulance:**		911
Project Manager: _____ Date : _____			The route to the hospital is described on the following page and includes a map.		

SITE SPECIFIC HEALTH & SAFETY PLAN
HOSPITAL MAP ROUTE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

White Plains Hospital
Directions: See below
Address: 41 East Post Road, White Plains, NY 10601
(914) 681-0600



Head east toward Chase Road; 266 feet
Continue straight onto Woodland Place; 0.1 mile
Turn right onto Crane Road; 0.4 mile
Turn left onto Post Road/White Plains Road; 3 miles
Continue to follow Post Road
(3.6 miles; 10 minutes)

White Plains Hospital
41 East Post Road
White Plains, NY 10601
(914) 681-0600

SITE SPECIFIC HEALTH & SAFETY PLAN
HISTORY AND WASTE CHARACTERIZATION PAGE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

HISTORY: Summarize site specific information below or attach information behind this page.

WASTE TYPES: (X) Liquid (X) Solid ( ) Sludge ( ) Gas ( ) Unknown ( ) Other specify:

WASTE CHARACTERISTICS: Check as many as applicable.

( ) Corrosive ( ) Flammable ( ) Radioactive

( ) Toxic (**X**) Volatile ( ) Reactive

( ) Inert Gas ( ) Unknown ( ) Other specify:

WORK ZONES: Work zones have been described on the "WORK ZONE MAP PAGE."

HAZARDS OF CONCERN: Check as many as applicable.

( ) Heat Stress ( ) Noise

( ) Cold Stress attach guidelines ( ) Inorganic Chemicals

( ) Explosive/Flammable (X) Organic Chemical

( ) Oxygen Deficient (**X**) Motorized Traffic

( ) Radiological (( ) Heavy Machinery

( ) Biological (**X**) Slips, Trips & Falls
(See HDR H&S Pro #3)

( ) Trenching/Test Pits

( ) Other specify:

CONFINED SPACES WILL NOT BE ENTERED.
(If confined spaces are to be entered a specific confined space entry plan will be developed)

PRINCIPAL DISPOSAL METHODS AND PRACTICES: Summarize Site Specific Conditions Procedures Below:

Investigative Derived Wastes (IDW) will be generated from groundwater sampling activities. Purge water will be discharged to the ground surface away from the well. All field refuse including PPE, paper towels, plastic bags, and other general refuse will be containerized and disposed of as solid waste.

SITE SPECIFIC HEALTH & SAFETY PLAN
HAZARDOUS MATERIAL SUMMARY PAGE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

HAZARDOUS MATERIAL SUMMARY: **Underline and bold waste type** and estimate amounts by category (if possible)

CHEMICALS Amounts/Units:	SOLIDS Amounts/Units:	SLUDGES Amounts/Units:	SOLVENTS Amounts/Units:	OILS Amounts/Units:	OTHER Amounts/Units:
Acids	Flyash	Paint	**Residual Dry Cleaning fluids (PCE) and breakdown products**	Oily Wastes	Laboratory
Pickling Liquors	Asbestos	Pigments	Hydrocarbons	Gasoline	Pharmaceutical
Caustics	Milling/Mine Tailings	Metal Sludges	Alcohols	Diesel Oil	Hospital
Pesticides	Ferrous Smelter	POTW Sludge	Ketones	Lubricants	Radiological
Dyes/Inks	Non-ferrous Smelter	Aluminum	Esters	PCBs	Municipal
Cyanides	Metals – Lead, Chromium, Zinc, etc.	Distillation Bottoms	Ethers	Polynuclear Aromatics	Construction
Phenols	Other	Other	Other	Other	Munitions
Halogens	Specify: Landfill related	Specify:	Specify:	Specify:	Other :
Dioxins					Specify:

OVERALL HAZARD EVALUATION: ( ) High ( ) Medium **(X) Low** ( ) Unknown (Where tasks have different hazards, evaluate each)
Attach additional sheets if necessary)

JUSTIFICATION: Minimal exposure during site visits and sample collection. No hazardous wastes generated as part of site activities.

FIRE/EXPLOSION POTENTIAL: ( ) High ( ) Medium **(X) Low** ( ) Unknown

BACKGROUND REVIEW: **(X) COMPLETE** ( ) INCOMPLETE

SITE SPECIFIC HEALTH & SAFETY PLAN
CHEMICAL HAZARD TABLE PAGE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

POTENTIAL CONTAMINANTS	HIGHEST OBSERVED CONCENTRATION (specify units and media)	Exposure Limits Ppm (TWA) or mg/m^3 (TWA) **(specify)**	IDLH ppm or mg/m^3 **(specify)**	SYMPTOMS/EFFECTS OF ACUTE EXPOSURE	
Tetrachloroethylene (PCE)	1,300 µg/l in 2004; (groundwater); >1,000 mcg/m^3 PCE (sub-slab vapors)	TLV: 100 ppm PEL: 25 ppm	150 ppm	Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.	
Trichloroethene (TCE)	42 µg/l, (groundwater;); >250 mcg/m^3 (sub-slab vapors)	TLV: 50 ppm PEL: 50 ppm	1000 ppm	Fatigue, drowsiness, mucous membrane irritation, headaches	

NA = Not Available
S = Soil
A = Air
NE = None Established
SW = Surface Water
GW = Groundwater
U = Unknown
T = Tailings
SL = Sludge
W = Waste
D = Drums
SD = Sediment
OFF = Offsite
TWA = Time weighted average

HAZARD COMMUNICATIONS STANDARD

The Site Specific Health and Safety Plan will be taken to the field with the crew and kept in the vehicle.

SITE SPECIFIC HEALTH & SAFETY PLAN
TASK DESCRIPTION PAGE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

FIELD ACTIVITIES COVERED UNDER THIS PLAN - **ATTACH ACTIVITY HAZARD ANALYSIS FOR EACH TASK**				HAZARD		
TASK DESCRIPTION/SPECIFIC TECHNIQUE-STANDARD OPERATING PROCEDURES/SITE LOCATION(Attach additional sheets as necessary)	Type	Primary	Contingency	SCHEDULE		
1 Site Visit;	Intrusive	A B C **D**	A B C D	Hi	Med	Low
	Non-intrusive	Modified D	**Exit Area**			X
2 Air Sampling	Intrusive	A B C **D**	A B C D	Hi	Med	Low
	Non-intrusive	Modified D	**Exit Area**			X
3 Groundwater Sampling;	Intrusive	A B C **D**	A B C D	Hi	Med	Low
	Non-intrusive	Modified D	**Exit Area**			X

PERSONNEL AND RESPONSIBILITIES (Include subcontractors) Responsibilities and the reporting organizational structure are described on the following page.

NAME	PHONE	DATE OF LAST 8-HOUR REFRESHER	DATE OF HEALTH CLEARANCE	RESPONSIBILITIES	ON-SITE? List task numbers
John Guzewich	(845) 735-8300	January 2013	February 2013	Project Manager	Yes(1, 2,3)
John Guzewich	(845) 735-8300	January 2013	February 2013	Office Safety And Health Officer	Yes (1, 2, 3)
Michael Pantliano	(845) 735-8300	January 2013		Environmental Chemist	Yes (1, 2,3)

SITE SPECIFIC HEALTH & SAFETY PLAN
PPE BY TASK PAGE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

PROTECTIVE EQUIPMENT: Specify by task. Indicate type and/or material as necessary. Use copies of this sheet if needed.

TASKS: **1** – 2 – 3 - 4 **(Site Visits)** (**X**) Primary
LEVEL: A - B - C - **D** – Modified ( ) Contingency

Respiratory: (**X**) Not Needed
( ) SCBA, Airline:
( ) APR:
( ) Cartridge:
( ) Escape Mask:
( ) Other:

Head and Eye: ( ) Not Needed
(**X**) Safety Glasses: (when eye hazard exists)
( ) Face Shield:
( ) Goggles:
( ) Hard Hat:
( ) Other:

Boots: ( ) Not Needed
(**X**) Boots - Safety-Toed
( ) Over boots:
( ) Rubber:

Protective Clothing: ( ) Not Needed
( ) Encapsulated Suit:
( ) Splash Suit:
( ) Apron
( ) Disposable Coverall: OPTIONAL (if contacting impacted soils)
( ) Saranex Coverall:
( ) Cloth Coverall:
( ) Other:

Gloves: ( ) Not Needed
( ) Under gloves:
(**X**) Gloves: Disposable Nitrile Gloves when handling soils, or groundwater
( ) Over gloves:

( ) Other - specify below:

TASKS: 1 - **2** - **3** - 4 **(Sampling)** (**X**) Primary
LEVEL: A - B - C - **D** - Modified ( ) Contingency

Respiratory: (**X**) Not Needed
( ) SCBA, Airline:
( ) APR:
( ) Cartridge:
( ) Escape Mask:
( ) Other:

Head and Eye: ( ) Not Needed
(**X**) Safety Glasses: (when eye hazard exists)
( ) Face Shield:
( ) Goggles:
( ) Hard Hat:
( ) Other:

Boots: ( ) Not Needed
(**X**) Boots - Safety-Toed
( ) Over boots:
( ) Rubber:

Protective Clothing: ( ) Not Needed
( ) Encapsulated Suit:
( ) Splash Suit:
( ) Apron
( ) Disposable Coverall: OPTIONAL (if contacting impacted soils, sediments, sludges, or liquids)*
( ) Saranex Coverall:
( ) Cloth Coverall:
( ) Other:

Gloves: ( ) Not Needed
( ) Under gloves: Latex
(**X**) Gloves: Disposable Nitrile Gloves when handling soils, or groundwater
( ) Work Gloves: May be needed over nitrile gloves when excavating shallow soils manually

(**X**) Other - specify below:
Ear plugs (if noise excessive)

SITE SPECIFIC HEALTH & SAFETY PLAN
AIR MONITORING BY TASK
HDR

MONITORING EQUIPMENT: Specify by task. Indicate type as necessary. Attach additional sheets as necessary.

INSTRUMENT	TASK	ACTION GUIDELINES	COMMENTS (Includes schedules of use)
Portable Gas Monitor (Breathing Zone)	1 - 2 - 3	0-10% LEL No explosion hazard 10-25% LEL Potential explosion hazard; notify SHO. >25% LEL Potential Explosion hazard; interrupt task/evacuate 21.0% 02 <20.5% 02 Oxygen normal <19.5% 02 Oxygen deficient; notify SHO. Interrupt task/evacuate	**(X) Not Needed** If % LEL concentration elevated over or at top of borehole or excavation, let vent and monitor before continuing boring or test pits
Radiation Survey Meter	1 - 2 - 3	3X Background Notify SHSC >2mR/hr Interrupt task/evacuate	**(X) Not Needed**
Photo ionization Detector ( ) 11.7 ev ( ) 10.6 ev ( ) 9.8 ev ( ) ___ ev	**1 - 2 - 3**	N/A	**(X) Not Needed** **Note: PID only used for sub-slab readings not crew H&S concerns. Work areas are within active tenant spaces and VOC monitoring nor required**
Flame Ionization Detector	1 - 2 - 3 - 4		**(X) Not Needed**
Dust Monitor	1 - 2 - 3	Specify:.	**(X) Not Needed**
Other: Specify	1 - 2 - 3 - 4	Specify:	**(X) Not Needed**

SITE SPECIFIC HEALTH & SAFETY PLAN
DECONTAMINATION PAGE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

DECONTAMINATION PROCEDURES

ATTACH SITE MAP INDICATING EXCLUSION, DECONTAMINATION, AND SUPPORT ZONES AS PAGE TWO

Personalized Decontamination On-Site crews will wear disposable gloves when contacting sample material.	Sampling Equipment Decontamination For equipment such as spoons, knives, bowls, trowels, hand augers, balers, direct-push samplers and surface water sampling devices that are reusable, the following procedures will be used at our HDR Nanuet facility: (1) Initial wash with potable water/alconox soap mixture. Scrub brushes will be used to remove all residual dirt or other debris. (2) Potable water wash to remove all soap residue. (3) Rinse with distilled/deionized water. (4) Wrap decontaminated equipment in plastic or aluminum foil to prevent recontamination.	Heavy Equipment Decontamination N/A
Containment and Disposal Method Disposable PPE will be secured in plastic bags and disposed of as municipal waste.	Containment and Disposal Method See principal disposal methods and practices.	Containment and Disposal Method N/A

SITE SPECIFIC HEALTH & SAFETY PLAN
WORK ZONE PAGE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

The designated exclusion zone and contamination reduction zone will not be required based on the contaminants known to be present. An on-site HDR vehicle will be used as the site command post. If necessary, personnel evacuation will be towards the command post. Re-assembly will also be at the command post.

At the end of each day, site personnel will remove gloves and wash hands and face with soap and water or waterless cleanser prior to leaving the site.

SITE SPECIFIC HEALTH & SAFETY PLAN
SIGNATURE PAGE
Henningson, Durham & Richardson Architecture and Engineering, P.C.

The following personnel have read and fully understand the contents of this Site Health and Safety Plan and referenced HDR H&S procedures and further agree to all requirements contained herein. Furthermore, the individuals are fully trained and have required clearances in accordance with HDR H&S Procedure #20. Attach copies of current HTRW and first aid training, medical clearance, and respiratory fit test records.

Name	Affiliation	Date	Signature

Appendix A
Incident Report Form

All accidents, injuries and illnesses which occur from performing project activities in this HASP require that the injured person and the Site Health and Safety Officer complete an INCIDENT REPORT and forward it to the Corporate Director of Safety, Mr. Jim Woolcott, in Omaha, Nebraska.

Incident Report

HDR Engineering, Inc.
8404 Indian Hills Drive
Omaha, NE 68114-4049
(402) 399-1000

Project Name:	Incident Location:
Project No.:	Date/Time of Incident:
Project Manager/ employee supervisor:	Reported to Omaha, Date/Time/to Whom:

Person(s) affected:

Name:	Phone:

Witnesses:

Name:	Phone:

Health Care Treatment Facility Used:

Name:	Address:	Phone:

Treating Physician/Health Care Provider:

Name:	Phone:

Person(s) Treated:

Name:	Extent of Injuries:

Describe the Incident, the project activity being performed, and just how the incident occured (please be descriptive, use proper names, etc.):

Continued on Reverse

Specific recommendations, to prevent this incident from reoccuring:

Comments:

Reported by | Date of Report | Phone

For Use by Health and Safety Manager:

Number of Sheets Attached:

Forwarded:

Appendix B
Deviations and Additions Form

Deviations from and additions to this HASP are permitted and sometimes required based on additional information obtained after the preparation date of the HASP. The DEVIATIONS AND ADDITIONS form will be used to authorize and record all deviations and additions that occur after any one individual has signed this document. The NJDEP and USEPA should be notified of any deviations from the HASP. Changes in this HASP are only permitted with the following:

1. Written documentation of what the deviation or addition is and reference to the appropriate section from this HASP;
2. Written justification for the change;
3. Verbal communication of the change to all personnel who are directly affected and answering all questions regarding the change to the satisfaction of those same individuals; and
4. Signatures from all personnel who are affected by the change prior to commencing project activities on site with an approval signature from the Site Health and Safety Officer.

Health and Safety Plan Deviations and Additions

HDR Engineering, Inc.
8404 Indian Hills Drive
Omaha, NE 68114-4049
(402) 399-1000

Change 1: Section:

Description of Change:

Justification:

Safety Impact:

Signatures of Acknowledgement:

Resident Field Representative Date Date

Date Date

Date Date

Change 2: Section:

Description of Change:

Justification:

Safety Impact:

Signatures of Acknowledgement:

Resident Field Representative Date Date

Date Date

Date Date

Appendix C
HDR H&S Procedures

SLIP, TRIP, AND FALL PREVENTION H&S PROCEDURE #3

HDR Approved By: JWoolcott H&S Pro #3 Revision Date: 12/22/06

1.0 OBJECTIVE

Each year, physical injuries due to common slips, trips and falls from the same level surface account for a significant percentage of all reportable accidents in the USA. Most of these accidents are preventable through proper housekeeping, correct walking surfaces and proper precautions. It is the objective of HDR to prevent injuries or "near misses" occurring from slip, trip, or fall hazards by the identification, elimination and/or control of these hazardous conditions.

2.0 PURPOSE

This procedure describes work practices that will reduce or eliminate slips, trips, and falls and thereby reduce or prevent the injuries associated with these types of accidents. The intent is to prevent injuries, maintain a safe workplace and a healthy workforce.

3.0 APPLICABILITY

The HDR Slip, Trip and Fall Prevention Program implemented in this Procedure applies to all HDR personnel at HDR client sites and at all HDR facilities working on horizontal surfaces. All employees, regardless of HDR Department, will be impacted by this program. Fall hazards due to climbing or working on elevated surfaces are addressed in the following HDR H&S Procedures: #12 – *Fall Protection*, and #2 – *Portable Ladders*.

4.0 PROGRAM IMPLEMENTATION

This program will be administered nationally by the HDR Director of Safety and locally by the Office Safety Coordinator (OSC).

National Director of Safety. The Director of Safety shall:

- Periodically review, at least annually, the effectiveness of this program, identify any deficiencies, and ensure that they are corrected; and
- Assist OSCs and project professionals, as requested, in the implementation of this Procedure and regulatory interpretations.

Office Safety Coordinators. The OSCs shall:

- Provide initial training on this Procedure to their respective office staff, and make sure that this procedure is readily available in each office, and
- Interface with the Director of Safety regarding any unsafe office or project site conditions that have been discovered, and need addressing or interpretation.

5.0 REQUIREMENTS

The following requirements detail a number of rules and methods to prevent slips, trips, and falls. These requirements shall be implemented at all HDR offices where we control the physical environment. Employees should also be alert for these hazards at project sites, where the hazardous conditions are not usually created by HDR, nor even under our control. HDR employees at these sites should look for, and avoid, these potential hazards to prevent suffering an injury.

5.1 General Housekeeping. Personnel shall keep the working area clean and orderly. Tools must not be left lying on floors, walkways or decking where they present tripping hazards.

5.2 Debris. Small, loose items such as pop cans, rope, trash or other small objects and debris shall not be left lying around in any place, particularly in areas where personnel walk.

5.3 Walkways and Grating. Walkways and grating must be kept free of obstacles that could cause trips. Openings in walkways and grating are very hazardous and should never be left unattended – either close, repair or cover before leaving them. If not immediately repaired, the openings must be roped or barricaded off until corrected. Also be alert for raised portions of walkway surfaces, such as sidewalk section edges, which create trip hazards. If necessary, bank the raised portion with wood or sandbag to cover the abrupt raised edge and provide a gradual transition to the upper walkway surface.

5.4 Access Points. Access points or holes in gratings must be covered or surrounded by an adequate guard rail.

5.5 Spills. Oil spills, water (including ice cubes in break areas) and spills of other slippery materials must be cleaned up immediately. Tracking through even a small spill will significantly reduce the friction coefficient between your shoes and any hard floor material, making a slip more likely. Not only are oil spills a slip hazard, but combustible oils also present a fire hazard.

5.6 Steel Decks. Personnel shall take extra precautions when walking on steel decking or catwalks during wet weather, such as establishing firm hand holds, wearing suitable footwear, and walking slowly. If possible, spread sand across the flooring to increase traction.

5.7 Jumping. Personnel shall not jump from elevated places or the backs of trucks or equipment. Employees should also refrain from jumping laterally across any excavation, even a shallow one. If excessive width prevents a normal stepping motion, find another route of access.

5.8 Tools. Personnel using hand and mechanical tools must position themselves properly to avoid slipping, considering required leverage as well as anticipating likely consequences if the tool suddenly moves or gives way. This pre-planning becomes even more critical when working at heights.

5.9 Climbing Surfaces. Personnel shall not walk or climb on piping, valves, fittings, diagonal cross-bracing or any other equipment not designed as walking or climbing surfaces. When ascending ladders or fixed vertical stairs, do not carry tools, notebooks, etc. by hand – this is dangerous! Pre-plan prior to site arrival, and either place these items in a backpack/fanny pack, or else ascend to the upper working surface and then hoist them by means of a rope and bucket.

5.10 Stairways, Walkovers, and Ramps. Stairways, walkovers or ramps shall be installed where personnel must walk or step over equipment in the course of their normal duties. In client facilities where these crossovers exist, use them! In our office buildings, it is particularly important to keep stairways and landings clear of any obstacles. DO NOT USE STAIRWAYS OR LANDINGS AS STORAGE AREAS!

5.11 Extension Cords. Electrical extension cords and electrical wiring must be kept clear of walking and working areas and/or covered, elevated, buried or otherwise secured. Exposure to loose extension cords is one of the most common causes of trips in the office environment. (By definition, an extension cord is for temporary power only; it is not to be used as a substitute for permanent wiring.) If an extension cord must be left across a walkway, tape it in place or cover it with a non-conductive (e.g., rubberized) mat to prevent dislodgment.

5.12 Winter Conditions. Walking and working surfaces must be properly maintained during inclement winter weather. Ice on sidewalks/parking lots account for many falls. Either physically remove the ice, or apply a chemical de-icer to traveled pathways to remove the ice. As an immediate (but less effective) alternative, sand or cinders may be thrown over the ice to improve traction. Hard-packed snow can also reduce the traction of walkers and should be removed by physical or chemical means. **Never walk on any elevated surface (scaffold, outside fixed stairway, ladder) when ice is present**!

5.13 Running. Running is prohibited on job sites unless under emergency conditions.

5.14 Lunch Areas. Lunch areas should be kept clear of empty bottles, containers and papers. Trash receptacles should be provided and used.

5.15 Lighting. Adequate lighting allows employees to see potential obstructions and prevents many falls. Make sure that all halls, passageways and stairs have adequate illumination; replace all burned out bulbs or defective receptacles.

5.16 Elevated Work Platforms. When working on scaffolds, stairwells, unfinished floors or any area presenting restricted body movement, place all tools to one side/corner of the area to prevent stepping on or kicking them during site activities.

5.17 Windy Conditions. Be aware of the hazards when working in high winds. Sudden gusts can cause a loss of balance, or blow tools, papers, hardhats, etc., causing a distraction and corresponding quick body movement that could result in falls. When preparing for site activities in windy conditions, secure hardhats with chin straps and use notebooks that will hold papers securely, eliminating the distraction caused by flapping papers. Also, preplan each body movement, anticipating sudden gusts and their effects on your body.

6.0 FALL PROTECTION Fall hazards of 4 feet or more should be evaluated to determine what fall preventative steps might be implemented. Fall protection is required at heights of 6 feet or greater. This rule also applies if walking/stepping across an excavation 6 feet or deeper. Reference HDR H&S Pro #12 – *Fall Protection*, for more information.

APPENDIX K

DISPOSAL OF CONTAMINATED MATERIALS

Former Mimi Cleaners
Excavation Soils Disposal Manifests Summary
(August 2000)

EPA ID #: NYR000089037

Ship Date	S. & W. Waste, Inc. Manifest No.	Horizon Environmental Inc. Manifest No.	Received at Landfill Date	Weight (lbs)	Tons
8/31/2000	NJA3181935	NJA3122496	9/1/2000	43717	21.86
8/31/2000	NJA3181933	NJA3122492	9/1/2000	48391	24.20
8/31/2000	NJA3181938	NJA3122494	9/1/2000	12963	6.48
8/31/2000	NJA3181936	NJA3122495	9/1/2000	41843	20.92
			Totals:	**146,914**	**73.46**

S.& W. WASTE, INC.
***** CERTIFICATE OF DISPOSAL *****

11/06/00

SITE: HAUSMAN REALTY
51 CHRISTIE PLACE

SCARSDALE, NY 10583

EPA ID #: NYR000089037

This is to document the disposition of waste materials removed from your facility on 08/31/00 on manifest number NJA3181935

The material on manifest line number 11a
waste type(s) F002
was shipped from S&W:

08/31/00 to HORIZON ENVIRONMENT INC.
on manifest number NJA3122496
Disposal Method: SECURE LANDFILL

The disposition of all material is in accordance and compliance with all required and applicable federal and state laws and regulations. S & W Waste, Inc.'s EPA ID is NJD991291105.

Please be advised that those waste streams showing multiple outgoing shipments may have been comingled with other waste prior to shipment.

Thank you for the opportunity to be of service.

Very truly yours
S & W Waste, Inc.

Robert Fixter
General Manager

S.& W. WASTE, INC.
***** CERTIFICATE OF DISPOSAL *****

11/06/00

SITE: HAUSMAN REALTY
51 CHRISTE PLACE

SCARSDALE, NY 10583

EPA ID #: NYR000089037

This is to document the disposition of waste materials removed from your facility on 08/31/00 on manifest number NJA3181933

The material on manifest line number 11a
waste type(s) F002
was shipped from S&W:

08/31/00 to HORIZON ENVIRONMENT INC.
on manifest number NJA3122492
Disposal Method: SECURE LANDFILL

The disposition of all material is in accordance and compliance with all required and applicable federal and state laws and regulations.
S & W Waste, Inc.'s EPA ID is NJD991291105.

Please be advised that those waste streams showing multiple outgoing shipments may have been comingled with other waste prior to shipment.

Thank you for the opportunity to be of service.

Very truly yours
S & W Waste, Inc.

Robert Fixter
General Manager

S.& W. WASTE, INC.
***** CERTIFICATE OF DISPOSAL *****

11/03/00

SITE: HAUSMAN REALTY
51 CHRISTIE PLACE

SCARDALE, NY 10583

EPA ID #: NYR000089037

This is to document the disposition of waste materials removed from your facility on 09/01/00 on manifest number NJA3181938

The material on manifest line number 11a
waste type(s) F002
was shipped from S&W:

09/01/00 to HORIZON ENVIRONMENT INC.
on manifest number NJA3122494
Disposal Method: SECURE LANDFILL

The disposition of all material is in accordance and compliance with all required and applicable federal and state laws and regulations. S & W Waste, Inc.'s EPA ID is NJD991291105.

Please be advised that those waste streams showing multiple outgoing shipments may have been comingled with other waste prior to shipment.

Thank you for the opportunity to be of service.

Very truly yours
S & W Waste, Inc.

Robert Fixter
General Manager

S.& W. WASTE, INC.
***** CERTIFICATE OF DISPOSAL *****

11/06/00

SITE: HAUSMAN REALTY
51 CHRISTIE PLACE

SCARSDALE, NY 10583

EPA ID #: NYR000089037

This is to document the disposition of waste materials removed from your facility on 08/31/00 on manifest number NJA3181936

The material on manifest line number 11a
waste type(s) F002
was shipped from S&W:

08/31/00 to HORIZON ENVIRONMENT INC.
on manifest number NJA3122495
Disposal Method: SECURE LANDFILL

The disposition of all material is in accordance and compliance with all required and applicable federal and state laws and regulations.
S & W Waste, Inc.'s EPA ID is NJD991291105.

Please be advised that those waste streams showing multiple outgoing shipments may have been comingled with other waste prior to shipment.

Thank you for the opportunity to be of service.

Very truly yours
S & W Waste, Inc.

Robert Fixter
General Manager

20308

HORIZON ENVIRONNEMENT INC.
120, route 155
Grandes-Piles (Québec) G0X 1H0
Tél.: 1-800-545-5015 • (819) 538-3921
Fax: (819) 538-0889

BILLET

N°. T.P.S.: 140578741 RT

N° T.V.Q.: 1017578304

N° DU BILLET 1918

N° DU CONTRAT CHE-7B

N° DE BON DE COMMANDE

DATE 2000/09/0

HEURE ENTRÉE 09:0

HEURE SORTIE 09:1

CLIENT

00-110 (3600653 CANADA INC.)
123, BOUL. LABELLE, SUITE 101
ROSEMERE (QC) J7A 2S9
3600653 G. BROUSSEAU
(800) 792-7645 C-1B
CAPITOL ENV. SERV.

CHE-78B (CONTAMINATED SOIL)
S & W WASTE INC.
SOUTH KEARNY, NJ
(HAUSMAN REALTY)

L176915 (TRANSPORT ROLLEX)
910, Boulevard Lionel-Boulet
Varennes (Québec)
J3X 1T6
Tél.: (514) 652-4282

PROVENANCE

MATÉRIEL (TETRACHLOROTYLENE)

CODE PRIX

ZONE DE DÉCHARGEMENT C-3

DÉTAIL DES PRIX 78086 P.

POIDS BRUT 35420 kg 36743 P.

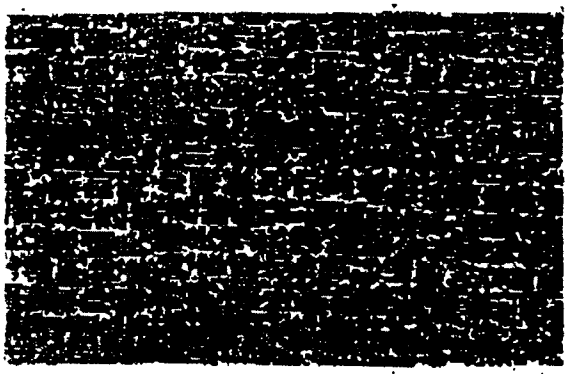
TARE 16440 kg L1843 P.

POIDS NET 18980 kg

DE LICENCE L176915

DU CAMION CC5723-3 NJA 3122495

DE CONNAISSEMENT B2678236



AUTRE SERVICE

20.92

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques, et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom Pierre St-Hilaire (CARACTÈRE D'IMPRIMERIE)

Signature

COPIE DU BUREAU

20308

BILLET

HORIZON ENVIRONNEMENT INC.
120, route 155
Grandes-Piles (Québec) G0X 1H0
Tél.: 1-800-545-SOLS • (819) 538-3921
Fax: (819) 538-0889

N°. T.P.S.: 140578741 RT

N° T.V.Q.: 1017578304

N° DU BILLET 191

N° DU CONTRAT CHE-7

N° DE BON DE COMMANDE

DATE 2000/09/

HEURE ENTRÉE 09:

HEURE SORTIE 09:

CLIENT
00-110 (3600653 CANADA INC.)
123, BOUL. LABELLE, SUITE 101
ROSEMERE (QC) J7A 2G9
3600653 G. BROUSSEAU
(800) 792-7645 C-1B
CAPITOL ENV. SERV.

TÉL

GÉNÉRATEUR
CHE-788 (CONTAMINATED SOIL)
S & W WASTE INC.
SOUTH KEARNY, NJ
(HAUSMAN REALTY)

TÉL

TRANSPORTEUR
L176915 (TRANSPORT ROLLEX)
910, Boulevard Lionel-Boulet
Varennes (Québec)
J3X 1T6
Tél.: (514) 652-4282

TÉL

PROVENANCE

MATÉRIEL (TETRACHLOROTYLENE)

CODE PRIX

ZONE DE DÉCHARGEMENT C-3

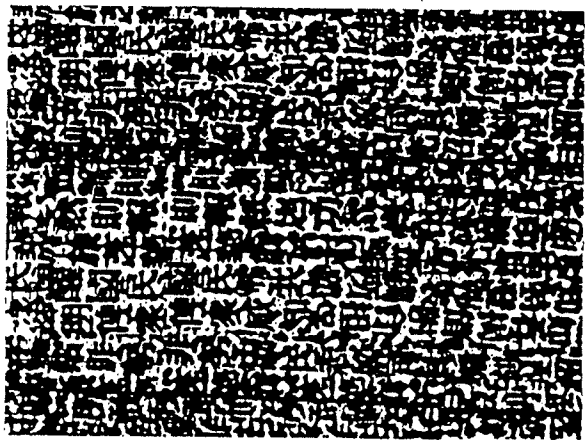
DÉTAIL DES PRIX

POIDS BRUT	35420 kg 36243P. 78086P.
TARE	16440 kg 17243P.
POIDS NET	18980 kg

≠ DE LICENCE L176915

≠ ~~DU CAMION~~ CC5293-3
NJA 3122495

≠ DE CONNAISSEMENT B2678236



AUTRE SERVICE

20.92

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques, et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom Pierre St-Hilaire
(CARACTÈRE D'IMPRIMERIE)

Signature

COPIE DU BUREAU

MANIFEST / MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / Nº de référence du manifeste: CC 57293-3

A Consignor (Generator) / Expéditeur (Producteur)

Provincial ID No. / Nº d'id. provincial

Company name / Nom de l'entreprise: NJD991291105

Mailing address / Adresse postale | City / Ville | Province | Postal code / Code postal

Shipping address / Origine de l'expédition

100 JACOBUS AVENUE | Province | Postal code / Code postal

City / Ville: SOUTH KEARNY | NJ | 07032

Intended consignee / Destinataire prévu | Provincial ID No. / Nº d'id. provincial

Address / Adresse: HORIZON ENVIRONNEMENT 111432021156 | City / Ville | Province | Postal code / Code postal

Receiving site address / Destination de l'expédition: 121 RANG 105

City / Ville: GRANDES-PILES (CHAMPO | Province | Postal code / Code postal: G0X 1H0

B Carrier / Transporteur

Provincial ID No. / Nº d'id. provincial: 1013110121

Company name / Nom de l'entreprise

Address / Adresse: SERVICE ROLLEX LTEE

City / Ville: 310 BLVD LIONEL BOULET | Postal code / Code postal

VARENNES

	Registration No. / Nº d'immatriculation	Prov.
Vehicle / Véhicule	L176915	Qc
Trailer/Rail Car No. 1 / 1er remorque – wagon	RP73408	Qc
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée | Point of exit / Point de sortie

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année: 00 | Month / Mois: 08 | Day / Jour: 31 | Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Pierre St-Hilaire

Signature: [signature] | Tel. No. / Nº de tél.

C Consignee (Receiver) / Destinataire (Réceptionnaire)

Reference nos. of other Manifest(s) used / Nºs de références des autres manifestes utilisés: NJA 3122495

Provincial ID No. / Nº d'id. provincial

Consignee information same as Intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A: ☑ Yes / Oui ☐ No, complete the boxed area below

Company name / Nom de l'entreprise

Address / Adresse

City / Ville | Province | Postal code / Code postal

Receiving site address / Destination de l'expédition

City / Ville | Province | Postal code / Code postal

Date received / Date de réception: Year / Année: 00 | Month / Mois: 09 | Day / Jour: 01 | Time / Heure: 0902 ☑ A.M. ☐ P.M.

Waste identification / Identification du déchet

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Provincial No. / Nº (Quebec-Ontario only)	TDGA/PIN / LTMD/NIP	Quantity shipped / Quantité expédiée	Units L or kg / unités	Classification	Packing group / Groupe d'emballage	Packaging / Contenants No.	Codes	Quantity received / Quantité reçue	Units L or kg / unités	Identify any shipment discrepancy problems. Attach addendum if necessary. / Indiquer toute différence relative à l'expédition. Annexer une feuille au besoin.	Handling code / Code de manutention	Decontamination Packaging Yes/No	Decontamination Vehicle Yes/No
S	RQ WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID N.O.S. (CONTAMINATED SOIL) (TETRACHLOROETHYLENE)	N/A	UN3077	19142	KG	9.2	III	1	03	18980	KG	—	66	✓	✓

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence: ☐ Attached / Ci-jointes ☐ Below / Ci-dessous

Numéro de préavis: 104725

Circulation no. – Quebec only / Nº de circulation – Réservée au Québec

Date shipped / Date d'expédition: Year / Année: 00 | Month / Mois: 08 | Day / Jour: 31 | 1520 ☐ A.M. ☑ P.M.

Emergency Tel: Transport Rollex

Scheduled arrival date / Date d'arrivée prévue: Year / Année: 00 | Month / Mois: 08 | Day / Jour: 31

Consignor Certification: I declare that the information contained in Part A is correct and complete. / Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): OXNE JOSEPH | Signature: Oxne Joseph | Tel. no. / Nº de tél.: 973 201 344-4004

If handling code "Other" (specify) / Si code de manutention "divers", spécifier

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire | Provincial ID No. / Nº d'id. provincial

Address / Adresse | City / Ville | Prov.

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration du l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Gleurvier

Signature: [signature] | Tel. no. / Nº de tél.: 800 545 2559

Mailed by Consignee to Consignor - Postée par le destinataire à l'expéditeur

Copy / Copie 6 (brown / brun)

State of New Jersey
Department of Environmental Protection
Hazardous Waste Regulation Program
Manifest Section
P.O. Box 421, Trenton, NJ 08625-0421

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NJD991291105 Manifest Document No. 212495
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
S&W WASTE INC
105 JACOBUS AVENUE
SOUTH KEARNY NJ USA 07032
4. Generator's Phone (201 344-4004

A. State Manifest Document Number NJA 3122495
B. State Generator's ID-(Gen. Site Address) 105 JACOBUS AVENUE SOUTH KEARNY

5. Transporter 1 Company Name TRANSPORT ROLLEX LTEE
6. US EPA ID Number NYF008000063
C. State Trans. ID-NJDEP 150117
Decal No. 08685

7. Transporter 2 Company Name
8. US EPA ID Number
D. Transporter's Phone (450 652-4282
E. State Trans. ID-NJDEP
Decal No.-

9. Designated Facility Name and Site Address
HORIZON ENVIRONEMENT INC
120 ROUTE 185
GRANDES-PILES (CHAMPLAIN)
PQ CANADA G0X 1H0
10. US EPA ID Number NYR000078984
F. Transporter's Phone ( )
G. State Facility's ID
H. Facility's Phone (800 565-7657

	11. US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	RQ WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, NOS CLASS 9 NA9077 PGII (TETRACHLOROETHYLENE) R002	X	001	DT	1 X X 21	T	F010
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
a. R/S soil containing Tetrachloroethylene
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a.
b.
c.
d.

15. Special Handling Instructions and Additional Information
IN CASE OF AN EMERGENCY CALL ROLLEX AT 1-888-767-0068
PORT OF EXIT FROM U.S.A. CHAMPLAIN, NY
PST - 08/31/00

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. and conform to the terms of the attached EPA Acknowledgment of Consent.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determinec to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR
Printed/Typed Name: OXONE JOSEPH
Signature: Oxone Joseph
Month Day Ye.: 08 31 00

TRANSPORTER
17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: PIERRE ST. HILAIRE
Signature:
Month Day Ye.: 08 31 00

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month Day Ye.:

FACILITY
19. Discrepancy Indication Space
Ref. NJA 3181936

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name:
Signature:
Month Day Ye.: 09 1 00

In case of an emergency or spill immediately call the state the emergency occurred in and the N.J. Dept. of Environmental Protection and Energy: (609) 292-7172

SIGNATURE AND INFORMATION MUST BE ENTERED IN INK

20318

HORIZON ENVIRONNEMENT INC.
120, route 155
Grandes-Piles (Québec) G0X 1H0
Tél.: 1-800-545-SOLS • (819) 538-3921
Fax (819) 538-0889

BILLET

N°. T.P.S.: 140578741 RT

N° T.V.Q.: 1017578304

N° DU BILLET 1919

N° DU CONTRAT CHE-78

N° DE BON DE COMMANDE

DATE 2000/09/0

HEURE ENTRÉE 11:3

HEURE SORTIE 11:5

000-110 (3600653 CANADA INC.)
123, BOUL. LABELLE, SUITE 101
ROSEMERE (QC) J7A 2G9
3600653 G. BROUSSEAU
(800) 792-7645 C-18
CAPITOL ENV. SERV.

CHE-788 (CONTAMINATED SOIL)
S & W WASTE INC.
SOUTH KEARNY, NJ
(HAUSMAN REALTY)

L207545 (ROLLEX / POIRIER)

PROVENANCE

MATÉRIEL (TETRACHLOROTYLENE)

CODE PRIX

ZONE DE DÉCHARGEMENT C-3

DÉTAIL DES PRIX 45414 P

POIDS BRUT 20600 kg 32457 P

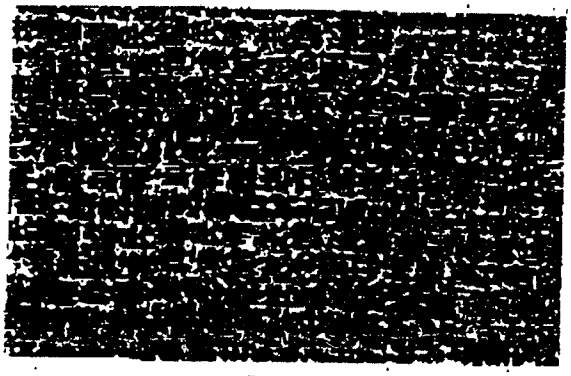
TARE 14720 kg 12963 P

POIDS NET 5880 kg

DE LICENCE L207545

DU CAMION CC57291-7
NJA3122494

DE CONNAISSEMENT



AUTRE SERVICE

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques, et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom André MÉNARD
(CARACTÈRE D'IMPRIMERIE)

Signature

COPIE DU BUREAU

20318

HORIZON ENVIRONNEMENT INC.
120, route 155
Grandes-Piles (Québec) G0X 1H0
Tél.: 1-800-545-SOLS • (819) 538-3921
Fax: (819) 538-0889

BILLET

N°. T.P.S.: 140578741 RT

N° T.V.Q.: 1017578304

N° DU BILLET 191

N° DU CONTRAT CHE-7

N° DE BON DE COMMANDE

DATE 2000/09/

HEURE ENTRÉE 11:

HEURE SORTIE 11:

CLIENT
00-110 (3600653 CANADA INC.)
123, BOUL. LABELLE, SUITE 101
ROSEMERE (QC) J7A 2G9
3600653 G. BROUSSEAU
(800) 792-7645 C-1B
CAPITOL ENV. SERV.

TÉL.

GÉNÉRATEUR
CHE-788 (CONTAMINATED SOIL)
S & W WASTE INC.
SOUTH KEARNY, NJ
(HAUSMAN REALTY)

TÉL.

TRANSPORTEUR
L207545 (ROLLEX / POIRIER)

TÉL.

PROVENANCE

MATÉRIEL (TETRACHLOROTYLENE)

CODE PRIX

ZONE DE DÉCHARGEMENT C-3

DÉTAIL DES PRIX 45414 P.

POIDS BRUT 20600 kg 32451 P.

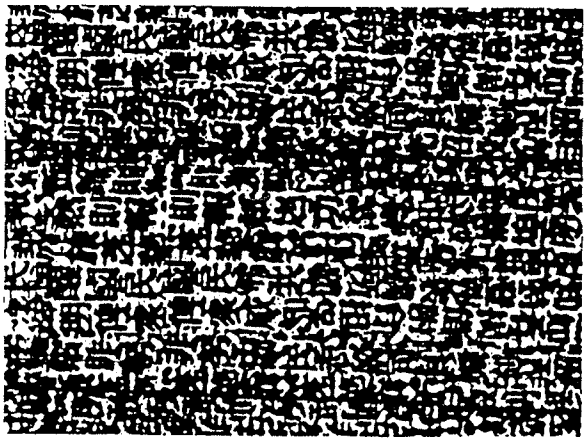
TARE 14720 kg 12963 P.

POIDS NET 5880 kg

≠ DE LICENCE L207545

~~≠ DU CAMION~~ CC572914 NJA3122494

≠ DE CONNAISSEMENT



AUTRE SERVICE

6.48

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques, et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom André MÉNARD
(CARACTÈRE D'IMPRIMERIE)

Signature

COPIE DU BUREAU

MANIFEST / MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / Nº de référence du manifeste **CC-57291-7**

A Consignor (Generator) / Expéditeur (Producteur)

Provincial ID No. / Nº d'id. provincial: NJD991291105

Company name / Nom de l'entreprise: [illegible] LLC

Mailing address / Adresse postale — City / Ville — Province — Postal code / Code postal

Shipping site address / Origine de l'expédition: SAME

105 JACOBUS AVENUE

City / Ville: SOUTH KEARNY — Province: NJ — Postal code / Code postal: 07032

Intended consignee / Destinataire prévu — Provincial ID No. / No d'id. provincial: HORIZON ENVIRONNEMENT 111142031856

Address / Adresse — City / Ville — Province — Postal code / Code postal

Receiving site address / Destination de l'expédition: 170 ROUTE 153

City / Ville — Province — Postal code / Code postal: GRANDES-PILES (CHAMPEG) G0X 1H0

B Carrier / Transporteur

Provincial ID No. / Nº d'id. provincial: 1019110121

Company name / Nom de l'entreprise: TRANSPORT ROLLEX LTEE — André Ménard

Address / Adresse: 910 BLVD LIONEL BOULET

City / Ville: VARENNES — Prov. — Postal code / Code postal

Vehicle / Véhicule — Registration No. / Nº d'immatriculation: L20754S — Prov.: Qc

Trailer/Rail Car No. 1 / 1re remorque – wagon: RW75030 — Qc

Trailer/Rail Car No. 2 / 2e remorque – wagon

Point of entry / Point d'entrée: LACOLLE — Point of exit / Point de sortie

Carrier Certification: I/We received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année, Month / Mois, Day / Jour: 00 09 01 — Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): André Ménard

Signature: [signature] — Tel. No. / Nº de tél.: 450 652-1232

C Consignee (Receiver) / Destinataire (Réceptionnaire)

Reference nos. of other Manifest(s) used / Nºs de références des autres manifestes utilisés: NJA3122494

Provincial ID No. / Nº d'id. provincial

Consignee information same as Intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A: ☑ Yes / Oui ☐ No, complete the boxed area below

Company name / Nom de l'entreprise

Address / Adresse

City / Ville — Province — Postal code / Code postal

Receiving site address / Destination de l'expédition

City / Ville — Province — Postal code / Code postal

Date received / Date de réception — Year / Année, Month / Mois, Day / Jour: 00 09 05 — Time / Heure: 11:30 ☑ A.M. ☐ P.M.

Waste Identification / Identification du déchet

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Provincial No. / Nº (Quebec-Ontario only)	TDGA/PIN / LTMD/NIP	Quantity shipped / Quantité expédiée	Units	Classification	Packing group / Groupe d'emballage	Packaging / Contenants No.	Codes	Quantity received / Quantité reçue	Units / Unités	Identify any shipment discrepancy problems	Handling code / Code de manutention	Decontamination Packaging Yes/No	Decontamination Vehicle Yes/No
S	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (CONTAMINATED SOIL) (TETRACHLOROETHYLENE)	N/A	UN3077	5455	KG	9.1	III	01	D3	5880	KG	—	06	✓	✓

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence: ☐ Attached / Ci-jointes ■ Below / Ci-dessous

Numéro de préavis 104725

Circulation no. – Quebec only / Nº de circulation – Réservée au Québec

Date shipped / Date d'expédition — Year / Année, Month / Mois, Day / Jour: 00 09 01 — Time / Heure: 12:45 ☐ A.M. ☑ P.M. — All Transport Rollex [illegible]

Scheduled arrival date / Date d'arrivée prévue — Year / Année, Month / Mois, Day / Jour: 00 09 01

Consignor Certification: I declare that the information contained in Part A is correct and complete.
Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): OXONE JOSEPH — Signature: Oxone Joseph — Tel. no. / Nº de tél.: 973 [illegible]

If handling code "Other" (specify) / Si code de manutention "divers", spécifier

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire — Provincial ID No. / Nº d'id. provincial

Address / Adresse — City / Ville — Prov.

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie C sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Gournier

Signature: [signature] — Tel. no. / Nº de tél.: (819) 545-7657

Mailed by Consignee to Consignor - Postée par le destinataire à l'expéditeur

Copy / Copie 6 (brown / brun)

Capella

784

State of New Jersey
Department of Environmental Protection
Hazardous Waste Regulation Program
Manifest Section
P.O. Box 421, Trenton, NJ 08625-0421

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039.

In case of an emergency or spill immediately call the state the emergency occurred in and the N.J. Dept. of Environmental Protection and Energy: (609) 292-7172

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: N J D 0 9 9 1 2 8 1 1 0 5 — Manifest Document No.: 2 2 1 4 1 9 1 4

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
S & W WASTE INC
105 JACOBUS AVENUE
SOUTH KEARNY NJ USA 07032

4. Generator's Phone (201 344-4004)

A. State Manifest Document Number: **NJA 3122494**

B. State Generator's ID-(Gen. Site Address): 105 JACOBUS AVENUE SOUTH KEARNY

5. Transporter 1 Company Name: TRANSPORT ROLLEX LTEE

6. US EPA ID Number: N Y F 0 0 8 0 0 0 0 6 3

C. State Trans. ID-NJDEP: 510117 — Decal No.: 08680

7. Transporter 2 Company Name

8. US EPA ID Number

D. Transporter's Phone (450 682-4282)

E. State Trans. ID-NJDEP

Decal No.-

9. Designated Facility Name and Site Address
HORIZON ENVIRONEMENT INC.
120 ROUTE 155
GRANCES-PILES (CHAMPLAIN)
PQ CANADA G0X 1H0

10. US EPA ID Number: N Y R 0 0 0 0 7 8 6 8 4

F. Transporter's Phone ( )

G. State Facility's ID

H. Facility's Phone (800 565-7667)

	11. US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group) HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X RQ WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, NOS CLASS9 NA8077 PGII (TETRACHLOROETHYLENE) R002	0 0 1 1	DT	X X X X 6	T	F 0 0 5
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
a. R/S soil containing TETRACHLOROETHYLENE
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a.
b.
c.
d.

15. Special Handling Instructions and Additional Information
IN CASE OF AN EMERGENCY CALL ROLLEX AT 1-888-767-0088
PORT OF EXIT FROM U.S.A. CHAMPLAIN, NY

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmen regulations and conform to the terms of the attached EPA Acknowledgement of Consent.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the presen and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: OXONE JOSEPH — Signature: Oxone Joseph — Month Day Ye: 10 9 0 1 1 0

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Andre MENARD — Signature — Month Day Ye: 09 01 10

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Ye

FACILITY

19. Discrepancy Indication Space
Ref. NJA 3181938

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Month Day Ye

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete

3—TSD MAIL TO-GENERATOR

SIGNATURE AND INFORMATION *MUST* BE LEGIBLE ON ALL COPIES

2U3U9

HORIZON ENVIRONNEMENT INC.
120, route 155
Grandes-Piles (Québec) G0X 1H0
Tél.: 1-800-545-SOLS • (819) 538-3921
Fax: (819) 538-0889

BILLET

N°. T.P.S.: 140578741 RT

N° T.V.Q.: 1017578304

N° DU BILLET 1919

N° DU CONTRAT CHE-7B

N° DE BON DE COMMANDE

DATE 2000/09/0

HEURE ENTRÉE 09:0

HEURE SORTIE 09:1

CLIENT
00-110 (3600653 CANADA INC.)
123, BOUL. LABELLE, SUITE 101
ROSEMERE (QC) J7A 2G9
3600653 G. BROUSSEAU
(800) 792-7645 C-1B
CAPITOL ENV. SERV.

EL

GÉNÉRATEUR
CHE-788 (CONTAMINATED SOIL)
S & W WASTE INC.
SOUTH KEARNY, NJ
(HAUSMAN REALTY)

EL

TRANSPORTEUR
L112345 (TRANSPORT ROLLEX)
910, Boulevard Lionel-Boulet
Varennes (Québec)
J3X 1T6
Tél.: (514) 652-4282

EL

PROVENANCE

MATÉRIEL (TETRACHLOROTYLENE)

CODE PRIX

ZONE DE DÉCHARGEMENT C-3

DÉTAIL DES PRIX 26748 P.

POIDS BRUT 35720 kg 35031 P.

TARE 15890 kg 43717 P.

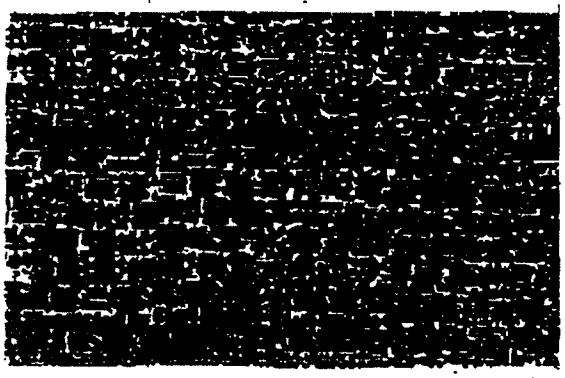
POIDS NET 19830 kg

DE LICENCE L112345

CC 57292-5

DU CAMION NJA 310 3496

DE CONNAISSEMENT



AUTRE SERVICE

21.86

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques, et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom BERNARD GIBSON

Signature

COPIE DU BUREAU

20309

HORIZON ENVIRONNEMENT INC.
120, route 155
Grandes-Piles (Québec) G0X 1H0
Tél.: 1-800-545-SOLS • (819) 538-3921
Fax: (819) 538-0889

BILLET

N°. T.P.S.: 140578741 RT

N° T.V.Q.: 1017578304

N° DU BILLET 191

N° DU CONTRAT CHE-7

N° DE BON DE COMMANDE

DATE 2000/09/

HEURE ENTRÉE 09:

HEURE SORTIE 09:

CLIENT
00-110 (3600653 CANADA INC.)
123, BOUL. LABELLE, SUITE 101
ROSEMERE (QC) J7A 2G9
3600653 G. BROUSSEAU
(800) 792-7645 C-1B
CAPITOL ENV. SERV.

TÉL.

GÉNÉRATEUR
CHE-788 (CONTAMINATED SOIL)
S & W WASTE INC.
SOUTH KEARNY, NJ
(HAUSMAN REALTY)

TÉL.

TRANSPORTEUR
L112345 (TRANSPORT ROLLEX)
910, Boulevard Lionel-Boulet
Varennes (Québec)
J3X 1T6
Tél.: (514) 652-4282

TÉL.

PROVENANCE

MATÉRIEL (TETRACHLOROTYLENE)

CODE PRIX

ZONE DE DÉCHARGEMENT C-3

DÉTAIL DES PRIX

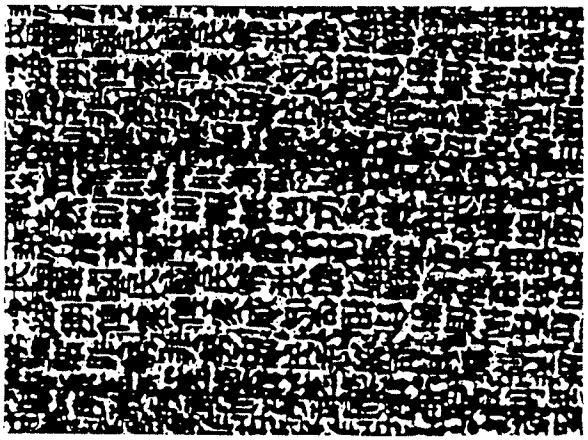
POIDS BRUT	35720 kg	76748 P.
TARE	15890 kg	35031 P.
POIDS NET	19830 kg	43717 P.

= DE LICENCE L112345

CC 57292-5

~~= DU CAMION~~ NJA 310 2496

= DE CONNAISSEMENT



AUTRE SERVICE

21.86

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques, et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom SYLVAIN GIASSON
(CARACTÈRE D'IMPRIMERIE)

Signature

COPIE DU BUREAU

State of New Jersey
Department of Environmental Protection
Hazardous Waste Regulation Program
Manifest Section
P.O. Box 421, Trenton, NJ 08625-0421

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.) *Form Approved. OMB No. 2050-0039.*

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N J D 0 9 1 2 9 1 1 0 5 — Manifest Document No. 3124916
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
S&W WASTE INC
105 JACOBUS AVENUE
SOUTH KEARNY NJ USA 07032
4. Generator's Phone (201 344-4004

A. State Manifest Document Number **NJA 3122496**
B. State Generator's ID-(Gen. Site Address) 105 JACOBUS AVENUE SOUTH KEARNY

5. Transporter 1 Company Name: TRANSPORT ROLLEX LTEE — 6. US EPA ID Number: N Y F 0 0 6 0 0 0 0 5 8
C. State Trans. ID-NJDEP: 5011 — Decal No.: 086856

7. Transporter 2 Company Name — 8. US EPA ID Number
D. Transporter's Phone (450 662-4282
E. State Trans. ID-NJDEP — Decal No.:

9. Designated Facility Name and Site Address
HORIZON ENVIRONEMENT INC
120 ROUTE 156
GRANDES-PILES (CHAMPLAIN) PQ CANADA G0X 1H0
10. US EPA ID Number: N Y R 0 0 0 0 7 8 0 8 4
F. Transporter's Phone ( )
G. State Facility's ID
H. Facility's Phone (800 645-7557

11. US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, NOS CLASS9 NA3077 PGII (TETRACHLOROETHYLENE) F002	X	0101	DT	XXX22	T	F002
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
a. RQ soil containing TETRACHLOROETHYLENE
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a.
b.
c.
d.

15. Special Handling Instructions and Additional Information
IN CASE OF AN EMERGENCY CALL ROLLEX AT 1-888-767-0088
PORT OF EXIT FROM U.S.A. CHAMPLAIN, NY

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations and conform to the terms of the attached EPA Acknowledgment on Consent.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: OXONE JOSEPH — Signature: Oxone Joseph — Month Day Y: 10 8 B 1 0

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: SYLVAIN GIASSON — Signature — Month Day Y: 10 8 1 10

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Y

FACILITY

19. Discrepancy Indication Space
Ref. NJA 3181935
Sect. 2C "DECAL# Should Read 086856"

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Month Day Y: 10 8 1 10

EPA Form 8700-22 (Rev. 9/88) Previous editions are obsolete.

SIGNATURE AND INFORMATION *MUST* BE LEGIBLE ON ALL COPIES

3—TSD MAIL TO-GENERATOR

GENERATOR

In case of an emergency or spill immediately call the state the emergency occurred in and the N.J. Dept. of Environmental Protection and Energy. (609) 292-7172

MANIFEST / MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / Nº de référence du manifeste: CC 57292-5

A Consignor (Generator) / Expediteur (Producteur)

Provincial ID No. / Nº d'id. provincial: NJD991291105

Company name / Nom de l'entreprise: S & H WASTE INC

Mailing address / Adresse postale | City / Ville | Province | Postal code / Code postal

SAME

Shipping site address / Origine de l'expédition: 105 JACOBUS AVENUE

City / Ville	Province	Postal code / Code postal
SOUTH KEARNY	NJ	07032

Intended consignee / Destinataire prévu | Provincial ID No. / No d'id. provincial

HORIZON ENVIRONNEMENT IN1142021556

Address / Adresse | City / Ville | Province | Postal code / Code postal

160 ROUTE 155

Receiving site address / Destination de l'expédition: SAME

City / Ville	Province	Postal code / Code postal
GRANDES-PILES (CHAMPS)		G0X 1H0

B Carrier / Transporteur

Provincial ID No. / Nº d'id. provincial: 1010110171

Company name / Nom de l'entreprise: TRANSPORT ROLLEX LTEE

Address / Adresse: 910 BLVD LIONEL BOULET

City / Ville | Prov. | Postal code / Code postal: VARENNES

	Registration No. / Nº d'immatriculation	Prov.
Vehicle / Véhicule	L112395	KB
Trailer/Rail Car No. 1 / 1er remorque – wagon	RP73401	RQ
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée | Point of exit / Point de sortie

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année – Month / Mois – Day / Jour: 00 08 31

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): SYLVAIN GAGNON

Signature: [signature]

Tel. No. / Nº de tél.: (450) 652-9262

C Consignee (Receiver) / Destinataire (Réceptionnaire)

Reference nos. of other Manifest(s) used / Nº's de références des autres manifestes utilisés: NJA3122796

Provincial ID No. / Nº d'id. provincial

Consignee information same as Intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A
☒ Yes / Oui ☐ No, complete the boxed area below

Company name / Nom de l'entreprise

Address / Adresse

City / Ville | Province | Postal code / Code postal

Receiving site address / Destination de l'expédition

City / Ville | Province | Postal code / Code postal

Date received / Date de réception – Year / Année, Month / Mois, Day / Jour: 00 09 01 – Time / Heure: 0908 ☒ AM ☐ PM

Waste Identification / Identification du déchet

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Provincial No. / Nº (Quebec–Ontario only)	TDGA/PIN / LTMD/NIP	Quantity shipped / Quantité expédiée	Units L or kg / unités	Classification	Packing group / Groupe d'emballage	Packaging / Contenants – No.	Codes	Quantity received / Quantité reçue	Handling code / Code de manutention
SO	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (CONTAMINATED SOIL) (TETRACHLOROETHYLENE)	N/A	UN3077	19477	KG	9.2	III	01	CD	19830 KG	

Special handling/Emergency Instructions / Manutention spéciale/instructions d'urgence ☐ Attached / Ci-jointes ☒ Below / Ci-dessous

[illegible] 184721 ... IN CASE OF EMERGENCY CALL Transport Rollex Ltd 1 8[illegible]

Circulation no. – Quebec only / Nº de circulation – Réservée au Québec: N/A

Date shipped / Date d'expédition – Year / Année, Month / Mois, Day / Jour: 00 08 31 – Time / Heure: 1445 ☐ AM ☒ PM

Scheduled arrival date / Date d'arrivée prévue – Year / Année, Month / Mois, Day / Jour: 00 09 01

Consignor Certification: I declare that the information contained in Part A is correct and complete. / Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): OXNE JOSEPH

Signature: Oxne Joseph

Tel. no. / Nº de tél.: (973) [illegible]

If handling code "Other" (specify) / Si code de manutention "divers", spécifier

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire | Provincial ID No. / Nº d'id. provincial

Address / Adresse | City / Ville | Province

Consignee Certification: I declare that the information contained in Part C is correct and complete. / Déclaration du destinataire : Je déclare que tous les renseignements à la partie C sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): G Fournier

Signature: [signature]

Tel. no. / Nº de tél.: (819) 545-7659

3 — TSD MAIL TO GENERATOR

20511

HORIZON ENVIRONNEMENT INC.
120, route 155
Grandes-Piles (Québec) G0X 1H0
Tél.: 1-800-545-SOLS • (819) 538-3921
Fax: (819) 538-0889

BILLET

N°. T.P.S.: 140578741 RT

N° T.V.Q.: 1017578304

N° DU BILLET 1919

N° DU CONTRAT CHE-78

N° DE BON DE COMMANDE

DATE 2000/09/0

HEURE ENTRÉE 10:4

HEURE SORTIE 10:5

00-110 (3608653 CANADA INC.)
123, BOUL. LABELLE, SUITE 101
ROSEMERE (QC) J7A 2G9
3608653 G. BROUSSEAU
(800) 792-7545 C-1B
CAPITOL ENV. SERV.

CHE-788 (CONTAMINATED SOIL)
S & W WASTE INC.
SOUTH KEARNY, NJ
(HAUSMAN REALTY)

PROVENANCE

MATÉRIEL (TETRACHLOROTYLENE)

CODE PRIX

ZONE DE DÉCHARGEMENT C-3

L207994 (TRANSPORT ROLLEX/REAL POIRIER)
910, Boulevard Lionel-Boulet
Varennes (Québec)
J3X 1T6
Tél.: (514) 652-4282

DÉTAIL DES PRIX

POIDS BRUT	35740 kg	78 792 P.
TARE	13790 kg	30401 P.
POIDS NET	21950 kg	48 392 P.

DE LICENCE L207994

DU CAMION CC572290-9
NJA 3123492

DE CONNAISSEMENT B2678230

AUTRE SERVICE

24.20

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques, et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom ANDRÉ LEMOYNE
(CARACTÈRE D'IMPRIMERIE)

Signature André Lemoyne

COPIE DU BUREAU

20311

HORIZON ENVIRONNEMENT INC.
120, route 155
Grandes-Piles (Québec) G0X 1H0
Tél.: 1-800-545-SOLS • (819) 538-3921
Fax: (819) 538-0889

BILLET

N°. T.P.S.: 140578741 RT

N° T.V.Q.: 1017578304

N° DU BILLET 191

N° DU CONTRAT CHE-7

N° DE BON DE COMMANDE

DATE 2000/09/

HEURE ENTRÉE 10:

HEURE SORTIE 10:

CLIENT
00-110 (3600653 CANADA INC.)
123, BOUL. LABELLE, SUITE 101
ROSEMERE (QC) J7A 2G9
3600653 G. BROUSSEAU
(800) 792-7645 C-1B
CAPITOL ENV. SERV.

TÉL.

GÉNÉRATEUR
CHE-788 (CONTAMINATED SOIL)
S & W WASTE INC.
SOUTH KEARNY, NJ
(HAUSMAN REALTY)

TÉL.

PROVENANCE

MATÉRIEL (TETRACHLOROTYLENE)

CODE PRIX

ZONE DE DÉCHARGEMENT C-3

TRANSPORTEUR
L207994 (TRANSPORT ROLLEX/REAL POIRIER)
910, Boulevard Lionel-Boulet
Varennes (Québec)
J3X 1T6
Tél.: (514) 652-4282

TÉL.

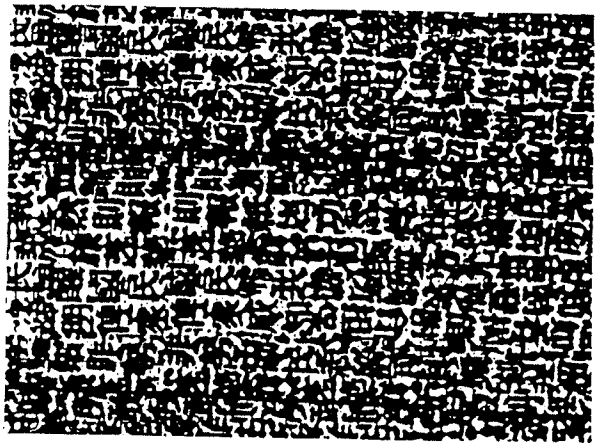
DÉTAIL DES PRIX

POIDS BRUT	35740 kg	78 792 P.
TARE	13790 kg	30401 P.
POIDS NET	21950 kg	48 391 P.

DE LICENCE L207994

~~# DU CAMION~~ CC57290-9
NJA 3122492

DE CONNAISSEMENT B2678230



AUTRE SERVICE

24.2

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques, et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom ANDRÉ LEMONDE
(CARACTÈRE D'IMPRIMERIE)

Signature André Lemonde

COPIE DU BUREAU

State of New Jersey
Department of Environmental Protection
Hazardous Waste Regulation Program
Manifest Section
P.O. Box 421, Trenton, NJ 08625-0421

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.) *Form Approved.* *OMB No. 2050-0039.*

In case of an emergency or spill immediately call the state the emergency occurred in and the N.J. Dept. of Environmental Protection and Energy. (609) 292-7172

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NJD991291105 — Manifest Document No.: 23492
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: S&W WASTE INC, 105 JACOBUS AVENUE, SOUTH KEARNY NJ USA 07032
4. Generator's Phone (201 344-4004

A. State Manifest Document Number: **NJA 3122492**

B. State Generator's ID-(Gen. Site Address): 105 JACOBUS AVENUE SOUTH KEARNY

5. Transporter 1 Company Name: TRANSPORT ROLLEX LTEE
6. US EPA ID Number: NYF000600063

C. State Trans. ID-NJDEP: 15011
Decal No.- 09558

D. Transporter's Phone (450 882-4282

7. Transporter 2 Company Name:
8. US EPA ID Number:

E. State Trans. ID-NJDEP:
Decal No.-

9. Designated Facility Name and Site Address: HORIZON ENVIRONEMENT INC, 120 ROUTE 155, GRANDES-PILES (CHAMPLAIN), PQ CANADA G0X 1H0
10. US EPA ID Number: NYR000078984

F. Transporter's Phone ( )

G. State Facility's ID

H. Facility's Phone (800 5[illegible]-7557

	11. US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group) HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X RQ WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, NOS CLASS9 NA3077 PGIII (TETRACHLOROETHYLENE) F002	001	DT	XXX214		F002
b.						
c.						
d.						

GENERATOR

J. Additional Descriptions for Materials Listed Above
a. A/S soil containing Tetrachloroethylene
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. b. c. d.

15. Special Handling Instructions and Additional Information
IN CASE OF AN EMERGENCY CALL ROLLEX AT 1-888-787-0068
PORT OF EXIT FROM U.S.A. CHAMPLAIN, NY

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. and conform to the terms of the attached EPA Acknowledgement on Consent.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: OXONE JOSEPH — Signature: Oxone Joseph — Month Day Year: 08 31 10

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: ANDRE LEMONDE — Signature: Andre Lemonde — Month Day Year: 08 31 10

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Month Day Year:

FACILITY

19. Discrepancy Indication Space
Ref. NJA 3181933

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: [illegible] — Signature: [illegible] — Month Day Year: [illegible]

EPA Form 8700-22 (Rev. 9/88) Previous editions are obsolete.

SIGNATURE AND INFORMATION *MUST* BE LEGIBLE ON ALL COPIES

3—TSD MAIL TO-GENERATOR

MANIFEST / MANIFESTE

This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.
Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No. / Nº de référence du manifeste: CC 57290-9

A Consignor (Generator) / Expediteur (Producteur)

Provincial ID No. / Nº d'id. provincial: NJD991291105

Company name / Nom de l'entreprise: S & W WASTE INC

Mailing address / Adresse postale, City / Ville, Province, Postal code / Code postal: SAME

Shipping site address / Origine de l'expédition: 105 JACOBUS AVENUE

City / Ville: SOUTH KEARNY | Province: NJ | Postal code / Code postal: 07032

Intended consignee / Destinataire prévu: HORIZON ENVIRONNEMENT | Provincial ID No. / No d'id. provincial: III142031856

Address / Adresse: 120 ROUTE 155

Receiving site address / Destination de l'expédition: SAME

City / Ville: GRANDES-PILES (CHAMPD) | Postal code / Code postal: G0X 1H0

B Carrier / Transporteur

Provincial ID No. / Nº d'id. provincial: 1019110121

Company name / Nom de l'entreprise: TRANSPORT ROLLEX LTEE (Rollex)

Address / Adresse: 910 BLVD LIONEL BOULET

City / Ville: VARENNES | Prov.: QC | Postal code / Code postal: [illegible]

	Registration No. / Nº d'immatriculation	Prov.
Vehicle / Véhicule	L-207994	Que
Trailer/Rail Car No. 1 / 1er remorque – wagon	RR 51027	Que
Trailer/Rail Car No. 2 / 2e remorque – wagon		

Point of entry / Point d'entrée: LACOLLE PQ | Point of exit / Point de sortie:

Carrier Certification: I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur : J'atteste avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire choisi et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année: 00 | Month / Mois: 08 | Day / Jour: 31 | Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): ANDRÉ LEROUX

Signature: [signature] | Tel. No. / Nº de tél.: 450 652-4282

C Consignee (Receiver) / Destinataire (Réceptionnaire)

Reference nos. of other Manifest(s) used / Nº's de références des autres manifestes utilisés: NJA 3122492

Provincial ID No. / Nº d'id. provincial:

Consignee information same as Intended Consignee in Part A / L'information à fournir par le destinataire est la même qu'en A: ☑ Yes / Oui ☐ No, complete the boxed area below

Company name / Nom de l'entreprise:

Address / Adresse:

City / Ville, Province, Postal code / Code postal:

Receiving site address / Destination de l'expédition:

City / Ville, Province, Postal code / Code postal:

Date received / Date de réception: Year / Année 00 | Month / Mois 09 | Day / Jour 01 | Time / Heure: 1642 ☑ A.M. ☐ P.M.

Waste

Physical state / État physique	Shipping name of waste / Appellation réglementaire du déchet	Provincial No. / Nº (Quebec-Ontario only)	TDGA/PIN LTMD/NIP	Quantity shipped / Quantité expédiée	Units / Unités	Classification	Packing group / Groupe d'emballage	Packaging No. / Contenants Nbre	Codes	Quantity received / Quantité reçue	Units / Unités	Identify any shipment discrepancy problems	Handling code / Code de manutention	Packaging Yes/No	Vehicle Yes/No
3	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (CONTAMINATED SOIL) (TETRACHLOROETHYLENE)	N/A	UN3077	22,126	KG	9.2	III	01	03	21950	KG	—	6	✓	✓

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence: ☐ Attached / Ci-jointes ☒ Below / Ci-dessous

Numero de permis 104123

In case of emergency call Transport Rollex Ltd 1 888 [illegible]

Circulation no. – Quebec only / Nº de circulation – Réservée au Québec:

If handling code "Other" (specify) / Si code de manutention "divers", spécifier:

If waste to be transferred, specify intended company name / Si les déchets doivent être transférés, préciser le nom du destinataire | Provincial ID No. / Nº d'id. provincial

Address / Adresse | City / Ville | Prov.

Date shipped / Date d'expédition: Year / Année 00 | Month / Mois 08 | Day / Jour 31 | Time / Heure: 1410 ☑ A.M. ☐ P.M.

Scheduled arrival date / Date d'arrivée prévue: Year / Année 00 | Month / Mois 09 | Day / Jour 01

Consignor Certification: I declare that the information contained in Part A is correct and complete.
Déclaration de l'expéditeur : Je déclare que tous les renseignements à la partie A sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): OXNNE JOSEPH | Signature: Oxnne Joseph | Tel. no. / Nº de tél.: 973 [illegible]

Consignee Certification: I declare that the information contained in Part C is correct and complete. / **Déclaration de l'expéditeur :** Je déclare que tous les renseignements à la partie C sont véridiques et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Fournier

Signature: [signature] | Tel. no. / Nº de tél.: (800) 545-7857