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Interim Remedial Measure Final Engineering Report for Construction of Vapor Intrusion Mitigation Systems

Former Frame Center

Chili, New York

August 2008

ARCADIS

Interim Remedial Measure Final Engineering Report for Construction of Vapor Intrusion Mitigation Systems

Former Frame Center
Chili, New York

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Alexander B. Grannis
Commissioner

March 30, 2009

Mr. Frank Chiappone
Manager, Global Environmental Affairs
Bausch & Lomb
One Bausch & Lomb Place
Rochester, New York 14604-2701

Re: Interim Remedial Measure Final Engineering Report for Construction of Vapor Intrusion Mitigation Systems; August 2008 (IRM Completion Report)
Former Bausch & Lomb Frame Center, Town of Chili, Monroe County
Site # 828061

Dear Mr. Chiappone:

The New York State Department of Environmental Conservation (NYSDEC) has completed its review of the interim remedial measures (IRM) report entitled "Interim Remedial Measure Final Engineering Report for Construction of Vapor Intrusion Mitigation Systems," (the IRM Completion Report) dated August 2008 and has determined that the IRM Completion Report substantially addresses the requirements of the IRM Work Plan dated October 2, 2006 (as modified and approved by NYSDEC on October 16, 2006), the IRM Work Plan Addendum dated February 12, 2007 (as modified and approved by NYSDEC on February 22, 2007), and the Revised Interim Vapor Mitigation Report for Pilot Study Evaluation and Additional Sampling dated July 18, 2007 (as modified and approved by NYSDEC on August 7, 2007). The IRM Completion Report is hereby approved.

Please incorporate the operation, maintenance and monitoring (OM&M) activities for the sub-slab depressurization system into the existing OM&M plan for the site so that all OM&M requirements for the site are located in a single document. Additionally, please entitle the updated OM&M plan as the Site Management Plan (SMP) and submit the SMP by June 30, 2009.

Thank you for your cooperation in this matter and please contact me at (585) 226-5357 should you have any questions.

Very truly yours,

Frank Sowers

Frank Sowers, P.E.
Environmental Engineer 2

cc:
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1. Introduction

This *Interim Remedial Measure Final Engineering Report* (IRM FER) was prepared by ARCADIS, on behalf of Bausch & Lomb, to document the IRM activities performed to address vapor intrusion conditions at the former Bausch & Lomb Frame Center Site located in Chili, New York (site). The IRM activities entailed installing sub-slab depressurization systems (SSDSs) in four areas of the site (Figure 1). The SSDSs were installed in general accordance with the IRM Work Plan (ARCADIS, 2007), which comprises the following:

- The October 2, 2006 *Interim Remedial Measure Work Plan for Vapor Mitigation of Building 40 and Building 41* (ARCADIS, 2006) (as conditionally approved and modified in an October 16, 2006 letter from the New York State Department of Environmental Conservation [NYSDEC]), which identified a phased approach consisting of:
  - An initial phase that specifically addresses three previously identified areas requiring mitigation by sealing expansion joints, and installing and operating SSDSs in those areas.
  - A pilot study to evaluate the performance of each SSDS and evaluate whether additional testing is required.
  - Additional testing, if required to further evaluate the effectiveness of the SSDSs.
- The February 12, 2007 *IRM Work Plan Addendum* (ARCADIS, 2007) (as conditionally approved and modified in a February 22, 2007 letter from the NYSDEC), which describes proposed additional on-site sub-slab vapor, indoor air and ambient air sampling locations.

1.1 IRM FER Objectives

As required by the Draft DER-10 *Technical Guidance for Site Investigation and Remediation* (NYSDEC, 2004), this IRM FER presents and discusses the relevant data and information collected as part of the IRM to document the remedial action (RA) activities completed at the site. Applicable Draft DER-10 IRM FER requirements are addressed in an April 25, 2008 e-mail correspondence with the NYSDEC's project manager and are consistent with the IRM Work Plan (ARCADIS, 2007). Accordingly, this IRM FER includes the following information (the part of the IRM FER addressing the listed requirement is provided in parentheses):

- summarizes the completed RA activities, including descriptions of the following:
  - backdrafting evaluations and any associated corrective measures (Section 2.2.2)
  - describes the SSDSs, as constructed, pursuant to the IRM Work Plan (ARCADIS, 2007) (Section 2.2.3 and Figures 1 and 7)
  - indications of contaminants removed (i.e., photoionization detector [PID] readings measured during the pilot study, Section 2.3)
  - problems encountered during construction of the SSDSs and associated resolutions (Section 2.5)
  - changes to the remedial design and why such changes were made (Section 2.5)
- lists the cleanup levels applied to the RA activities, which are the New York State Department of Health (NYSDOH) Soil Vapor Intrusion Guidance Matrices (October 2006 NYSDOH Decision Matrices, Appendix A)
- tables, figures, and appendices containing the pre- and post-remedial data necessary to document the completion of the RA activities, including:
  - soil and groundwater analytical data from the *Phase II / Supplemental Phase II Environmental Site Assessment* (BBL, 1999) (Figure 2 and Appendix B)
  - pre- and post-mitigation indoor air, ambient air and sub-slab soil vapor analytical results from April 2006, March 2007 and November 2007, previously reported by ARCADIS in the July 27, 2007 *Revised Interim Vapor Mitigation Report for Pilot Study Evaluation and Additional Sampling* and March 19, 2008 *Supplemental Interim Vapor Mitigation Report* (Table 1 and Figure 3)
  - monitoring data for the SSDSs between November 2006 and August 2007, which includes PID background readings, PID discharge readings, and system

pressures, previously reported by ARCADIS in the November 2007 *Annual Report* (Table 2)

- – pressure field extension test results, previously reported in the March 19, 2008 *Supplemental Interim Vapor Mitigation Report* (Table 3 and Figures 4, 5 and 6)

- figures showing the location of each SSDS suction point and exhaust vent, and general system profile (Figures 1 and 7)

- Operation, Maintenance & Monitoring (OM&M) Plan, which describes the methods to be used to continually implement, maintain and monitor the SSDSs (Appendix C)

- reference to the deed restriction that was filed for the site as part of the Record of Decision (ROD; NYSDEC, 1998a) and is certified annually (Section 4)

- certification pursuant to Section 1.5 (a) of the Draft DER-10 stating at a minimum that the data submitted demonstrates that the remediation requirements set forth in the IRM Work Plan (ARCADIS, 2007) have been, or will be, achieved (Section 6)

1.2 Site Description

The site is located on the south side of Paul Road, approximately 1½ miles east of the intersection of State Route 33A and Paul Road in Chili, New York (Appendix B, Figure 1). The site is approximately 40 acres in size (i.e., the deed-restricted portion of the 89 acre former Bausch & Lomb Frame Center property) and is bordered to the north by Paul Road.

The site comprises one main building (Building 40) located in the northern portion of the site and a smaller building (Building 41) located adjacent to and south of Building 40 (Figure 1). Building 41 is approximately 5,000 square feet in size and was used by Bausch & Lomb for vehicle maintenance and general storage. Building 40 is approximately 354,000 square feet in size and housed the production area, as well as offices, cafeteria and other associated facilities when owned by Bausch & Lomb. The former Frame Center was constructed in 1961 and was enlarged in 1966. Based on site history and a review of the building construction, it was determined that the southern portion of Building 40 (i.e., the area south of column line 11) is located on a separate foundation system from the balance of the building; as this area represents the 1966 addition to the original building.

Since Bausch & Lomb sold the property, the space within Building 40 has gradually shifted from an unoccupied large open space, to subdivided areas occupied by various tenants for use as warehousing, manufacturing and office space. Three companies (CEVA [formerly known as Eagle Freight Company], Skooba Design [space previously occupied by Cure on Demand Adhesive Company (CODACO), and Applied Coatings) occupy the southern portion of Building 40, and one company (Pierce Industries) occupies the northwestern portion of Building 40, as shown on Figure 1. The northern and northeastern portion of the building has recently become occupied by Lifetime Assistance, Guardian Insulation, Kayex and First Choice Glass. Building 41 is currently occupied by Gordon-Smith Contracting, Inc.

1.3 Site Regulatory Background

In the 1980s, two separate areas of the site were classified by the NYSDEC as Class 2 Inactive Hazardous Waste Disposal Sites, which include the former dry well area and the State Pollutant Discharge Elimination System (SPDES) streambed area. Based on preliminary investigation results, Bausch & Lomb entered into an Administrative Consent Order (ACO) with the NYSDEC on August 16, 1990, and from 1990 through 1997, conducted a Remedial Investigation/Feasibility Study (RI/FS) to address the presence of constituents of interest that may be present at the site. In 1995, an IRM was conducted to address the streambed area. A groundwater remedy was selected, as defined in the February 24, 1998 ROD for the site (NYSDEC, 1998a) (as modified by the October 14, 1998 Explanation of Significant Differences [ESD], NYSDEC, 1998b), which consists of mass removal (by excavation of approximately 400 cubic yards of soil, and groundwater recovery well installation) from source areas located south and southwest of Building 40, long-term groundwater monitoring and natural attenuation for the downgradient plume areas. The issues related to the Class 2 listing of this site are well-documented in the public record and are not the focus of this IRM FER.

1.4 Report Organization

This report is organized into the sections identified in the table below.

Section	Description
1. Introduction	Presents the remedial components, site description and report organization.
2. RA Activities	Summarizes the remedial action background and activities performed to construct the SSDSs.

Section	Description
3. Sampling and Analysis Summary	Summarizes the sampling and off-site laboratory analyses performed.
4. Documentation	Provides supplemental documentation required by the IRM Work Plan (ARCADIS, 2007).
5. Summary and Conclusions	Presents a summary and the conclusions made from the implementation of the IRM Work Plan (ARCADIS, 2007).
6. Certification	Certifies that the SSDSs were installed in accordance with the IRM Work Plan (ARCADIS, 2007).
7. References	Provides a detailed list of references cited in this report.

In addition, several tables, figures and appendices are included, which provide supporting documentation associated with performing the RA activities.

2. RA Activities

This section summarizes the RA activities performed to construct the SSDSs and to meet the objectives of the NYSDEC-approved IRM Work Plan (ARCADIS, 2007). For the former Frame Center, the SSDS locations were determined based on available analytical data, knowledge of building construction and site operations to target areas of potential vapor intrusion. This selection process is briefly summarized in Section 2.1. Additional discussion of the analytical results used to select these locations is provided in Section 3.

The SSDSs were constructed in accordance with the NYSDEC-approved IRM Work Plan (ARCADIS, 2007) and any field modifications agreed upon with the onsite NYSDEC/NYSDOH personnel. As described in the Soil Vapor Intrusion Guidance (NYSDOH, 2006), the RA activities conducted at the site are consistent with the preferred mitigation method for structures with slab-on-grade foundations. This combined approach consists of:

- sealing potential subsurface vapor entry points, which can significantly improve SSDS performance by reducing the flow of sub-slab vapors into a building

- operating SSDSs to lower the sub-slab air pressure relative to indoor air pressure

2.1 Remedial Action Overview

In response to a July 29, 2005 letter from the NYSDEC to Bausch & Lomb, potential vapor intrusion was evaluated for Buildings 40 and 41. Following numerous conversations and various correspondence with the NYSDEC/NYSDOH, Bausch & Lomb submitted a March 31, 2006 *Revised Potential Vapor Intrusion Work Plan* (BBL, 2006) to the NYSDEC that included five sub-slab vapor sampling locations, which were proposed based on existing site information, knowledge of construction of buildings at the site, site operations, and sub-slab soil and groundwater analytical data. This work plan was approved by NYSDEC in their April 4, 2006 letter. Section 3 presents these analytical data results.

Bausch & Lomb retained Paradigm Environmental Labs, Inc. to collect and analyze the air / sub-slab vapor samples required for this program. As per the NYSDEC-approved March 31, 2006 work plan (BBL, 2006), sub-slab vapor samples SV-1 to SV-5 were collected in April 2006 from the proposed locations and analyzed for site-specific volatile organic compounds (VOCs) by United States Environmental Protection Agency

(USEPA) Method TO-15. These analytical results were reported in a June 9, 2006 letter to the NYSDEC, and are included in Table 1. Based on the April 2006 analytical results, three sub-slab vapor sampling locations (SV-1 [former dry well area], SV-4 [former plating pit area] and SV-5 [Building 41]) were identified with trichloroethene (TCE) concentrations greater than 250 micrograms per cubic meter ($\mu g/m^3$). The 250 $\mu g/m^3$ TCE concentration in sub-slab vapor is a NYSDOH criterion over which “mitigation” is required, regardless of co-located indoor air sample results (which were not available in April 2006, since this sampling was limited to sub-slab vapor samples). Based on this criterion, “mitigation” was required to minimize potential exposures associated with soil vapor intrusion.[1]

In October 2006, an *Interim Remedial Measure Work Plan for Vapor Mitigation of Building 40 and Building 41* (ARCADIS, 2006) was submitted to the NYSDEC, which proposed installing SSDSs at locations identified based on the April 2006 sub-slab soil vapor data. From October through December 2006, SSDSs were installed at the approximate locations shown on Figure 1. A pilot study was conducted from November 2006 through January 2007 to monitor the performance of the SSDSs.

In February 2007, an *IRM Work Plan Addendum* (ARCADIS, 2007) was submitted to the NYSDEC. This addendum proposed co-located sub-slab soil vapor and indoor air sampling locations near the outer pressure field extent of the systems in the former dry well and plating areas, which was conducted in March 2007. Based on these analytical results, and as proposed in the July 27, 2007 *Revised Interim Vapor Mitigation Report for Pilot Study Evaluation and Additional Sampling* (ARCADIS, 2007), additional suction drops were added to these areas in August 2007.

In November 2007, post-mitigation indoor air samples were collected from the former dry well and former plating pit areas to help evaluate the effectiveness of the expanded systems. Due to elevated detection limits in the previous sampling event, another co-located indoor air and sub-slab vapor sample pair was also collected in the former wastewater treatment area (east of former plating pit area, near SV-13). Based on the November 2007 analytical results and plans for future occupancy, an additional SSDS was installed in the former wastewater treatment area in February 2008. The analytical results and additional pressure field extension tests were reported in the March 19, 2008 *Supplemental Interim Vapor Mitigation Report* (ARCADIS, 2008).

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[1] New York State Department of Health Draft Guidance for Evaluating Soil Vapor Intrusion in the State of New York Decision Matrices (NYSDOH, 2005). Note: this is also consistent with the October 2006 final guidance matrices, which are provided in Appendix A.

2.2 Description of the SSDSs

Bausch & Lomb retained Mitigation Tech (a National Environmental Health Association-certified radon mitigation contractor) to install SSDSs in four areas (initially for three areas in the immediate vicinity of SV-1, SV-4, SV-5 and subsequently near SV-13) to mitigate potential vapor intrusion conditions. A SSDS consists of a fan-powered vent and piping to draw vapors from sub-slab soils (i.e., essentially creating a vacuum beneath the slab) and discharging the vapors to the atmosphere. The SSDS installation included sealing expansion joints, cracks and penetrations, as well as installing and operating venting systems in accordance with USEPA's radon mitigation standard 402-R93-078.

2.2.1 SSDS Components

The SSDSs consist of four major components (see Figure 7 for a generalized system profile), which include:

- RadonAway™ GP-501 centrifugal in-line fans with an approximate 0 to 95 cubic feet per minute (cfm) flow at 0 to 4 inches of water vacuum (see Appendix D for a RadonAway™ GP Series Fans Information Sheet)

- 3-inch-diameter, Schedule 40 polyvinyl chloride (PVC) pipe installed a minimum of 1 inch below the concrete floor slab to conduct soil vapor vertically from below the slab to the in-line fan

- appropriate brackets to attach piping to building columns, walls, and other areas

- manometer (u-tube type) at the suction end of the system, to obtain pressure readings

2.2.2 Preconstruction Activities

Prior to implementing the RA activities, observations were made of the concrete slabs beneath Buildings 40 and 41, particularly where mitigation was planned. The concrete slab for Building 40 was observed to be in good to excellent condition. Expansion joints were observed around each building column, with additional expansion joints extending between columns. Perimeter cracks in the concrete slab were observed around an "L-shaped" area, located approximately 50 feet east and northeast of sampling location SV-4. This area corresponds to where concrete was emplaced following remediation of the former plating pit area. Based on available information, Building 41 has a slab-on-grade foundation without perimeter footings. Several cracks were noted in the concrete slab in the western portion of Building 41.

Mitigation Tech applied urethane sealant to the expansion joints in the vicinity of sub-slab sampling locations SV-1 and SV-4, as well as to cracks around the perimeter of the former plating pit area (where concrete had been repaired). Cracks observed in Building 41 were also sealed by Mitigation Tech where appropriate.

As per the Soil Vapor Intrusion Guidance (NYSDOH, 2006), SSDSs should be designed to avoid the creation of other health, safety, or environmental hazards to building occupants (e.g., backdrafting of natural draft combustion appliances). Operation of an SSDS may compete with the proper venting of fireplaces, wood stoves and other combustion or vented appliances (e.g., furnaces, clothes dryers, and water heaters), resulting in the accumulation of exhaust gases in the building and the potential for carbon monoxide poisoning. Therefore, in buildings with natural draft combustion appliances, backdrafting conditions should be corrected before the depressurization system is placed in operation. Accordingly, Mitigation Tech conducted an evaluation of potential backdrafting conditions in Buildings 40 and 41. Based on observations made prior to and during installation, Building 40 is heated by steam and Building 41 is unheated. No open flame heat sources, natural draft combustion or vented appliances, or continuous process vents were observed in the areas being mitigated.

2.2.3 Installation of SSDSs

Mitigation Tech installed the initial SSDSs from October through December 2006. Additional SSDSs were installed in August 2007 and February 2008, based on the analytical results of subsequent sampling. The SSDSs were installed at the approximate locations shown on Figure 1, and a generalized system profile is shown on Figure 7.

Each SSDS consists of a 3-inch-diameter PVC pipe installed a minimum of 1 inch below the concrete floor slab to conduct soil vapor vertically from below the slab to the in-line fan. Soil vapor is then carried through a 3-inch-diameter PVC discharge pipe mounted to building columns and discharged approximately 12 inches above the roof line, approximately 10 feet above ground level, approximately 10 feet away from any opening that is less than 2 feet below the exhaust point, and approximately 10 feet from any adjoining or adjacent buildings, intakes or supply registers. In addition, the in-line fan and discharge piping were not located in or below an occupied area of the buildings.

A total of six RadonAway™ GP-501 centrifugal in-line fans were installed during the RA activities: five for the initial SSDSs (SV-1N and SV-1S in the former dry well area, SV-4N and SV-4S in the former plating pit area, and SV-5 for Building 41), and one later for the SV-13 SSDS (SV-13 in former wastewater treatment area). Multiple suction points are associated with the two fans installed in the former dry well area and for one fan in the former plating pit area. Approximate system suction locations are shown on Figure 1, and an enlargement of each area is shown on Figures 4, 5 and 6. Where feasible, each suction location was located near a column or the perimeter of the room to minimize potential interference with traffic patterns inside the buildings.

The SSDSs were installed at the following initial locations:

- two SSDSs in the southwest corner of Building 40, in the vicinity of the former dry well and near sub-slab vapor sampling location SV-1 (one fan for suction points SV-1NA, SV-1NB and exhaust point SV-1NX, and a second fan for suction points SV-1SA, SV-1SB and exhaust point SV-1SX)

- two SSDSs near the center of Building 40, in the vicinity of the former plating pit: one next to sub-slab vapor sampling location SV-4 (one fan for suction point SV-4S and exhaust point SV-4SX) and one adjacent to the backfill of the former plating pit (one fan for suction point SV-4N and exhaust point SV-4NX)

- one SSDS in the western section of Building 41, near sub-slab vapor sampling location SV-5 (one fan for suction point SV-5 and exhaust point SV-5X)

Subsequently, additional components were added at the following locations:

- In August 2007, two additional suction points were added: one near the SV-6 sampling location in the former dry well area (suction point SV-1SC vented to the previously installed exhaust point SV-1SX) and one near the SV-11 sampling location in the former plating pit area (suction point SV-4SA vented to the previously installed exhaust point SV-4SX).

- In February 2008, one additional SSDS was installed near SV-13 in the former wastewater treatment area (one fan for suction point SV-13 and exhaust point SV-13X).

Any cracks and penetrations generated during the SSDS installation activities were sealed with urethane sealant. Each SSDS was clearly labeled to avoid accidental modifications or changes to the system that could disrupt its function. The building occupants have been made aware of the presence of the SSDSs, that the u-tube manometers may be used to indicate whether a system stops working properly, and contact information is provided on each SSDS label in case of malfunction.

2.3 SSDSs Startup and Continuous Operation

Initial startup of the SSDSs commenced during the week of November 2, 2006, with additional systems added in August 2007 and February 2008. During the initial startup period, a pilot study was conducted to fully optimize the system and to evaluate whether additional testing was required for the potential vapor intrusion evaluation of Buildings 40 and 41.

Pilot study measurements, including frequent system checks and manometer and PID readings, were obtained during system operation from November 2, 2006 through January 19, 2007, to evaluate system performance, and are included in Table 2. To monitor the SSDSs, the sub-slab pressure was measured at each location using a micromanometer. Additionally, a manometer was installed on the suction side of each fan to verify that each system continued to lower the sub-slab pressure below the building ambient interior pressure.

In November 2006, August 2007 and February 2008, pressure field extension tests were conducted with the SSDSs in operation. Small holes (e.g., ⅜ inch diameter) were drilled through the slab and manometer measurements made at each pressure field test location shown on area enlargement Figures 4, 5 and 6. These results were previously reported in the March 19, 2008 *Supplemental Interim Vapor Mitigation Report* (ARCADIS, 2008), and are included on Figures 4, 5 and 6, as well as in Table 3.

The pressure field extension tests indicated negative sub-slab pressures extending outward up to approximately 60 feet from the nearest suction point (Table 3). The pressure field extension test results for the SV-5 SSDS indicated that negative sub-slab pressure is present beneath the approximate extent of the Building 41 slab. Negative pressures, ranging from 1.7 to 4 inches of water, were maintained during the pilot study testing period (other than a brief period when the SV-5 SSDS shut down due to a tripped ground fault interrupt breaker). PID readings were measured periodically from November 2, 2006 to January 19, 2007 from sampling and/or manometer ports in the suction lines. These VOC field screening results are presented in Table 2, and indicate that system discharge PID readings are generally decreasing over time. These data suggest that the SSDSs are functioning as anticipated.

Information gathered during this initial phase of system operation was evaluated to determine whether additional testing was needed. During the first several months of operation, system pressures and VOC discharges (based on PID readings) were monitored regularly (i.e., daily, then weekly) and the SSDSs were adjusted as needed (Tables 2 and 3). Since January 19, 2007, weekly manometer measurements have continued to monitor the SSDSs operation. Those measurements made through August 2007 are presented in Table 2. Subsequent data will be presented in the annual report, which will be submitted in fall 2008.

The SSDSs have continued to operate with minimal, if any, interruptions as they have been added. Operating information through August 2007 is included in this report and the 2007 *Annual Report*. Similar documentation will be presented in subsequent annual reports, as defined in the OM&M Manual (Appendix C).

2.4 Site Restoration and Cleanup Activities

Minimal site restoration and general cleanup activities were required following installation. Most significantly, cracks and penetrations in the floor slab were sealed with urethane, and roof penetrations were sealed around the exhaust pipes with an appropriate sealant (e.g., caulk, expandable foam) to prevent leaks.

2.5 Modifications to the SSDS Design

The following modifications were made to the design outlined in the IRM Work Plan (ARCADIS, 2007) during construction of the SSDSs:

- Initially, suction piping was connected to a floor drain pipe leading to the former dry well (SV-1SA); however, due to limited pressure response, a second suction point (SV-1NA) was installed near this drain, in a former storage room. Additional suction drops (SV-1SB and SV-1NB) were subsequently installed in the former dry well area to increase the area of sub-slab depressurization.

- In August 2007, two additional suction points were added and connected to nearby fans, which included one near the SV-6 sampling location in the former dry well area (suction point SV-1NC vented to exhaust point SV-1NX) and one near the

SV-11 sampling location in the former plating pit area (suction point SV-4SA vented to exhaust point SV-4SX).

- In February 2008, an additional SSDS was installed near SV-13 in the former wastewater treatment area (comprising one fan and suction point SV-13 and exhaust point SV-13X).

3. Sampling and Analysis Summary

This section discusses the historical analytical data used to determine the initial sub-slab vapor sampling points and presents the results of the premitigation and post-mitigation indoor air/sub-slab vapor sampling and analysis activities.

3.1 Historical Phase II/Supplemental Phase II ESA Sampling and Analysis

In 1998, Blasland, Bouck & Lee, Inc. (BBL) conducted an environmental site assessment (ESA) at the request of Bausch & Lomb. The Phase II sampling locations were selected based on the findings of the Phase I ESA. The Supplemental Phase II sampling locations were selected to assess the possible presence of VOCs (particularly acetone and Freon 113) beneath the floor of Building 40 and the concentration of VOCs in groundwater immediately downgradient of Building 40. Thirty-nine soil and 48 groundwater primary field samples were collected and analyzed as part of the Phase II/Supplemental Phase II ESA activities. Appendix B includes analytical data tables and figures from the Phase II/Supplemental Phase II ESA.

Historical results from the Phase II/Supplemental Phase II ESA were used to determine the initial sub-slab sampling locations to evaluate the potential for vapor intrusion. Figure 2 shows the five sub-slab sampling locations (SV-1 through SV-5) and summarizes the key information used to select these locations, including PID field readings and laboratory detections of key constituents of interest (COIs) relevant to the potential vapor intrusion pathway, namely tetrachloroethene (PCE), TCE and cis-1,2-dichloroethene (cis-1,2-DCE). These locations were specifically selected to target areas with higher sub-slab soil and/or groundwater VOC concentrations.

3.2 Indoor Air/Sub-Slab Soil Vapor Sampling and Analysis

The sampling methods that were used and a summary of the analytical results are described below.

3.2.1 Sampling Methods

Sampling was conducted on behalf of Bausch & Lomb by Paradigm Environmental Services, Inc. Ambient and indoor air sampling canisters were secured as needed, such that the orifice was located between approximately 3 and 5 feet above the floor (grade). At each sub-slab vapor sampling location, an approximately ⅜-inch-diameter hole was drilled to approximately 3 inches below the slab, a sampling line (i.e., ¼-inch-diameter polyethylene tubing) was inserted approximately 1½ inches into the sub-slab material and a modeling clay seal was installed at the slab surface, around the tubing. When each sampling line was at the intended intake location, it was connected to a brass “T” fitting and a portable vacuum pump, and one to two sample tubing volumes of air were purged from the line.

Samples were collected during an approximately 2-hour period using a 1-liter passivated steel canister equipped with a flow regulator. The initial and final canister pressures were recorded in the field notes. Following sample collection, the tubing was removed and the sub-slab hole was sealed with cement grout, and the samples were transported under chain-of-custody to Paradigm for laboratory analyses by USEPA TO-15 for site-specific COIs.

ARCADIS prepared a data usability summary report (DUSR) for each indoor air/sub-slab vapor sampling event. The DUSRs were presented in these previous reports and are available upon request:

- the DUSR for the April 2006 analytical results was included with the June 9, 2006 letter report (BBL, 2006)
- the DUSR for the March 2007 analytical results was included with the July 18, 2007 *Revised Interim Vapor Mitigation Report* (ARCADIS, 2007)
- the DUSR for the November 2007 analytical results was included with the March 19, 2008 *Supplemental Interim Vapor Mitigation Report* (ARCADIS, 2008)

3.2.2 Indoor Air/Sub-Slab Soil Vapor Analytical Results

Analytical results for the April 2006, March 2007, and November 2007 sampling events are presented in Table 1 and on Figure 3. Table 1 includes the analytical results of data evaluation based on the NYSDOH matrices (Appendix A), which prescribe certain actions based on co-located indoor air and sub-slab vapor results. Screening values are provided in Table 1 for 1,1,1-trichloroethane (1,1,1-TCA; 1,000 $\mu g/m^3$), 1,1-dichloroethene (DCE; 1,000 $\mu g/m^3$), cis-1,2-DCE (1,000 $\mu g/m^3$), PCE (1,000 $\mu g/m^3$), TCE (250 $\mu g/m^3$), PCE (1,000 $\mu g/m^3$) and vinyl chloride (250 $\mu g/m^3$), above which the matrices would prescribe mitigation regardless of associated indoor air results.

Based on a comparison of the April 2006 sub-slab vapor analytical results to the screening values, SSDSs were installed at the following three initial locations:

- SV-1 (former dry well area): TCE was detected at a concentration of 1,460 EJ µg/m^3 (estimated beyond calibration range, and 2,920 EJ µg/m^3 in the duplicate sample) in sub-slab vapor, which is above the 250 µg/m^3 screening value.

- SV-4 (former plating pit area): TCE and PCE were detected at concentrations of 925 µg/m^3 and 7,040 EJ µg/m^3 (both estimated beyond calibration range) in sub-slab vapor, respectively, which are above the associated screening values of 250 µg/m^3 and 1,000 µg/m^3.

- SV-5 (Building 41): TCE was detected at a concentration of 1,170 EJ µg/m^3 (estimated beyond calibration range) in sub-slab vapor, which is above the screening values of 250 µg/m^3.

A comparison of the subsequent March and November 2007 sub-slab vapor and/or indoor air analytical data to the NYSDOH October 2006 decision matrices (Appendix A) indicated concentrations above the screening criteria of one or more COIs at several locations. These sampling locations are listed below, followed by the actions taken to address these areas, with reference to the decision matrices:

- <u>SV-6/IA-1 (former dry well area):</u> In March 2007, TCE was detected at a concentration of 55.8 E µg/m^3 (beyond calibration range) in sub-slab vapor and 0.264 µg/m^3 in indoor air (summarized in Table 1), which indicated that monitoring/mitigation was needed (Appendix A, matrix 1, box 10). These TCE analytical results were only slightly above the concentrations that fall within the no further action range (Appendix A, matrix 1, box 5, which is for sub-slab vapor concentrations below 50 µg/m^3 and indoor air concentrations below 0.25 µg/m^3).

  – <u>Action 1:</u> As proposed in the IRM Work Plan (ARCADIS, 2007), Bausch & Lomb installed an additional suction point (SV-1SC) to an existing fan (SV-1S) and conducted associated pressure field extension testing in August 2007. As shown on Figure 4, this additional suction point extended the pressure field well beyond the SV-6/IA-1 sampling location, while having no apparent adverse effects on the SSDS's performance in the former dry well area.

  – <u>Action 2:</u> One post-mitigation indoor air sample, IA-6, was collected on November 28, 2007. PCE was not detected in the March 2007 premitigation indoor air sample (<0.671 μg/m^3), but was detected in the November 2007 post-mitigation indoor air sample (20.7 μg/m^3). A conservative comparison of this indoor air result to the decision matrices, paired with the highest observed sub-slab vapor concentration of PCE in this area (20.3 μg/m^3 at SV-6 in March 2007), indicated that measures should be taken to identify source(s) and reduce exposures (Appendix A, matrix 2, box 2, which is for sub-slab concentrations below 100 μg/m^3 and indoor air concentrations between 3 and 30 μg/m^3). However, mitigation is ongoing in this area and the available data suggest an indoor source of PCE, possibly related to the extensive remodeling of this area that was observed at the time of sampling.

- <u>SV-11 (Applied Coatings, south of former plating pit area):</u> In March 2007, PCE and TCE were detected in sub-slab vapor at concentrations of 372 EJ μg/m^3 (estimated concentration beyond calibration range) and 27.4 μg/m^3, respectively (summarized in Table 1). In indoor air at IA-4, PCE and TCE were detected at concentrations of 1.22 μg/m^3 and 0.307 μg/m^3, respectively. Comparison to the matrices (Appendix A) indicated that monitoring was needed at this location based on PCE concentrations (matrix 2, box 5). The sub-slab vapor analytical result for PCE was above that needed to fall into the no further action range (Appendix A, matrix 2, box 1, which is for sub-slab concentrations below 100 μg/m^3 and indoor air concentrations below 3 μg/m^3). The TCE indoor air and sub-slab vapor results were slightly above the concentration needed for no further action (Appendix A, matrix 1, box 5, which is for sub-slab vapor concentrations below 50 μg/m^3 and indoor air concentrations below 0.25 μg/m^3).

  – <u>Action 1:</u> As proposed in the IRM Work Plan (ARCADIS, 2007), Bausch & Lomb installed another suction point (SV-4SA) to an existing fan (SV-4S) and conducted associated pressure field extension testing in August 2007. Based on the pressure field extension results (Figure 5), the additional suction point extended the pressure field beyond SV-11, while having no apparent adverse effects on the system's performance in the former plating pit area.

  – <u>Action 2:</u> One post-mitigation indoor air sample was collected in November 2007, which showed a decrease in concentrations of PCE and TCE to below the detection limit (from 1.22 μg/m^3 to <0.671 μg/m^3 for PCE and from 0.307 μg/m^3 to <0.250 μg/m^3 for TCE).

- SV-13 / IA-5 location (former wastewater treatment area): In March 2007, TCE was detected at a concentration of 17.1 $\mu g/m^3$ in sub-slab vapor and not detected in indoor air (detection limit of 0.488 $\mu g/m^3$) (summarized in Table 1), which indicates that no further action or monitoring is needed (Appendix A, matrix 1, box 5 or 6), dependent on how the detection limit was used. PCE was detected at concentrations of 62 $\mu g/m^3$ in sub-slab vapor and 1.33 $\mu g/m^3$ in indoor air, indicating that no further action is needed (Appendix A, matrix 2, box 1, which is for sub-slab concentrations below 100 $\mu g/m^3$ and indoor air concentrations below 3 $\mu g/m^3$).

  – Action 1: Given the relatively low concentrations of COIs at these locations and unoccupied status of this area, Bausch & Lomb initially proposed no further action for these locations. However, as per the NYSDEC's August 7, 2007 conditional approval letter, co-located indoor air/sub-slab vapor samples were collected in November 2007. PCE was detected at concentrations of 3 $\mu g/m^3$ and 196 EJ $\mu g/m^3$ (estimated beyond calibration range) for indoor air and sub-slab vapor, respectively (summarized in Table 1). Comparison to the matrices indicated that monitoring/mitigation was needed (Appendix A 1, matrix 2, box 6, which is for sub-slab concentrations between 100 and 1,000 $\mu g/m^3$ and indoor air concentrations between 3 to 30 $\mu g/m^3$).

  – Action 2: Based on the November 2007 sampling results and plans for future occupancy of this area, an additional SSDS (SV-13) was installed and pressure field extension testing was conducted (Figure 6).

No further action was proposed for the SV-9/IA-3 location, because based on comparison to the matrices, the low concentrations observed of 1,1,1-TCA (8.21 $\mu g/m^3$), PCE (1.96 $\mu g/m^3$) and TCE (0.522 $\mu g/m^3$) indicated that no further action or monitoring was needed (Appendix A, matrix 2, box 1 for 1,1,1-TCA and PCE, and matrix 1, box 1 for TCE). No further action was proposed for sampling locations SV-7 and SV-8 (former dry well area) or from SV-10 and SV-12 (former plating pit area), because the potential sources have been identified and mitigation is ongoing in these areas.

4. Documentation

This section presents additional information that is required by the Draft DER-10 and/or the IRM Work Plan (ARCADIS, 2007), including:

- Analytical results used to determine the SSDS locations are presented in Section 3. Historical soil and groundwater analytical results were used to select five initial sub-slab vapor sampling locations. Based on these results, three sampling locations (SV-1 [former dry well area], SV-4 [former plating pit area] and SV-5 [Building 41]) were identified with TCE concentrations greater than 250 µg/m3 in sub-slab vapor, which is NYSDOH's criterion over which "mitigation" is required, regardless of co-located indoor air sample results (which were not available in April 2006, since this sampling was limited to sub-slab vapor samples). System additions were made in August 2007 and February 2008, based on indoor air and/or sub-slab vapor analytical results from sampling conducted in March 2007 and November 2007.

- No wastes were generated as a result of the remedial activities.

- The layout of the SSDS exhaust and suction points, and a typical system profile are provided in this IRM FER on Figures 1 and 7.

- P.E. Certification: A certification by an ARCADIS Professional Engineer (P.E.) is provided in Section 6 of this IRM FER.

- The *Annual Report* for the existing Groundwater Collection and Treatment System (GWCTS) includes a certification that the on-site institutional controls remain in place, and discusses the need (or lack thereof) for institutional controls in the off-site area where VOCs are present in groundwater. As requested by the NYSDEC, beginning with the 2007 *Annual Report*, this annual certification was amended to certify that on-site engineering controls (i.e., the SSDSs) remain in place, are performing properly and remain effective. The information to be included in future annual reports is listed in the OM&M Manual (Appendix C).

- The institutional control certified in the *Annual Report* is a deed restriction that was filed for the site as part of the ROD (NYSDEC, 1998a) and prevents residential use of the property.

5. Summary and Conclusions

The RA activities covered in this IRM FER include the installation of SSDSs in four areas of the site:

- Building 40, former dry well area: SV-1N (with suction points SV-1NA, SV-1NB and exhaust point SV-1NX) and SV-1S (with suction points SV-1SA, SV-1SB, SV-1SC and exhaust point SV-1SX)

- Building 40, former plating pit area: SV-4N (with suction point SV-4N and exhaust point SV-4NX) and SV-4S (with suction points SV-4S and SV-4SA and exhaust point SV-4SX)

- Building 40, former wastewater treatment area: SV-13 (with suction point SV-13 and exhaust point SV-13X)

- Building 41: SV-5 (with suction point SV-5 and exhaust point SV-5X)

These areas were initially identified as having sub-slab soil and/or groundwater with COIs relevant to the potential vapor intrusion pathway present at relatively elevated concentrations, based on a review of extensive historical sub-slab soil and groundwater analytical data acquired during Phase II/Supplemental ESA investigations.

The need for SSDS modifications was identified and implemented based on subsequent sub-slab vapor and/or indoor air analytical data. To expedite an evaluation of whether vapor intrusion may be occurring at the site, sub-slab vapor samples were initially collected at five sampling locations in April 2006. These analytical results showed that regardless of what indoor air TCE concentrations may be present in three areas, that mitigation would be required. Accordingly, an IRM Work Plan was submitted to NYSDEC in October 2006 and SSDSs were installed in these areas in late 2006. Co-located indoor air and sub-slab vapor sampling was conducted in March 2007. Modifications to the SSDSs were made in August 2007 based on these analytical results, and post-mitigation samples were collected in November 2007. Since the analytical results indicated monitoring was required near SV-13, Bausch & Lomb elected to install an additional SSDS in this area in February 2008.

Through this iterative sampling and RA approach, the areas beneath Buildings 40 and 41 most likely contributing VOCs to sub-slab vapors were initially addressed, and subsequent SSDS refinements have resulted in sub-slab depressurization of each of these areas, as demonstrated by the pressure field extension tests.

As stated in the NYSDOH Guidance, “mitigation is considered to be an interim measure to address exposures until contaminated environmental media are remediated, or until mitigation is no longer needed to address exposures related to soil vapor intrusion.” Because the SSDSs are not meant to remediate the sub-slab media, we anticipate that the systems will continue to operate until such time as remediation is conducted or further investigation shows it is not necessary, or there is a change in land use. The OM&M Plan (Appendix C) provides the requirements for the ongoing operation, maintenance and annual inspections of the SSDSs. The SSDSs will continue to operate under the OM&M Plan until further notice.

6. Certification

I certify that I am a qualified engineer who has received a baccalaureate or post-graduate degree in engineering, and have sufficient experience in engineering and related fields, as demonstrated by state registration and completion of accredited university courses, that allows me to make sound professional engineering judgments. I further certify the following:

- This IRM FER was prepared by me or by a subordinate working under my direction.

- The analytical data demonstrate that remediation requirements have been or will be achieved in accordance with the approved remedial program.

- The RA activities described in this report have been performed in accordance with the IRM Work Plan (ARCADIS, 2007) and any subsequent changes as agreed to and approved by the NYSDEC.

STATE OF NEW YORK ★ JOSEPH MOLINA III ★ 072644 ★ LICENSED PROFESSIONAL ENGINEER

New York State Licensed Professional Engineer #072644	8/6/08 Date

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7. References

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TABLES

Table 1. Summary of Sub-Slab Soil Vapor and Indoor Air Analytical Results, Bausch & Lomb, Former Frame Center, Rochester, New York

Area:	**Sub-Slab Vapor Screening Criteria**	**Ambient Air**		**Applied Coatings**	**Building 41**	**Former Dry Well Area**							
Sample ID:		**AA-1**	**AA-2**	**SV-2**	**SV-5**	**SV-1**	**SV-1 (DUP)**	**IA-1**	**IA-6**	**SV-6**	**IA-2**	**SV-7**	**SV-8**
Related Indoor Air Sample ID:		**--**	**--**	**NA**	**NA**	**NA**	**NA**	**--**	**--**	**IA-1**	**--**	**IA-2**	**IA-2**
Air Sample Type:		**Ambient**	**Ambient**	**Sub-Slab**	**Sub-Slab**	**Sub-Slab**	**Sub-Slab**	**Indoor**	**Indoor**	**Sub-Slab**	**Indoor**	**Sub-Slab**	**Sub-Slab**
Sample Date:	**ug/m^3**	**3/13/2007**	**11/28/2007**	**4/7/2006**	**4/6/2006**	**4/7/2006**	**4/7/2006**	**3/13/2007**	**11/28/2007**	**3/13/2007**	**3/13/2007**	**3/13/2007**	**3/13/2007**
1,1,1-Trichloroethane	1,000 [2]	0.537 U	0.539 U	10.8 U	10.8 U	10.3 U	10.3 U	0.540 U	0.540 U	**2.27**	1.98 U	**1.84**	1.70 U
1,1-Dichloroethane	--	0.399 U	0.400 U	8.02 U	8.02 U	**589 E J**	**1,310 E J**	0.401 U	0.401 U	0.918 U	1.47 U	0.400 U	1.26 U
1,1-Dichloroethene	1,000 [2]	0.391 U	0.392 U	7.85 U	7.85 U	**942 E J**	**1,810 E J**	0.393 U	0.393 U	0.899 U	1.44 U	0.392 U	1.24 U
1,2,4-Trimethylbenzene	--	**1.17 J**	0.490 U	**31.4**	9.82 U	**33.9 J**	**63.3 J**	**1.28**	**0.618**	**12.6 J**	**3.98**	**4.25**	**9.77**
2-Butanone	--	**0.695 J**	1.47 U	**33.9**	5.89 U	5.6 U	5.6 U	**2.23**	1.96 E J	0.674 U	**10.2 J**	**2.52**	**2.87**
2-Hexanone	--	0.407 U	2.04 U	8.18 U	8.18 U	7.77 U	7.77 U	0.409 U	2.04 U	**3.96**	**3.72 J**	**2.32**	1.29 U
Acetone	--	**9.32 J**	27.5 U	**174**	48.4 U	194 U	122 U	**9.47**	40.1 U	**19.7**	**51.5 E J**	**26.8 E J**	**135 E J**
Benzene	--	**0.348 J**	**0.488**	**103**	**59**	**202 J**	**488 E J**	**0.654 J**	**0.759**	**1.49**	1.17 U	**0.405**	**3.13**
Carbon Disulfide	--	1.11 U	1.55 U	**21.3**	6.22 U	**15.8 J**	**30.6 J**	0.311 U	1.82 U	1.77 U	1.45 U	0.32 U	1.5 U
Chloroethane	--	0.260 U	1.31 U	5.24 U	5.24 U	4.97 U	4.97 U	0.262 U	1.31 U	0.599 U	0.961 U	0.261 U	0.825 U
Chloroform	--	0.480 U	0.482 U	**15.1**	9.65 U	9.17 U	9.17 U	0.483 U	0.483 U	1.11 U	1.77 U	0.482 U	1.52 U
cis-1,2-Dichloroethene	1,000 [2]	0.391 U	0.392 U	7.85 U	7.85 U	**9,420 E J**	**21,100 E J**	0.393 U	**0.452**	**5.18**	1.44 U	0.392 U	1.24 U
Freon 113	--	0.757 U	0.759 U	**55.8**	**81,400 E J**	14.5 U	14.5 U	0.761 U	**0.776**	1.74 U	2.79 U	0.759 U	2.40 U
Methylene Chloride	--	1.71 U	3.03 U	34.4 U	34.4 U	**79.7 J**	32.7 U J	1.72 U	6.25 U	3.92 U	6.29 U	1.71 U	5.39 U
Tetrachloroethene	1,000 [2]	0.667 U	0.669 U	13.4 U	13.4 U	12.7 U	12.7 U	0.671 U	***20.7***	**20.3**	2.46 U	0.669 U	**5.31**
Toluene	--	**0.685 J**	**0.418**	**284**	**105**	**374 J**	**839 E J**	**2.08**	**3.43**	**174 E J**	**3.04 J**	**8.77**	**123 E J**
trans-1,2-Dichloroethene	--	0.391 U	0.392 U	7.85 U	7.85 U	**1,400 E J**	**3,040 E J**	0.393 U	0.393 U	0.899 U	1.44 U	0.392 U	1.24 U
Trichloroethene	250 [1]	0.249 U	0.249 U	5 U	**1,170 E J**	**1,460 E J**	**2,920 E J**	**0.264**	**1.15**	**55.8 E***	0.915 U	***0.824 ****	***2.81 ****
Vinyl Chloride	250 [1]	0.252 U	0.253 U	5.07 U	5.07 U	4.82 U	4.82 U	0.254 U	0.254 U	0.581 U	0.931 U	0.253 U	0.799 U

See Notes on Page 3.

Table 1. Summary of Sub-Slab Soil Vapor and Indoor Air Analytical Results, Bausch & Lomb, Former Frame Center, Rochester, New York

Area:	**Sub-Slab Vapor Screening Criteria**	**Former Plating Pit Area**								**Former Wastewater Treatment Area**				
Sample ID:		**SV-4**	**IA-4**	**IA-11**	**SV-10**	**SV-11**	**SV-12**	**IA-3**	**SV-9**	**IA-5**	**IA-13**	**SV-3**	**SV-13**	**SV-13R**
Related Indoor Air Sample ID:		**NA**	**--**	**--**	***(IA-4)***	***(IA-4)***	***(IA-4)***	**--**	**IA-3**	**--**	**--**	**NA**	**IA-5**	**IA-13**
Air Sample Type:		**Sub-Slab**	**Indoor**	**Indoor**	**Sub-Slab**	**Sub-Slab**	**Sub-Slab**	**Indoor**	**Sub-Slab**	**Indoor**	**Indoor**	**Sub-Slab**	**Sub-Slab**	**Sub-Slab**
Sample Date:	**ug/m^3**	**4/6/2006**	**3/13/2007**	**11/28/2007**	**3/13/2007**	**3/13/2007**	**3/13/2007**	**3/13/2007**	**3/13/2007**	**3/13/2007**	**11/28/2007**	**4/7/2006**	**3/13/2007**	**11/28/2007**
1,1,1-Trichloroethane	1,000 (2)	**13.9**	0.540 U	0.540 U	9.83 U	0.842 U	**4.32**	0.537 U	**8.21**	1.05 U	0.664 U	**19.2**	**2.9**	**12.0**
1,1-Dichloroethane	--	**51.7**	0.401 U	0.401 U	7.29 U	**1.89**	0.569 U	0.399 U	0.400 U	0.782 U	0.493 U	4.01 U	1.13 U	0.401 U
1,1-Dichloroethene	1,000 (2)	7.85 U	0.393 U	0.393 U	7.15 U	**16.4**	0.558 U	0.391 U	0.392 U	0.766 U	0.483 U	3.93 U	1.11 U	0.393 U
1,2,4-Trimethylbenzene	--	**69.2**	**1.72 J**	**0.864**	**10.7**	**16.0**	**36.6 E J**	**3.20**	**21.6 E J**	**3.83**	**0.952**	**12.9**	**6.23**	**48.6 E J**
2-Butanone	--	5.89 U	**2.05 J**	1.47 U	5.36 U	**7.24**	**3.59 J**	**5.04 J**	**2.68**	**3.18**	1.81 U	2.94 U	0.830 U	**30.9 E J**
2-Hexanone	--	8.18 U	**0.863**	2.04 U	7.44 U	0.638 U	0.581 U	0.407 U	0.408 U	0.798 U	2.52 U	4.09 U	1.15 U	2.04 U
Acetone	--	**115**	**55.5 E J**	**754 E J**	**47.9 J**	**218 E J**	**24.9 E J**	**93.2 E J**	**45.1 E J**	**21.8 E J**	30.4 U	74.7 U	**33.7 E J**	**129 E J**
Benzene	--	**108**	**0.699**	**0.558**	5.81 U	**2.32**	**1.66**	**0.536**	**0.995**	**0.957 J**	**0.526**	**7.82**	**1.13**	**28.9 E J**
Carbon Disulfide	--	6.22 U	0.311 U	1.55 U	5.66 U	1.27 U	0.441 U	0.507 U	0.643 U	0.606 U	1.91 U	**9.45**	4.17 U	5.00 U
Chloroethane	--	5.24 U	0.262 U	1.31 U	4.76 U	0.408 U	0.372 U	0.260 U	0.261 U	0.510 U	1.61 U	2.62 U	0.738 U	1.31 U
Chloroform	--	**95.1**	0.483 U	0.483 U	8.78 U	0.753 U	0.685 U	0.480 U	0.482 U	0.941 U	0.594 U	4.83 U	1.36 U	0.483 U
cis-1,2-Dichloroethene	1,000 (2)	**13.9**	0.393 U	0.393 U	7.15 U	0.613 U	0.558 U	0.391 U	0.392 U	0.766 U	0.483 U	3.93 U	1.11 U	0.393 U
Freon 113	--	**125,000 E J**	0.761 U	0.761 U	**705 E J**	**11,300 E J**	**1,210 E J**	0.757 U	**41.8 E J**	**2.98**	**0.959**	**386**	**129 E**	**148 E J**
Methylene Chloride	--	**41.9**	1.72 U	5.57 U	31.2 U	**3.18**	2.44 U	**1.75**	1.71 U	3.35 U	2.11 U	18.8 U	4.84 U	2.18 U
Tetrachloroethene	1,000 (2)	**7,040 E J**	**1.22**	0.671 U	12.2 U	**372 E J**	**1.32**	**2.45**	**1.96**	**1.33**	**3.00**	**114**	**62**	**196 E J**
Toluene	--	**380**	**4.89**	**2.50**	6.85 U	**55.3 E J**	**90.7 E J**	**5.08**	**40.3 E J**	**3.16**	**2.81**	**27.5**	**7.71**	**141 E J**
trans-1,2-Dichloroethene	--	7.85 U	0.393 U	**8.09**	7.15 U	**1.48**	0.558 U	0.391 U	0.392 U	0.766 U	0.483 U	3.93 U	1.11 U	0.393 U
Trichloroethene	250 (1)	**925 E J**	**0.307**	0.250 U	*4.55 U**	**27.4**	***1.82***	0.249 U	**0.522**	0.488 U	**0.436**	**21.8**	**17.1***	**32.8 E J**
Vinyl Chloride	250 (1)	5.07 U	0.254 U	0.254 U	4.62 U	0.396 U	0.360 U	***1.19 J***	*0.253 U*	0.494 U	0.312 U	2.54 U	0.715 U	0.254 U

See Notes on Page 3.

Table 1. Summary of Sub-Slab Soil Vapor and Indoor Air Analytical Results, Bausch & Lomb, Former Frame Center, Rochester, New York

Notes:

1. Results are reported in micrograms per cubic meter (ug/m^3).
2. Detected concentrations are bolded.
3. Italicized concentrations indicate steps should be taken to identify potential source(s) and to reduce exposures, based on NYSDOH criteria.
4. Shaded concentrations indicate monitoring is needed to evaluate whether concentrations have changed, based on NYSDOH criteria.
5. Detected concentrations outlined in bold are at or above the corresponding NYSDOH sub-slab vapor concentration criteria requiring "mitigation". According to the NYSDOH decision matrix, mitigation is needed to minimize current exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system, and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions.

(IA-4) Indoor air sample IA-4 is located in an area of elevated sub-slab vapor concentrations (SV-4). This sample is used for evaluation of nearby sub-slab locations, with the rationale IA-4 indoor air results would be much higher than co-located samples (if collected).

(1) Screening criteria represents the sub-slab vapor concentration at which mitigation is required regardless of the corresponding indoor air concentrations, based on Soil Vapor/Indoor Air Matrix 1 table from the New York State Department of Health's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York", October 2006. Vinyl chloride was added to Matrix 1 in June 2007.

(2) Screening criteria represents the sub-slab vapor concentration at which mitigation is required regardless of the corresponding indoor air concentrations, based on Soil Vapor/Indoor Air Matrix 2 table from the New York State Department of Health's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York", October 2006. 1,1-Dichloroethene and cis-1,2-dichloroethene were added to Matrix 2 in June 2007.

-- = Not applicable.

* Next higher action is identified as a conservative measure, due to evaluated detection limits or action identified as monitor/mitigate.

Data Qualifiers:

B = The compound was detected in an associated blank.
E = Estimated concentration; compound exceeds calibration range.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U = The compound was not detected at the indicated concentration.

Table 2. Sub-Slab Depressurization Systems Monitoring Data Summary, Bausch & Lomb, Former Frame Center, Chili, NY

Location	Date	Time	PID Background Reading (ppb)	System Discharge PID Reading (ppb)	System Pressure (negative inches of water)	Comments
Dry Well (SV-1N)	11/2/06	11:04	120	> 199,000	NA	
Dry Well (SV-1N)	11/2/06	15:20	NA	3,500	NA	
Dry Well (SV-1N)	11/3/06	11:16	44	45	2.4	
Dry Well (SV-1N)	11/6/06	10:09	240	6,836	2.3	
Dry Well (SV-1N)	11/7/06	8:23	200	1,339	2.3	
Dry Well (SV-1N)	11/21/06	10:25	130	7,182	2.0	Second suction drop to sub-slab in Eagle Freight Company area added to dry well area SV-1 fan.
Dry Well (SV-1N)	12/27/06	15:07	121	536	2.7	New suction drop installed on December 27, 2006.
Dry Well (SV-1N)	1/5/07	14:13	122	2,251	1.7	
Dry Well (SV-1N)	1/12/07	9:23	120	1,025	1.7	
Dry Well (SV-1N)	1/19/07	9:12	108	859	1.7	
Dry Well (SV-1N)	1/28/07	3:40	NA	NA	1.6	Pilot study ended, record system checks by logging manometer readings only.
Dry Well (SV-1N)	2/6/07	10:50	NA	NA	1.5	
Dry Well (SV-1N)	2/15/07	2:40	NA	NA	1.6	
Dry Well (SV-1N)	2/23/07	2:23	NA	NA	1.6	
Dry Well (SV-1N)	3/2/07	3:15	NA	NA	1.6	
Dry Well (SV-1N)	3/8/07	3:30	NA	NA	1.5	
Dry Well (SV-1N)	3/13/07	1:30	NA	NA	1.6	
Dry Well (SV-1N)	3/23/07	1:38	NA	NA	1.6	
Dry Well (SV-1N)	3/27/07	3:40	NA	NA	1.6	
Dry Well (SV-1N)	4/3/07	2:53	NA	NA	1.6	
Dry Well (SV-1N)	4/12/07	4:00	NA	NA	1.5	
Dry Well (SV-1N)	4/20/07	1:45	NA	NA	1.6	
Dry Well (SV-1N)	4/26/07	3:10	NA	NA	1.6	
Dry Well (SV-1N)	5/4/07	2:37	NA	NA	1.6	
Dry Well (SV-1N)	5/10/07	3:03	NA	NA	1.6	
Dry Well (SV-1N)	5/18/07	1:10	NA	NA	1.6	
Dry Well (SV-1N)	5/24/07	3:30	NA	NA	1.5	
Dry Well (SV-1N)	5/29/07	3:10	NA	NA	1.5	
Dry Well (SV-1N)	6/8/07	3:00	NA	NA	1.6	
Dry Well (SV-1N)	6/13/07	10:05	NA	NA	1.6	
Dry Well (SV-1N)	6/20/07	8:40	NA	NA	1.6	
Dry Well (SV-1N)	6/27/07	3:10	NA	NA	1.6	
Dry Well (SV-1N)	7/5/07	2:00	NA	NA	1.6	
Dry Well (SV-1N)	7/12/07	12:30	NA	NA	1.6	
Dry Well (SV-1N)	7/18/07	3:17	NA	NA	1.5	
Dry Well (SV-1N)	7/27/07	2:50	NA	NA	1.6	
Dry Well (SV-1N)	7/31/07	3:25	NA	NA	1.6	
Dry Well (SV-1N)	8/8/07	3:28	NA	NA	1.6	
Dry Well (SV-1N)	8/20/07	2:40	NA	NA	1.6	

See Notes on Page 6.

Table 2. Sub-Slab Depressurization Systems Monitoring Data Summary, Bausch & Lomb, Former Frame Center, Chili, NY

Location	Date	Time	PID Background Reading (ppb)	System Discharge PID Reading (ppb)	System Pressure (negative inches of water)	Comments
Dry Well (SV-1N)	8/24/07	8:36	NA	NA	1.6	
Dry Well (SV-1N)	8/28/07	3:01	NA	NA	1.6	
Dry Well (SV-1S)	11/17/06	10:25	176	134	2.4	
Dry Well (SV-1S)	11/20/06	11:58	226	182	2.4	
Dry Well (SV-1S)	11/28/06	15:02	234	>199,000	2.0	PID Reading at manometer tube port; PID reading at sampling port was only 600 ppb.
Dry Well (SV-1S)	12/6/06	12:55	155	50,400	3.6	
Dry Well (SV-1S)	12/13/06	15:20	169	8,178	3.7	
Dry Well (SV-1S)	12/21/06	14:00	170	6,200	3.7	Original system.
Dry Well (SV-1S)	12/27/06	12:52	121	191	3.7	
Dry Well (SV-1S)	1/5/07	14:07	122	34,200	3.7	
Dry Well (SV-1S)	1/12/07	9:26	120	120,000	3.7	Initial PID reading from line to dry well via drain pipe; re-read at 43,000 ppb.
Dry Well (SV-1S)	1/19/07	9:15	108	138,000	3.7	
Dry Well (SV-1S)	1/28/07	3:40	NA	NA	3.7	Pilot study ended, record system checks by logging manometer readings only.
Dry Well (SV-1S)	2/6/07	10:50	NA	NA	3.8	
Dry Well (SV-1S)	2/15/07	2:40	NA	NA	3.8	
Dry Well (SV-1S)	2/23/07	2:23	NA	NA	3.8	
Dry Well (SV-1S)	3/2/07	3:15	NA	NA	3.8	
Dry Well (SV-1S)	3/8/07	3:30	NA	NA	3.7	
Dry Well (SV-1S)	3/13/07	1:30	NA	NA	3.6	
Dry Well (SV-1S)	3/23/07	1:38	NA	NA	3.6	
Dry Well (SV-1S)	3/27/07	3:40	NA	NA	3.7	
Dry Well (SV-1S)	4/3/07	2:53	NA	NA	3.7	
Dry Well (SV-1S)	4/12/07	4:00	NA	NA	3.6	
Dry Well (SV-1S)	4/20/07	1:45	NA	NA	3.6	
Dry Well (SV-1S)	4/26/07	3:10	NA	NA	3.6	
Dry Well (SV-1S)	5/4/07	2:37	NA	NA	3.6	
Dry Well (SV-1S)	5/10/07	3:03	NA	NA	3.6	
Dry Well (SV-1S)	5/18/07	1:10	NA	NA	3.6	
Dry Well (SV-1S)	5/24/07	3:30	NA	NA	3.6	
Dry Well (SV-1S)	5/29/07	3:10	NA	NA	3.6	
Dry Well (SV-1S)	6/8/07	3:00	NA	NA	3.5	
Dry Well (SV-1S)	6/13/07	10:05	NA	NA	3.6	
Dry Well (SV-1S)	6/20/07	8:40	NA	NA	3.6	
Dry Well (SV-1S)	6/27/07	3:10	NA	NA	3.6	
Dry Well (SV-1S)	7/5/07	2:00	NA	NA	3.5	
Dry Well (SV-1S)	7/12/07	12:30	NA	NA	3.6	
Dry Well (SV-1S)	7/18/07	3:17	NA	NA	3.5	
Dry Well (SV-1S)	7/27/07	2:50	NA	NA	3.5	
Dry Well (SV-1S)	7/31/07	3:25	NA	NA	3.5	
Dry Well (SV-1S)	8/8/07	3:28	NA	NA	3.5	
Dry Well (SV-1S)	8/20/07	2:40	NA	NA	3.5	

See Notes on Page 6.

Table 2. Sub-Slab Depressurization Systems Monitoring Data Summary, Bausch & Lomb, Former Frame Center, Chili, NY

Location	Date	Time	PID Background Reading (ppb)	System Discharge PID Reading (ppb)	System Pressure (negative inches of water)	Comments
Dry Well (SV-1S)	8/24/07	8:36	NA	NA	3.2	New suction cavity added.
Dry Well (SV-1S)	8/28/07	3:01	NA	NA	3.2	New suction cavity added and operating.
Plating North (SV-4N)	11/2/06	11:30	155	> 199,000	NA	
Plating North (SV-4N)	11/2/06	15:36	NA	3,750	NA	
Plating North (SV-4N)	11/3/06	11:30	142	> 199,000	NA	
Plating North (SV-4N)	11/6/06	15:51	247	2,103	NA	
Plating North (SV-4N)	11/7/06	9:50	227	258	2.0	
Plating North (SV-4N)	11/17/06	10:13	171	200	2.5	
Plating North (SV-4N)	11/20/06	11:28	210	205	3.4	
Plating North (SV-4N)	11/28/06	14:51	212	856	2.4	PID reading at manometer tube port; PID reading was only 239 ppb at sampling port.
Plating North (SV-4N)	12/6/06	12:50	182	154	2.2	
Plating North (SV-4N)	12/13/06	15:10	157	179	3.2	
Plating North (SV-4N)	12/21/06	14:34	168	10,500	2.3	
Plating North (SV-4N)	12/27/06	12:59	135	172	2.2	
Plating North (SV-4N)	1/5/07	14:17	148	201	2.3	
Plating North (SV-4N)	1/12/07	9:40	173	427	3.2	
Plating North (SV-4N)	1/19/07	9:35	118	5,478	2.1	
Plating North (SV-4N)	1/28/07	3:40	NA	NA	2.0	Pilot study ended, record system checks by logging manometer readings only.
Plating North (SV-4N)	2/6/07	10:50	NA	NA	2.8	
Plating North (SV-4N)	2/15/07	2:40	NA	NA	1.8	
Plating North (SV-4N)	2/23/07	2:23	NA	NA	1.9	
Plating North (SV-4N)	3/2/07	3:15	NA	NA	1.8	
Plating North (SV-4N)	3/8/07	3:30	NA	NA	1.8	
Plating North (SV-4N)	3/13/07	1:30	NA	NA	2.0	
Plating North (SV-4N)	3/23/07	1:38	NA	NA	1.9	
Plating North (SV-4N)	3/27/07	3:40	NA	NA	2.3	
Plating North (SV-4N)	4/3/07	2:53	NA	NA	2.3	
Plating North (SV-4N)	4/12/07	4:00	NA	NA	2.2	
Plating North (SV-4N)	4/20/07	1:45	NA	NA	2.3	
Plating North (SV-4N)	4/26/07	3:10	NA	NA	2.3	
Plating North (SV-4N)	5/4/07	2:37	NA	NA	2.3	
Plating North (SV-4N)	5/10/07	3:03	NA	NA	2.4	
Plating North (SV-4N)	5/18/07	1:10	NA	NA	2.3	
Plating North (SV-4N)	5/24/07	3:30	NA	NA	2.4	
Plating North (SV-4N)	5/29/07	3:10	NA	NA	2.4	
Plating North (SV-4N)	6/8/07	3:00	NA	NA	2.4	
Plating North (SV-4N)	6/13/07	10:05	NA	NA	2.5	
Plating North (SV-4N)	6/20/07	8:40	NA	NA	2.5	
Plating North (SV-4N)	6/27/07	3:10	NA	NA	2.5	
Plating North (SV-4N)	7/5/07	2:00	NA	NA	2.5	
Plating North (SV-4N)	7/12/07	12:30	NA	NA	2.5	

See Notes on Page 6.

Table 2. Sub-Slab Depressurization Systems Monitoring Data Summary, Bausch & Lomb, Former Frame Center, Chili, NY

Location	Date	Time	PID Background Reading (ppb)	System Discharge PID Reading (ppb)	System Pressure (negative inches of water)	Comments
Plating North (SV-4N)	7/18/07	3:17	NA	NA	2.5	
Plating North (SV-4N)	7/27/07	2:50	NA	NA	2.5	
Plating North (SV-4N)	7/31/07	3:25	NA	NA	2.5	
Plating North (SV-4N)	8/8/07	3:28	NA	NA	2.5	
Plating North (SV-4N)	8/20/07	2:40	NA	NA	2.5	
Plating North (SV-4N)	8/24/07	8:36	NA	NA	2.5	
Plating North (SV-4N)	8/28/07	3:01	NA	NA	1.6	
Plating South (SV-4S)	11/2/06	11:20	155	1,380	NA	
Plating South (SV-4S)	11/2/06	15:36	NA	655	NA	
Plating South (SV-4S)	11/3/06	11:30	142	8,500	NA	
Plating South (SV-4S)	11/6/06	15:47	247	1,704	NA	
Plating South (SV-4S)	11/7/06	9:56	227	320	3.9	
Plating South (SV-4S)	11/17/06	10:18	171	227	4.0	
Plating South (SV-4S)	11/20/06	11:25	210	212	4.0	
Plating South (SV-4S)	11/28/06	14:58	212	630	3.8	PID reading at manometer tube port; PID reading was only 250 ppb at sampling port.
Plating South (SV-4S)	12/6/06	12:48	182	370	3.9	
Plating South (SV-4S)	12/13/06	15:05	157	274	3.9	
Plating South (SV-4S)	12/21/06	14:44	168	471	3.9	
Plating South (SV-4S)	12/27/06	13:05	135	135	3.9	
Plating South (SV-4S)	1/5/07	14:16	148	408	3.8	
Plating South (SV-4S)	1/12/07	9:44	173	417	3.9	
Plating South (SV-4S)	1/19/07	9:32	118	419	4.0	
Plating South (SV-4S)	1/28/07	3:40	NA	NA	4.0	Pilot study ended, record system checks by logging manometer readings only.
Plating South (SV-4S)	2/6/07	10:50	NA	NA	>4.0	
Plating South (SV-4S)	2/15/07	2:40	NA	NA	4.0	
Plating South (SV-4S)	2/23/07	2:23	NA	NA	4.0	
Plating South (SV-4S)	3/2/07	3:15	NA	NA	4.0	
Plating South (SV-4S)	3/8/07	3:30	NA	NA	4.0	
Plating South (SV-4S)	3/13/07	1:30	NA	NA	3.8	
Plating South (SV-4S)	3/23/07	1:38	NA	NA	3.7	
Plating South (SV-4S)	3/27/07	3:40	NA	NA	3.7	
Plating South (SV-4S)	4/3/07	2:53	NA	NA	3.8	
Plating South (SV-4S)	4/12/07	4:00	NA	NA	3.8	
Plating South (SV-4S)	4/20/07	1:45	NA	NA	3.7	
Plating South (SV-4S)	4/26/07	3:10	NA	NA	3.8	
Plating South (SV-4S)	5/4/07	2:37	NA	NA	3.8	
Plating South (SV-4S)	5/10/07	3:03	NA	NA	3.7	
Plating South (SV-4S)	5/18/07	1:10	NA	NA	3.8	
Plating South (SV-4S)	5/24/07	3:30	NA	NA	3.6	
Plating South (SV-4S)	5/29/07	3:10	NA	NA	3.7	
Plating South (SV-4S)	6/8/07	3:00	NA	NA	3.6	

See Notes on Page 6.

Table 2. Sub-Slab Depressurization Systems Monitoring Data Summary, Bausch & Lomb, Former Frame Center, Chili, NY

Location	Date	Time	PID Background Reading (ppb)	System Discharge PID Reading (ppb)	System Pressure (negative inches of water)	Comments
Plating South (SV-4S)	6/13/07	10:05	NA	NA	3.7	
Plating South (SV-4S)	6/20/07	8:40	NA	NA	3.8	
Plating South (SV-4S)	6/27/07	3:10	NA	NA	3.8	
Plating South (SV-4S)	7/5/07	2:00	NA	NA	3.7	
Plating South (SV-4S)	7/12/07	12:30	NA	NA	3.7	
Plating South (SV-4S)	7/18/07	3:17	NA	NA	3.6	
Plating South (SV-4S)	7/27/07	2:50	NA	NA	3.7	
Plating South (SV-4S)	7/31/07	3:25	NA	NA	3.6	
Plating South (SV-4S)	8/8/07	3:28	NA	NA	3.6	
Plating South (SV-4S)	8/20/07	2:40	NA	NA	3.6	
Plating South (SV-4S)	8/24/07	8:36	NA	NA	3.6	Suction cavity to be added this morning.
Plating South (SV-4S)	8/28/07	3:01	NA	NA	3.6	New suction cavity added and operating.
Bldg 41 (SV-5)	11/3/06	11:42	2,463	9,410	3.3	
Bldg 41 (SV-5)	11/6/06	13:55	496	6,708	3.3	
Bldg 41 (SV-5)	11/7/06	15:30	14,000 ?	95,100 ?	3.2	
Bldg 41 (SV-5)	11/17/06	12:46	270	275	3.4	
Bldg 41 (SV-5)	11/20/06	14:00	242	5,250	3.4	
Bldg 41 (SV-5)	11/28/06	15:10	296	3,700	3.4	
Bldg 41 (SV-5)	12/6/06	13:10	111	2,917	3.4	
Bldg 41 (SV-5)	12/13/06	14:55	149	680	3.2	
Bldg 41 (SV-5)	12/22/06	8:55	115	NA	0.0	System not working, fan off. Notified Mitigation Tech.
Bldg 41 (SV-5)	12/27/06	16:05	199	1,164	3.4	System restarted, GFI breaker had tripped.
Bldg 41 (SV-5)	1/5/07	14:34	220	1,252	3.3	
Bldg 41 (SV-5)	1/12/07	10:02	112	2,107	3.4	
Bldg 41 (SV-5)	1/19/07	11:44	121	1,854	3.3	
Bldg 41 (SV-5)	1/28/07	3:40	NA	NA	3.3	Pilot study ended, record system checks by logging manometer readings only.
Bldg 41 (SV-5)	2/6/07	10:50	NA	NA	3.2	
Bldg 41 (SV-5)	2/15/07	2:40	NA	NA	NA	Need snow removal to access.
Bldg 41 (SV-5)	2/23/07	2:23	NA	NA	3.7	
Bldg 41 (SV-5)	3/2/07	3:15	NA	NA	3.7	
Bldg 41 (SV-5)	3/8/07	3:30	NA	NA	3.7	
Bldg 41 (SV-5)	3/13/07	1:30	NA	NA	3.6	
Bldg 41 (SV-5)	3/23/07	1:38	NA	NA	3.6	
Bldg 41 (SV-5)	3/27/07	3:40	NA	NA	3.6	
Bldg 41 (SV-5)	4/3/07	2:53	NA	NA	3.8	
Bldg 41 (SV-5)	4/12/07	4:00	NA	NA	3.7	
Bldg 41 (SV-5)	4/19/07	2:48	NA	NA	3.4	Power out from 4/16 - not sure if unit was down, operating ok on 4/19 at 4:28 pm.
Bldg 41 (SV-5)	4/26/07	3:10	NA	NA	3.5	
Bldg 41 (SV-5)	5/4/07	2:37	NA	NA	3.6	
Bldg 41 (SV-5)	5/10/07	3:03	NA	NA	3.5	GFI breaker tripped, unit off. Reset ok.
Bldg 41 (SV-5)	5/18/07	1:10	NA	NA	3.5	

See Notes on Page 6.

Table 2. Sub-Slab Depressurization Systems Monitoring Data Summary, Bausch & Lomb, Former Frame Center, Chili, NY

Location	Date	Time	PID Background Reading (ppb)	System Discharge PID Reading (ppb)	System Pressure (negative inches of water)	Comments
Bldg 41 (SV-5)	5/24/07	3:30	NA	NA	3.5	
Bldg 41 (SV-5)	5/29/07	3:10	NA	NA	3.5	
Bldg 41 (SV-5)	6/8/07	3:00	NA	NA	3.4	
Bldg 41 (SV-5)	6/13/07	10:05	NA	NA	3.5	
Bldg 41 (SV-5)	6/20/07	8:40	NA	NA	3.5	
Bldg 41 (SV-5)	6/27/07	3:10	NA	NA	3.5	
Bldg 41 (SV-5)	7/5/07	2:00	NA	NA	3.5	
Bldg 41 (SV-5)	7/12/07	12:30	NA	NA	3.4	
Bldg 41 (SV-5)	7/18/07	3:17	NA	NA	3.5	
Bldg 41 (SV-5)	7/27/07	2:50	NA	NA	*	New tenant in storage bldg. No access to area to take reading. Heard motor from bldg exterior.
Bldg 41 (SV-5)	7/31/07	3:25	NA	NA	*	No access, new tenant. Ron from Buckingham to get reading when tenant is there.
Bldg 41 (SV-5)	8/9/07	2:24	NA	NA	3.4	New tenant onsite, had access for reading.
Bldg 41 (SV-5)	8/20/07	2:40	NA	NA	*	No access on 8/20. Fan operating from exterior check.
Bldg 41 (SV-5)	8/24/07	8:36	NA	NA	*	No access. Mit Tech to install remote manometer next week. Fan working ok.
Bldg 41 (SV-5)	8/28/07	3:01	NA	NA	*	No access, fan motor operating exterior check.

Notes:

* System motor running.

? = Meter issue (photoionization detector [PID] clogged with dust).

NA = Not Available.

ppb = parts per billion.

1. On November 21, 2006, and December 27, 2006, additional suction drops in Eagle Freight Company area were added to the former dry well area SV-1 fan.
2. On November 28, 2006, noted that PID measurements made from manometer tube port were significantly higher than from sampling port. Initial PID readings were collected through sampling port. After November 28, 2006, PID readings are from the manometer tube port.

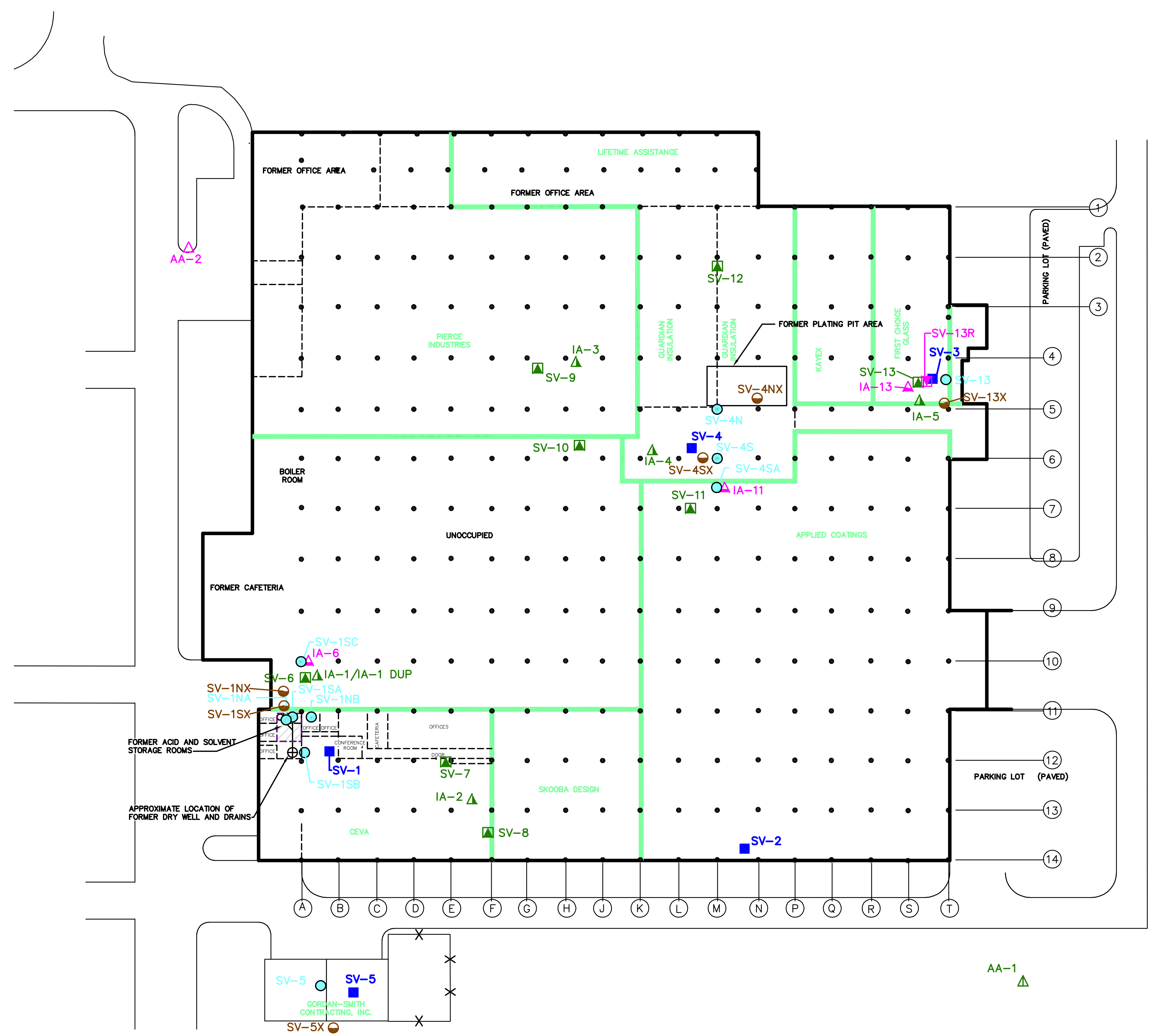
Table 3. Sub-Slab Pressure Field Extension Tests, Bausch & Lomb, Former Frame Center, Chili, NY

Sub-Slab Testing Location	Nearest System	Approximate Radial Distance from System (ft)	Sub-Slab Pressure (negative inches of water)	Comments
Former Dry Well Area				
#18	SV-1N	8	0.002	
#19	SV-1S	15	0.016	
#20	SV-1S	18	0.075	Following August 2007 installation of another drop to this fan, sub-slab pressure - 0.072 inches of water
#21	SV-1S	34	0.074	
#22	SV-1S	33	0.028	Following August 2007 installation of another drop to this fan, sub-slab pressure - 0.011 inches of water
#23	SV-1S	60	0.008	
Former Plating Pit Area				
#1	SV-4N	25	0.890	
#2	SV-4N	40	0.393	
#3	SV-4N	45	0.249	
#4	SV-4S	50	0.196	
#7	SV-4S	12	1.211	Following August 2007 installation of another drop to this fan, sub-slab pressure - 1.192 inches of water
#8	SV-4S	50	0.023	Following August 2007 installation of another drop to this fan, sub-slab pressure - 0.032 inches of water
#10	SV-4S	12	0.041	
#15	SV-4S	60	0.001	
#16	SV-4N	20	0.287	
#17	SV-4N	52	0.008	
Former Wastewater Treatment Area				
#30	SV-13	34	0.008	
#31	SV-13	28	0.022	
#32	SV-13	38	0.002	
#33	SV-13	19	0.102	
Building 41				
#11	SV-5	20	0.540	
#12	SV-5	35	0.010	
#13	SV-5	20	0.130	
#14	SV-5	45	0.004	

Note:
Test points 5, 6, and 9 were not installed.

ARCADIS

FIGURES



LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- 10 BUILDING COLUMN AND IDENTIFIER
- SV-5 APPROXIMATE SUCTION LOCATION
- SV-5X APPROXIMATE SYSTEM EXHAUST LOCATION
- SV-2 SUB-SLAB VAPOR SAMPLING LOCATION (APRIL 2006)
- AA-1 AMBIENT AIR SAMPLE LOCATION (MARCH 2007)
- SV-7 SUB-SLAB VAPOR SAMPLING LOCATION (MARCH 2007)
- IA-2 INDOOR AIR SAMPLING LOCATION (MARCH 2007)
- AA-2 AMBIENT AIR SAMPLE LOCATION (NOVEMBER 2007)
- SV-13R SUB-SLAB VAPOR SAMPLING LOCATION (NOVEMBER 2007)
- IA-6 INDOOR AIR SAMPLING LOCATION (NOVEMBER 2007)

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.
3. AMBIENT AIR SAMPLE LOCATIONS DETERMINED AT TIME OF SAMPLING BASED ON WIND DIRECTION.

0 100' 200'

GRAPHIC SCALE

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SUB-SLAB DEPRESSURIZATION SYSTEM LOCATIONS

ARCADIS

FIGURE
1

CITY:Syracuse GROUP:Env-141 DB:AMS PGL RCB PM:L. MOKRY LYR:ON=*;OFF=REF, (FRZ) ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 7/24/2008 2:19 PM BY: BASSETT, RICHARD
G:\CAD\ACT\B0034220\0000\00007\DWG\34220G05.DWG LAYOUT: 1 SAVED: 7/24/2008 2:18 PM
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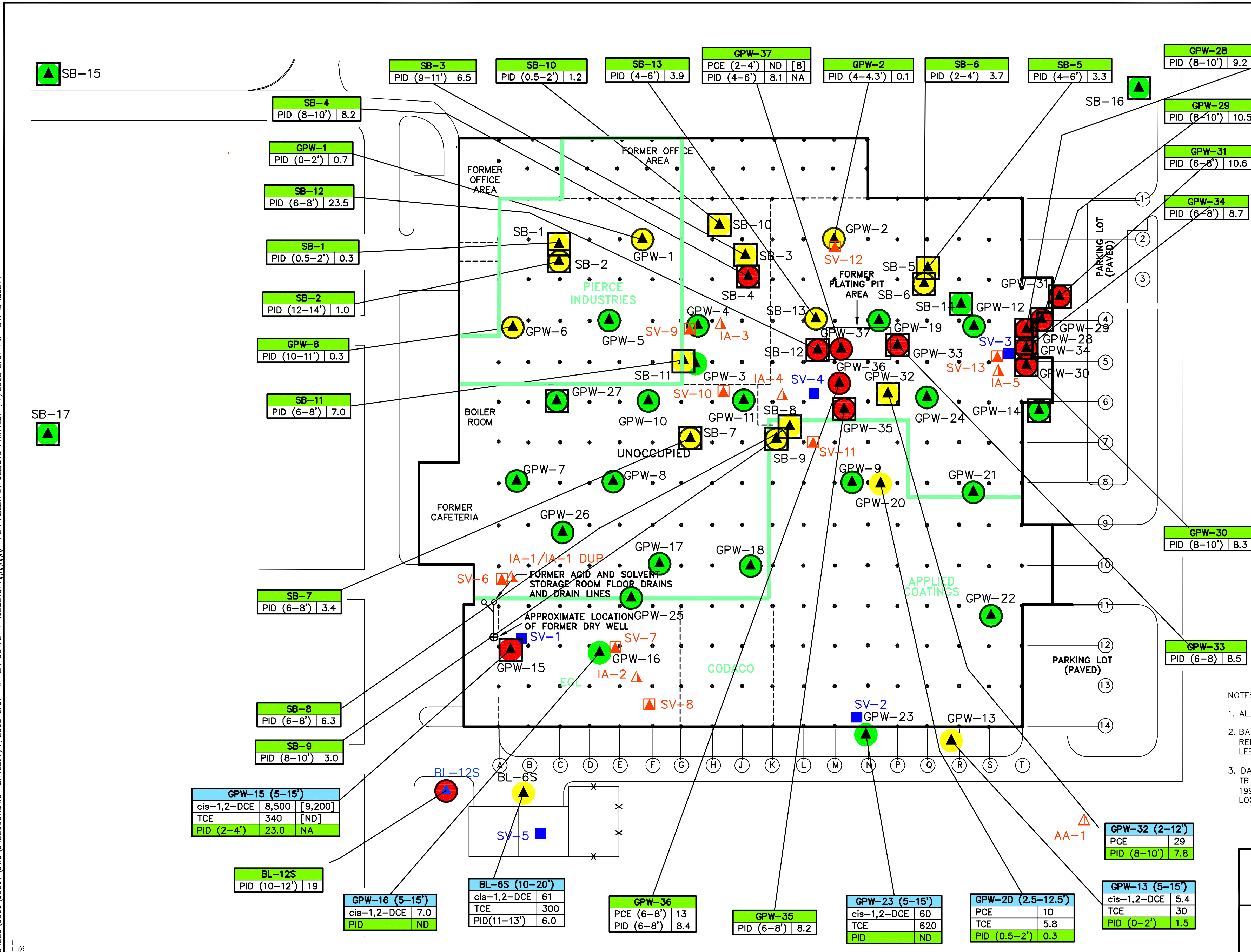

LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- (10) BUILDING COLUMN AND IDENTIFIER
- BL-6S SUBSURFACE SAMPLING LOCATIONS
- SV-3 SUB-SLAB VAPOR SAMPLING LOCATIONS (APRIL 2006)
- SV-13 SUB-SLAB SAMPLE LOCATION (MARCH 2007)
- IA-5 INDOOR AIR SAMPLE LOCATION (MARCH 2007)
- AA-1 AMBIENT AIR SAMPLE LOCATION (MARCH 2007)

SOIL SAMPLES

GPW-36		
PCE	(6-8')	13
PID	(6-8')	8.4

SOIL CONCENTRATIONS IN ug/Kg (ppb)
PID-MAXIMUM (ppm) (SEE NOTE 3)

GROUNDWATER SAMPLES

GPW-32 (2-12')	
PCE	29
PID (8-10')	7.8

SCREEN INTERVAL
GROUNDWATER CONCENTRATIONS IN ug/L (ppb)
SOIL PID-MAXIMUM (ppm) (SEE NOTE 3)

NA = NOT AVAILABLE
[ ] = DUPLICATE SAMPLE RESULTS
ND = NOT DETECTED

- GROUNDWATER SAMPLE ND FOR PCE, TCE, AND CIS-1,2-DCE
- SOIL SAMPLE ND FOR PCE, TCE, AND CIS-1,2-DCE.

PID RANGE

- GPW-19 ND
- GPW-13 >ND – 8 ppm
- GPW-30 >8 ppm

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.
3. DATA SHOWN INCLUDE DETECTIONS OF TETRACHLOROETHENE (PCE), TRICHLOROETHENE (TCE), AND CIS-1,2-DICHLOROETHENE (DCE) (BBL, 1999) AND THE MAXIMUM SOIL PID READING FOR EACH SOIL BORING LOCATION.

0 100' 200'
GRAPHIC SCALE

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SELECT DETECTIONS IN SOIL AND GROUNDWATER

ARCADIS

FIGURE
2

SYR-85-RCB AMS RCB L: ON=*, OFF=REF*
G:\CAD\ACT\B0034220\0000\00007\DWG\34220C01.DWG SAVED: 7/7/2008 2:01 PM LAYOUT: 2 PAGESETUP: ###### PENTABLE: PLTFULL.CTB PRINTED: 7/7/2008 2:01 PM BY: RBASSETT
PROJECTNAME: ----
XREFS: IMAGES:
34220X00

SV-9

CONSTITUENT	3/13/2007
1,1,1-Trichloroethane	8.21
1,2,4-Trimethylbenzene	21.6 E J
2-Butanone	2.68
Acetone	45.1 E J
Benzene	0.995
Freon 113	41.8 E J
Tetrachloroethene	1.96
Toluene	40.3 E J
Trichloroethene	0.522

IA-3

CONSTITUENT	3/13/2007
1,2,4-Trimethylbenzene	3.2
2-Butanone	5.04 J
Acetone	93.2 E J
Benzene	0.536
Methylene chloride	1.75
Tetrachloroethene	2.45
Toluene	5.08
Vinyl Chloride	1.19 J

IA-4

CONSTITUENT	3/13/2007
1,2,4-Trimethylbenzene	1.72 J
2-Butanone	2.05 J
2-Hexanone	0.863
Acetone	55.5 E J
Benzene	0.699
Tetrachloroethene	1.22
Toluene	4.89
Trichloroethene	0.307

SV-4

CONSTITUENT	4/6/2006
1,1,1-Trichloroethane	13.9
1,1-Dichloroethane	51.7
1,2,4-Trimethylbenzene	69.2
Acetone	115
Benzene	108
Chloroform	95.1
cis-1,2-Dichloroethene	13.9
Freon 113	125,000 E J
Methylene Chloride	41.9
Tetrachloroethene	7,040 E J
Toluene	380
Trichloroethene	925 E J

SV-12

CONSTITUENT	3/13/2007
1,1,1-Trichloroethane	4.32
1,2,4-Trimethylbenzene	36.6 E J
2-Butanone	3.59 J
Acetone	24.9 E J
Benzene	1.66
Freon 113	1,210 E J
Tetrachloroethene	1.32
Toluene	90.7 E J
Trichloroethene	1.82

SV-13

CONSTITUENT	3/13/2007	11/28/2007 (SV-13R)
1,1,1-Trichloroethane	2.9	12
1,2,4-Trimethylbenzene	6.23	48.6 E J
2-Butanone	ND	30.9 E J
Acetone	33.7 E J	129 E J
Benzene	1.13	28.9 E J
Freon 113	129 E	148 E J
Tetrachloroethene	62	196 E J
Toluene	7.71	141 E J
Trichloroethene	17.1	32.8 E J

SV-10

CONSTITUENT	3/13/2007
1,2,4-Trimethylbenzene	10.7
Acetone	47.9 J
Freon 113	705 E J

AA-2

CONSTITUENT	11/28/2007
Benzene	0.488
Toluene	0.418

IA-1

CONSTITUENT	3/13/2007
1,2,4-Trimethylbenzene	1.28
2-Butanone	2.23
Acetone	9.47
Benzene	0.654 J
Toluene	2.08
Trichloroethene	0.264

IA-6

CONSTITUENT	11/28/2007
1,2,4-Trimethylbenzene	0.618
2-Butanone	1.96 E J
Benzene	0.759
cis-1,2-Dichloroethene	0.452
Freon 113	0.776
Tetrachloroethene	20.7
Toluene	3.43
Trichloroethene	1.15

SV-6

CONSTITUENT	3/13/2007
1,1,1-Trichloroethane	2.27
1,2,4-Trimethylbenzene	12.6 J
cis-1,2-Dichloroethene	5.18
2-Hexanone	3.96
Acetone	19.7
Benzene	1.49
Tetrachloroethene	20.3
Toluene	174 E J
Trichloroethene	55.8 E

SV-3

CONSTITUENT	4/7/2006
1,1,1-Trichloroethane	19.2
1,2,4-Trimethylbenzene	12.9
Benzene	7.82
Carbon Disulfide	9.45
Freon 113	386
Tetrachloroethene	114
Toluene	27.5
Trichloroethene	21.8

IA-13

CONSTITUENT	11/28/2007
1,2,4-Trimethylbenzene	0.952
Benzene	0.526
Freon 113	0.959
Tetrachloroethene	3.00
Toluene	2.81
Trichloroethene	0.436

IA-5

CONSTITUENT	3/13/2007
1,2,4-Trimethylbenzene	3.83
2-Butanone	3.18
Acetone	21.8 E J
Benzene	0.957 J
Freon 113	2.98
Tetrachloroethene	1.33
Toluene	3.16

IA-11

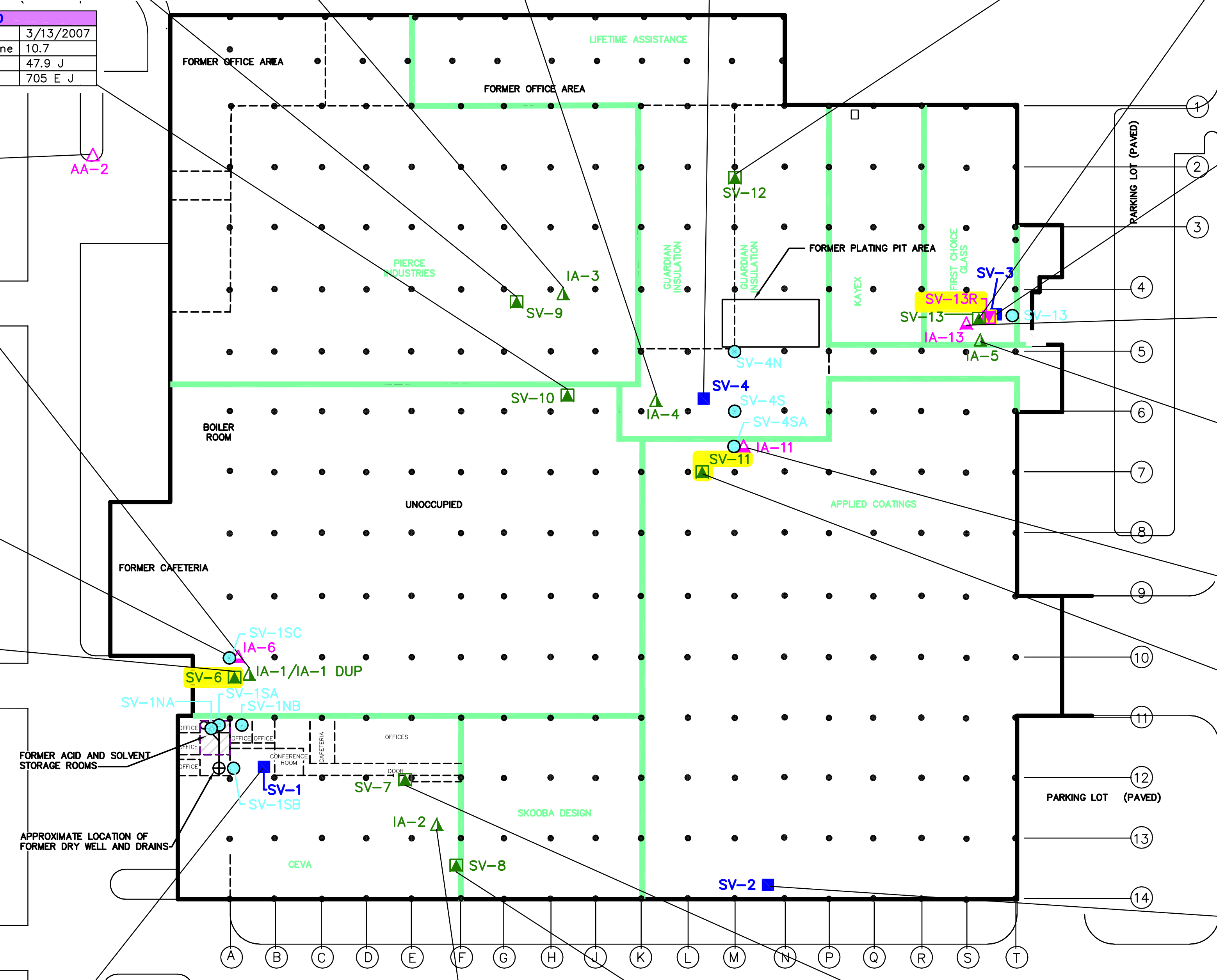
CONSTITUENT	11/28/2007
1,2,4-Trimethylbenzene	0.864
Acetone	754 E J
Benzene	0.558
Toluene	2.50
trans-1,2-Dichloroethene	8.09

SV-11

CONSTITUENT	3/13/2007
1,2,4-Trimethylbenzene	16
trans-1,2-Dichloroethene	1.48
1,1-Dichloroethane	1.89
1,1-Dichloroethene	16.4
2-Butanone	7.24
Acetone	218 E J
Benzene	2.32
Freon 113	11,300 E J
Methylene chloride	3.18
Tetrachloroethene	372 E J
Toluene	55.3 E J
Trichloroethene	27.4

SV-2

CONSTITUENT	4/7/2006
1,2,4-Trimethylbenzene	31.4
2-Butanone	33.9
Acetone	174
Benzene	103
Carbon Disulfide	21.3
Chloroform	15.1
Freon 113	55.8
Toluene	284



SV-1

CONSTITUENT	4/7/2006
1,1-Dichloroethane	589 E J
1,1-Dichloroethene	942 E J
1,2,4-Trimethylbenzene	33.9 J
Benzene	202 J
Carbon Disulfide	15.8 J
cis-1,2-Dichloroethene	9,420 E J
Methylene Chloride	79.7 J
Toluene	374 J
trans-1,2-Dichloroethene	1,400 E J
Trichloroethene	1,460 E J

SV-5

CONSTITUENT	4/6/2006
Benzene	59
Freon 113	81,400 E J
Toluene	105
Trichloroethene	1,170 E J

IA-2

CONSTITUENT	3/13/2007
1,2,4-Trimethylbenzene	3.98
2-Butanone	10.2 J
2-Hexanone	3.72 J
Acetone	51.5 E J
Toluene	3.04 J

SV-8

CONSTITUENT	3/13/2007
1,2,4-Trimethylbenzene	9.77
2-Butanone	2.87
Acetone	135 E J
Benzene	3.13
Tetrachloroethene	5.31
Toluene	123 E J
Trichloroethene	2.81

SV-7

CONSTITUENT	3/13/2007
1,1,1-Trichloroethane	1.84
1,2,4-Trimethylbenzene	4.25
2-Butanone	2.52
2-Hexanone	2.32
Acetone	26.8 E J
Benzene	0.405
Toluene	8.77
Trichloroethene	0.824

AA-1

CONSTITUENT	3/13/2007
1,2,4-Trimethylbenzene	1.17 J
2-Butanone	0.695 J
Acetone	9.32 J
Benzene	0.348 J
Toluene	0.685 J

LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- (10) BUILDING COLUMN AND IDENTIFIER
- SV-8 APPROXIMATE SYSTEM LOCATION
- SV-2 SUB-SLAB VAPOR SAMPLING LOCATION (APRIL 2006)
- SV-13 SUB-SLAB SAMPLING LOCATION (MARCH 2007)
- IA-5 INDOOR AIR SAMPLING LOCATION (MARCH 2007)
- AA-1 AMBIENT AIR SAMPLING LOCATION (MARCH 2007)
- AA-2 AMBIENT AIR SAMPLE LOCATION (NOVEMBER 2007)
- SV-13R SUB-SLAB VAPOR SAMPLING LOCATION (NOVEMBER 2007)
- IA-6 INDOOR AIR SAMPLING LOCATION (NOVEMBER 2007)
- E CONCENTRATION IS BEYOND THE CALIBRATION RANGE
- J ESTIMATED CONCENTRATION
- SAMPLING LOCATION WHERE MONITORING AND/OR MITIGATION IS REQUIRED BASED ON COMPARISON TO NYSDOH DECISION MATRICES (OCTOBER 2006).

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.

0 100' 200'
GRAPHIC SCALE

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DETECTED VOCs IN INDOOR AIR AND SUB-SLAB SOIL VAPOR

ARCADIS

FIGURE
3

CITY:Syracuse DIV/GROUP:85/Env DB:RCB AMS RCB LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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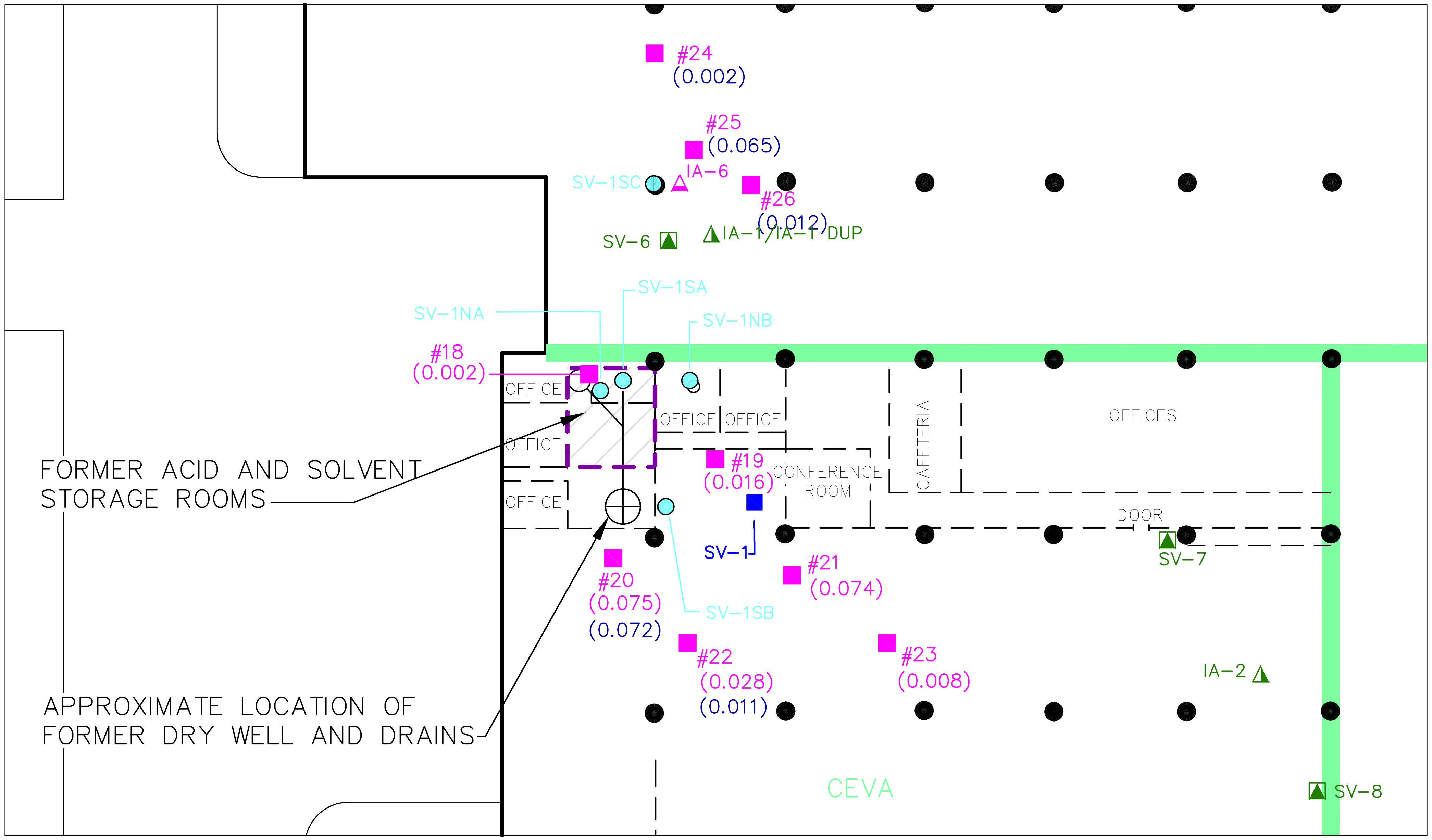
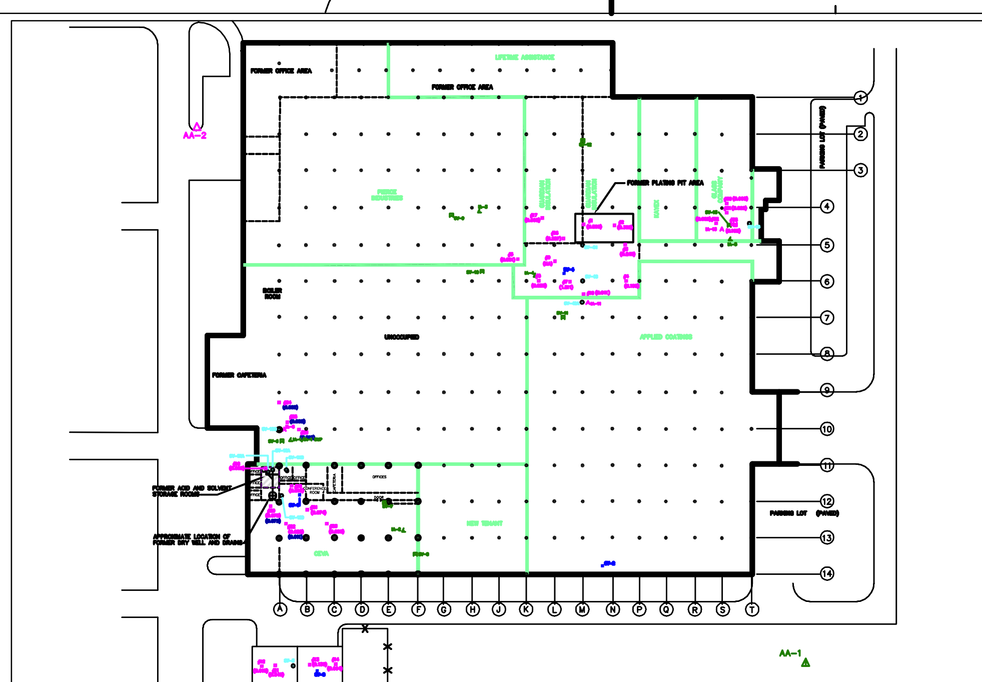
XREFS: 34220X00 34220X01 IMAGES: PROJECTNAME: ----



ENLARGEMENT FORMER DRY WELL AREA

0 30' 60'

GRAPHIC SCALE



FORMER DRY WELL AREA

NOT TO SCALE

LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- (10) BUILDING COLUMN AND IDENTIFIER
- SV-5 APPROXIMATE SYSTEM LOCATION
- SV-2 SUB-SLAB VAPOR SAMPLING LOCATION (APRIL 2006)
- SV-7 SUB-SLAB VAPOR SAMPLING LOCATION (MARCH 2007)
- 1A-2 INDOOR AIR SAMPLING LOCATION (MARCH 2007)
- IA-6 INDOOR AIR SAMPLING LOCATION (NOVEMBER 2007)
- #23 PRESSURE TEST LOCATION
- (0.074) PRESSURE (NOVEMBER 2006; NEGATIVE INCHES OF WATER)
- (0.012) PRESSURE (DECEMBER 2007; NEGATIVE INCHES OF WATER)

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.
3. DEPRESSURIZATION SYSTEMS INSTALLED IN OCTOBER–NOVEMBER, 2006. ADDITIONAL SUCTION DROPS ADDED NEAR SV-6 AND SV-11 IN AUGUST 2007. PRESSURE FIELD EXTENSION TESTS CONDUCTED IN NOVEMBER 2006, AUGUST 2007 AND DECEMBER 2007.

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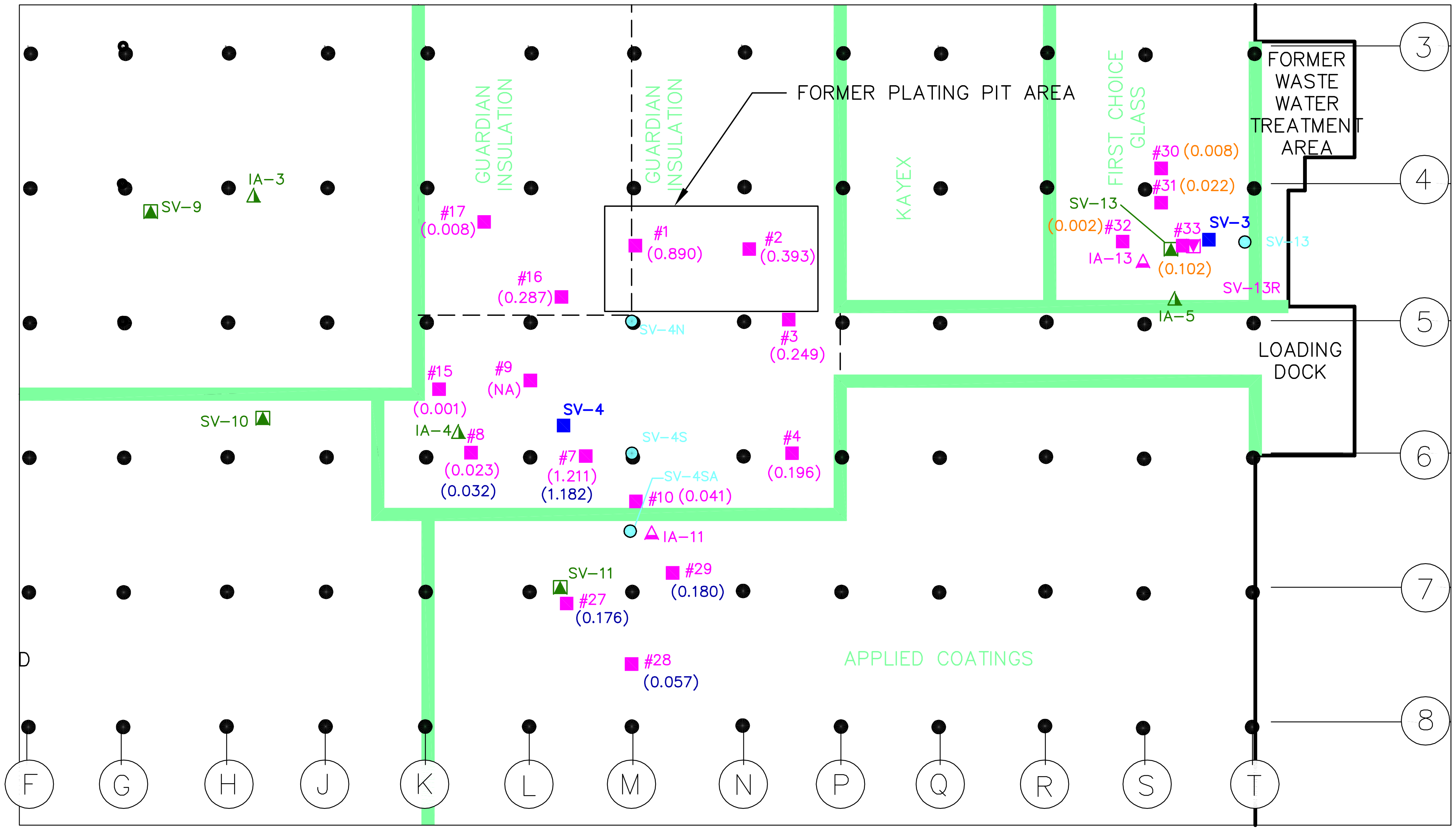
SUB-SLAB PRESSURE FIELD EXTENSION TEST RESULTS - FORMER DRY WELL AREA

ARCADIS

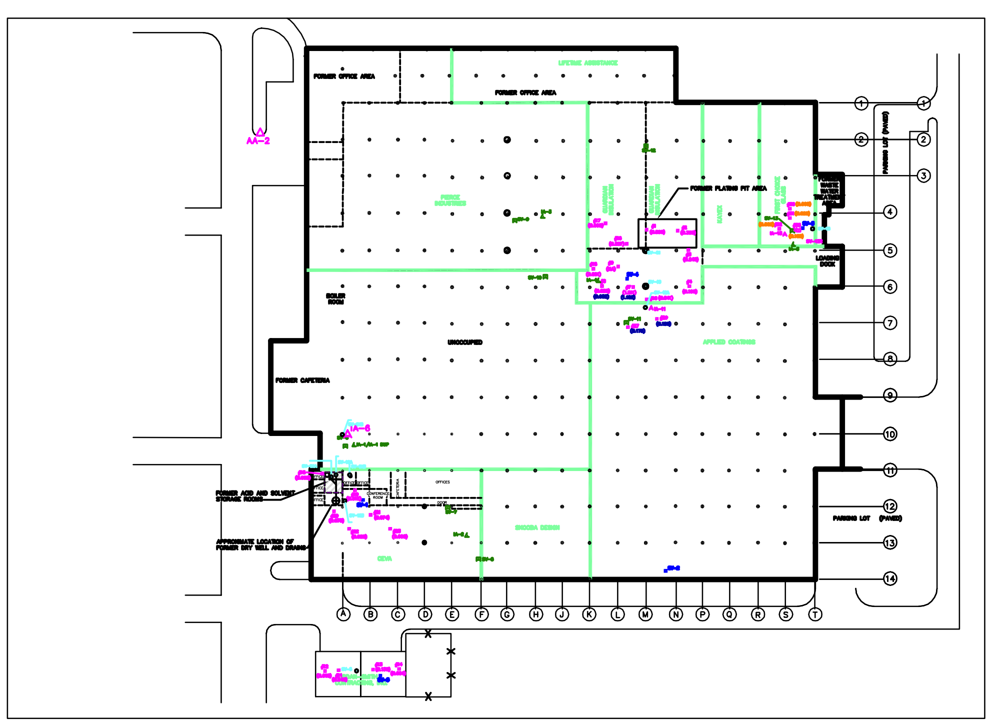
FIGURE
4



ENLARGEMENT FORMER PLATING PIT AREA

0 40' 80'

GRAPHIC SCALE



FORMER PLATING PIT AREA

NOT TO SCALE

LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- 10 BUILDING COLUMN AND IDENTIFIER
- SV-5 APPROXIMATE SYSTEM LOCATION
- SV-2 SUB-SLAB VAPOR SAMPLING LOCATION (APRIL 2006)
- SV-18 SUB-SLAB VAPOR SAMPLING LOCATION (MARCH 2007)
- IA-2 INDOOR AIR SAMPLING LOCATION (MARCH 2007)
- SV-13R SUB-SLAB VAPOR SAMPLING LOCATION (NOVEMBER 2007)
- IA-13 INDOOR AIR SAMPLING LOCATION (NOVEMBER 2007)
- #15 PRESSURE TEST LOCATION
- (0.041) PRESSURE (NOVEMBER 2006; NEGATIVE INCHES OF WATER)
- (NA) NOT AVAILABLE
- (0.057) PRESSURE (DECEMBER 2007; NEGATIVE INCHES OF WATER)
- (0.102) PRESSURE (FEBRUARY 2008; NEGATIVE INCHES OF WATER)

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.
3. DEPRESSURIZATION SYSTEMS SV-1, SV-4 AND SV-5 INSTALLED IN OCTOBER-NOVEMBER, 2006 AND SV-13 ON FEBRUARY 14, 2008. ADDITIONAL SUCTION DROPS ADDED NEAR SV-6 AND SV-11 SAMPLING LOCATIONS IN AUGUST 2007. PRESSURE FIELD EXTENSION TESTS CONDUCTED IN NOVEMBER 2006, AUGUST 2007, DECEMBER 2007, AND FEBRUARY 2008.
4. DATA FROM #9 NOT USED DUE TO LOCATION ON A SEAM.

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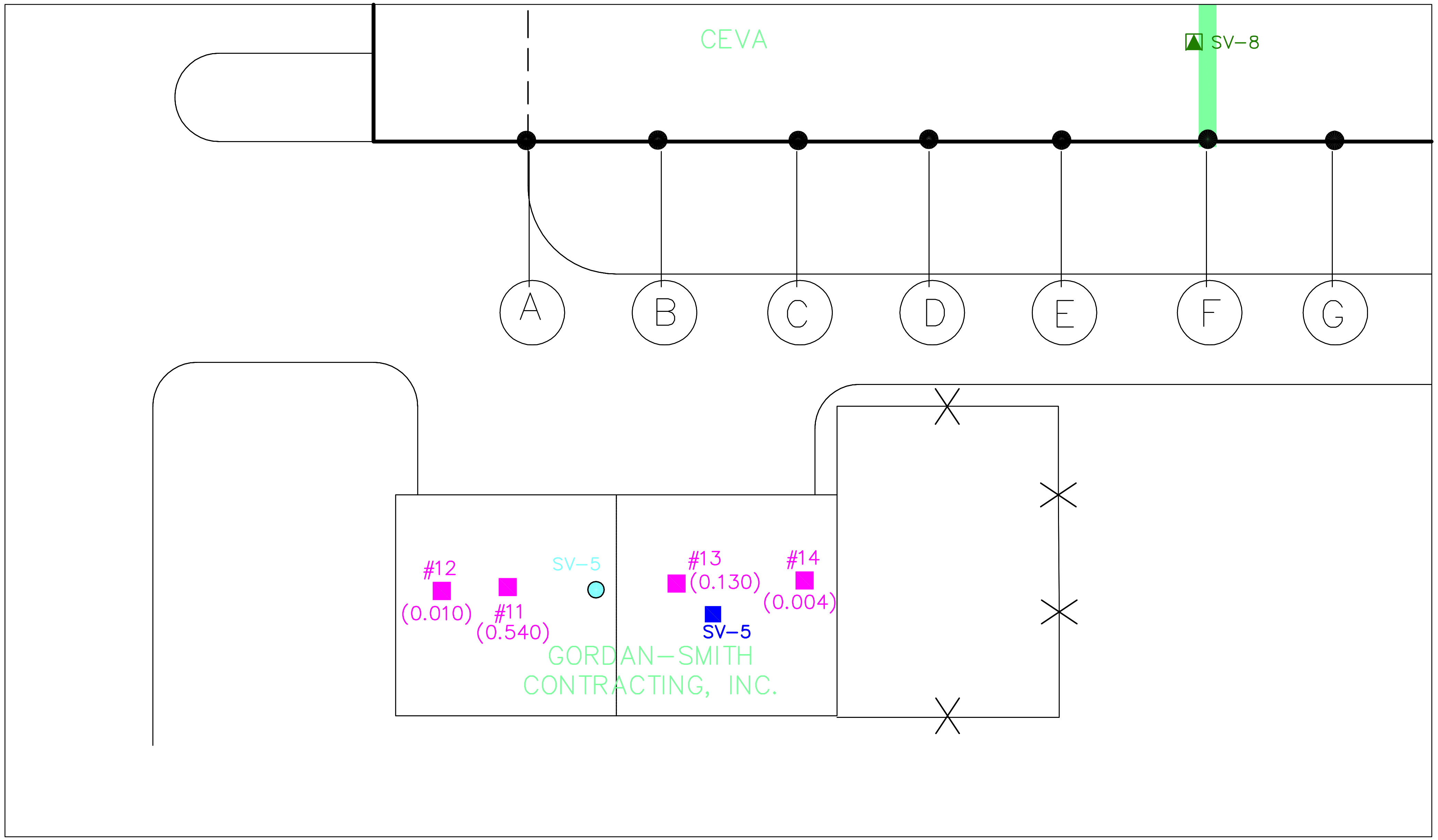
SUB-SLAB PRESSURE FIELD EXTENSION TEST RESULTS - FORMER PLATING PIT/ WASTEWATER TREATMENT AREAS

ARCADIS

FIGURE
5



ENLARGEMENT FORMER BUILDING 41

0 30' 60'

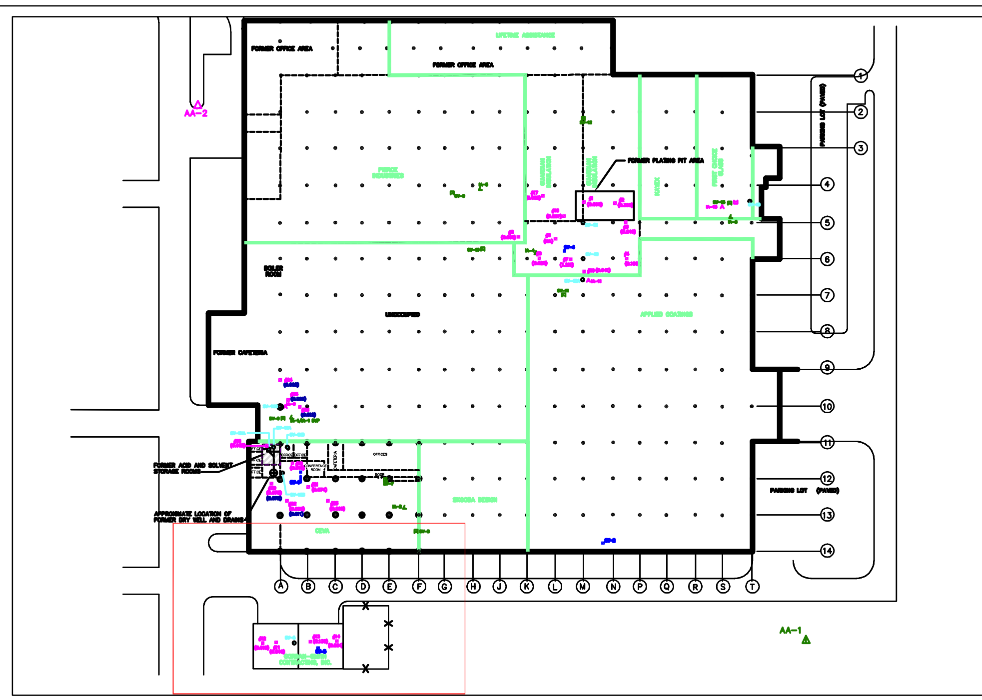
GRAPHIC SCALE

LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- 10 BUILDING COLUMN AND IDENTIFIER
- SV-5 APPROXIMATE SYSTEM LOCATION
- SV-2 SUB-SLAB VAPOR SAMPLING LOCATION (APRIL 2006)
- SV-7 SUB-SLAB VAPOR SAMPLING LOCATION (MARCH 2007)
- 1A-2 INDOOR AIR SAMPLING LOCATION (MARCH 2007)
- IA-6 INDOOR AIR SAMPLING LOCATION (NOVEMBER 2007)
- #23 PRESSURE TEST LOCATION
- (0.074) PRESSURE (NOVEMBER 2006; NEGATIVE INCHES OF WATER)
- (0.012) PRESSURE (DECEMBER 2007; NEGATIVE INCHES OF WATER)

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.
3. DEPRESSURIZATION SYSTEMS INSTALLED IN OCTOBER-NOVEMBER, 2006. ADDITIONAL SUCTION DROPS ADDED NEAR SV-6 AND SV-11 IN AUGUST 2007. PRESSURE FIELD EXTENSION TESTS CONDUCTED IN NOVEMBER 2006, AUGUST 2007 AND DECEMBER 2007.



FORMER BUILDING 41

NOT TO SCALE

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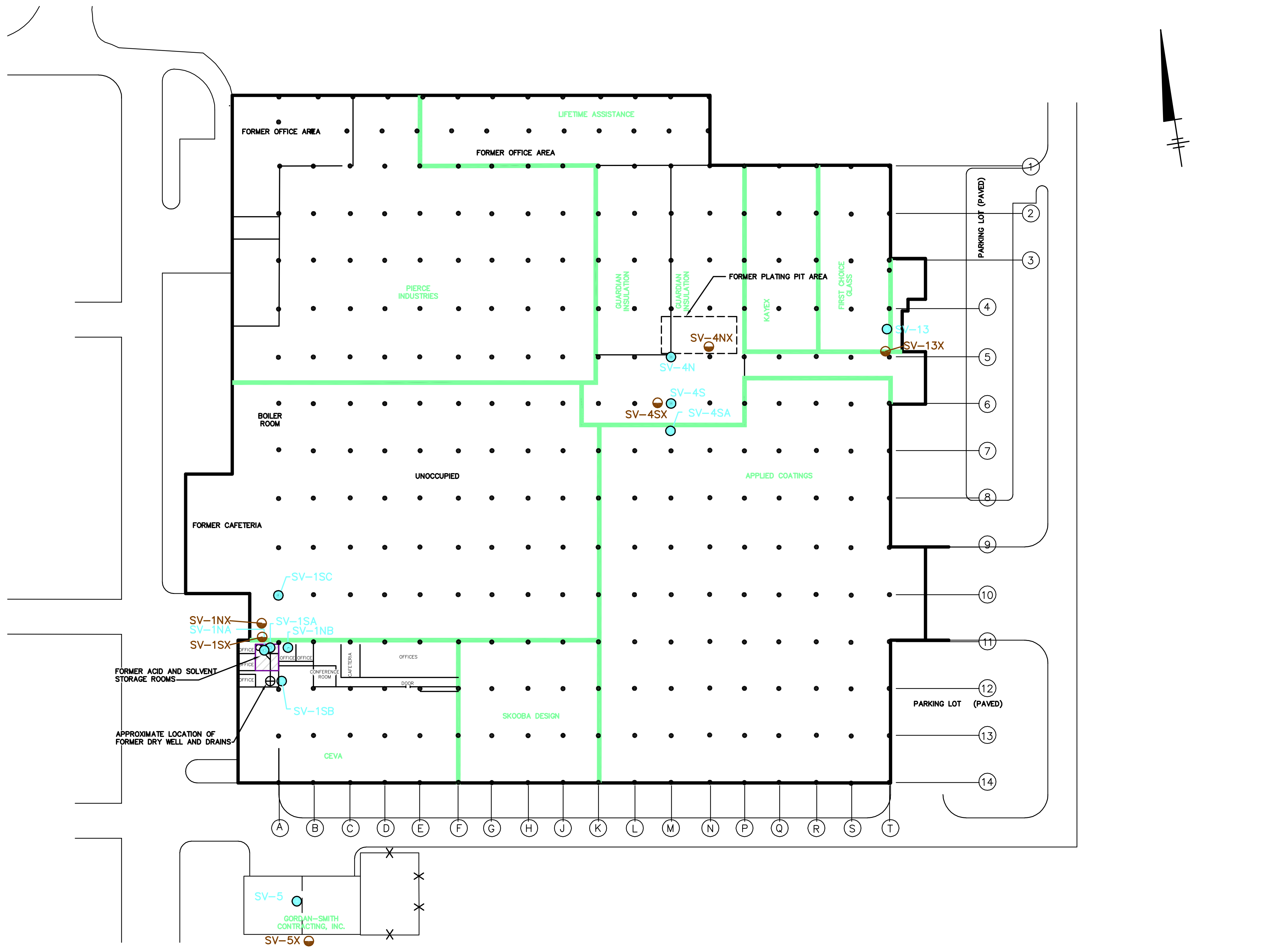
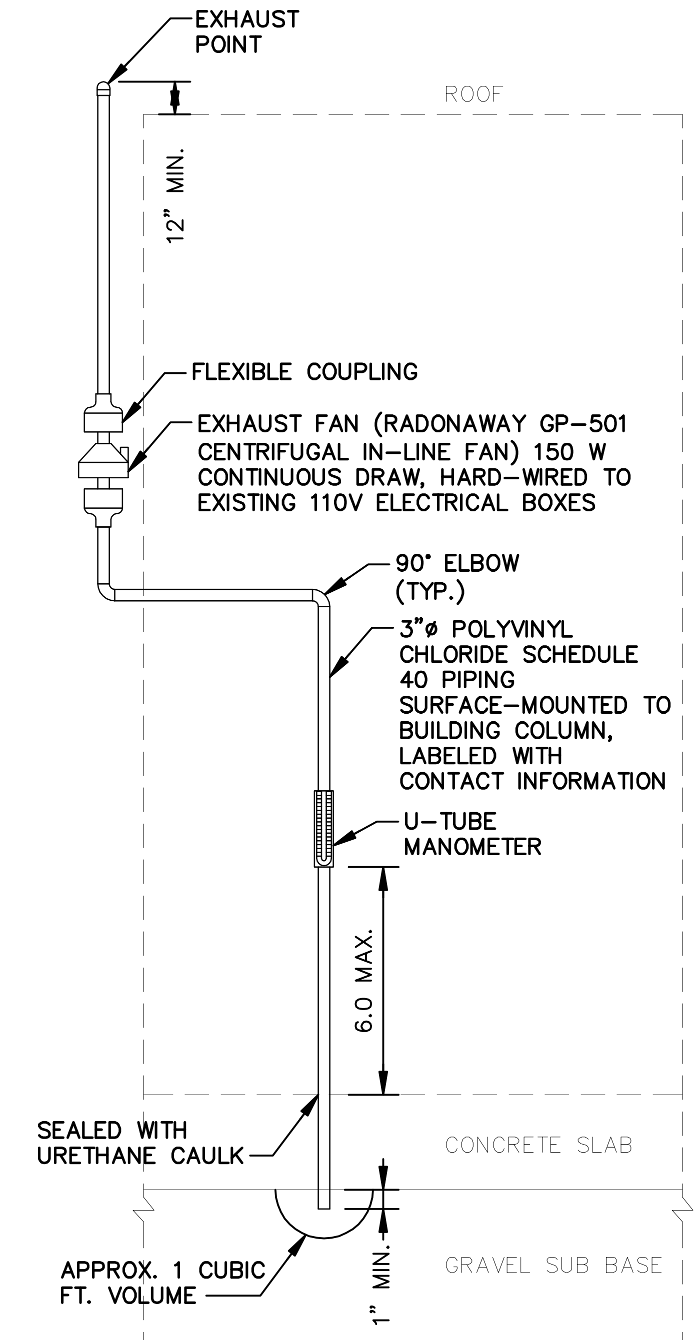
SUB-SLAB PRESSURE FIELD EXTENSION TEST RESULTS - FORMER BUILDING 41

ARCADIS

FIGURE
6





GENERAL SYSTEM PROFILE

NOT TO SCALE

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.

LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- 10 BUILDING COLUMN AND IDENTIFIER
- SV-5 APPROXIMATE SYSTEM SUCTION LOCATION
- SV-5X APPROXIMATE SYSTEM EXHAUST LOCATION

0 100' 200'
GRAPHIC SCALE

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SUB-SLAB DEPRESSURIZATION SYSTEMS DETAIL

ARCADIS

FIGURE
7

ARCADIS

APPENDICES

ARCADIS

Appendix A

October 2006 NYSDOH Decision Matrices

3.4 Decision matrices

3.4.1 Overview

Decision matrices are risk management tools, developed by the NYSDOH in conjunction with other agencies, to provide guidance on a case-by-case basis about actions that should be taken to address current and potential exposures related to soil vapor intrusion. The matrices are intended to be used when evaluating the results from buildings with full slab foundations. The matrices encapsulate the data evaluation processes and actions recommended to address exposures discussed in Sections 3.3.2 and 3.3.3. The general format of a decision matrix is shown in Table 3.2.

Table 3.2 General format of a decision matrix

Sub-slab Vapor Concentration of Volatile Chemical (mcg/m³)	**Indoor Air Concentration of Volatile Chemical (mcg/m³)**		
	Concentration Range 1	Concentration Range 2	Concentration Range 3
Concentration Range 1	ACTION	ACTION	ACTION
Concentration Range 2	ACTION	ACTION	ACTION
Concentration Range 3	ACTION	ACTION	ACTION

Indoor air and sub-slab vapor concentration ranges in a matrix are selected based on a number of considerations in addition to health risks. For example, factors that are considered when selecting the ranges include, but are not limited to, the following:

a. human health risks (i.e., cancer and non-cancer health effects) associated with exposure to the volatile chemical in air;

b. the NYSDOH's guidelines for volatile chemicals in air [Table 3.1];

c. background concentrations of volatile chemicals in air [Section 3.2.4];

d. analytical capabilities currently available; and

e. attenuation factors (i.e., the ratio of indoor air to sub-slab vapor concentrations).

3.4.2 Matrices

The NYSDOH has developed two matrices, which are included at the end of Section 3.4, to use as tools in making decisions when soil vapor may be entering buildings. The first decision matrix was originally developed for TCE and the second for PCE. As summarized in Table 3.3, four chemicals have been assigned to the two matrices to date.

Table 3.3 Volatile chemicals and their decision matrices

Chemical	**Soil Vapor / Indoor Air Matrix***
Carbon tetrachloride	Matrix 1
Tetrachloroethene (PCE)	Matrix 2
1,1,1-Trichloroethane (1,1,1-TCA)	Matrix 2
Trichloroethene (TCE)	Matrix 1

*The decision matrices are available at the end of Section 3.4.

Because the matrices are risk management tools and consider a number of factors, the NYSDOH intends to assign chemicals to one of these two matrices, if possible. For example, if a chemical other than those already assigned to a matrix is identified as a chemical of concern during a soil vapor intrusion investigation, assignment of that chemical into one of the existing decision matrices will be considered by the NYSDOH. Factors that will be considered in assigning a chemical to a matrix include, but are not limited to, the following:

a. human health risks, including such factors as a chemical's ability to cause cancer, reproductive, developmental, liver, kidney, nervous system, immune system or other effects, in animals and humans and the doses that may cause those effects;

b. the data gaps in its toxicologic database;

c. background concentrations of volatile chemicals in indoor air [Section 3.2.4]; and

d. analytical capabilities currently available.

If the NYSDOH determines that the assignment of the chemical into an existing matrix is inappropriate, then the NYSDOH will either modify an existing matrix or develop a new matrix.

To use the matrices appropriately as a tool in the decision-making process, the following should be considered:

a. The matrices are generic. As such, it may be appropriate to modify a recommended action to accommodate building-specific conditions (e.g., dirt floor in basement, crawl spaces, etc.) and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, resampling may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Additionally, actions more protective of public health than those specified within the matrix may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action is usually undertaken for reasons other than public health (e.g., seeking community acceptance, reducing excessive costs, etc.).

b. Indoor air concentrations detected in samples collected from the building's basement or, if the building has a slab-on-grade foundation, from the building's lowest occupied living space should be used.

c. Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of vapor contamination, nor does it preclude remediating contaminated soil vapors or the source of soil vapor contamination.

d. When current exposures are attributed to sources other than vapor intrusion, the agencies should be provided documentation(e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix and to support assessment and follow-up by the agencies.

3.4.3 Description of recommended actions

Actions recommended in the matrix are based on the relationship between sub-slab vapor concentrations and corresponding indoor air concentrations. They are intended to address both potential and current human exposures and include the following:

a. *No further action*

When the volatile chemical is not detected in the indoor air sample and the concentration detected in the corresponding sub-slab vapor sample is not expected to substantially affect indoor air quality.

b. *Take reasonable and practical actions to identify source(s) and reduce exposures*

The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposures accordingly (e.g., by keeping containers tightly capped or by storing volatile chemical-containing products in places where people do not spend much time, such as a garage or shed). Resampling may also be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

d. *Monitor*

Monitoring, including sub-slab vapor, basement air, lowest occupied living space air, and outdoor air sampling, is appropriate to determine whether concentrations in the indoor air or sub-slab vapor have changed. Monitoring may also be appropriate to determine whether existing building conditions (e.g., positive pressure HVAC systems) are maintaining the desired mitigation endpoint and to determine whether changes are appropriate.

The type and frequency of monitoring is determined on a site-specific and building-specific basis, taking into account applicable environmental data and building operating conditions.

e. *Mitigate*

Mitigation is appropriate to minimize current or potential exposures associated with soil vapor intrusion. Methods to mitigate exposures related to soil vapor intrusion are described in Section 4.

f. *Monitor / Mitigate*

Monitoring or mitigation may be recommended after considering the magnitude of sub-slab vapor and indoor air concentrations along with building- and site-specific conditions.

Soil Vapor / Indoor Air Matrix 1

October 2006

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)			
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 0.25	0.25 to < 1	1 to < 5.0	5.0 and above
< 5	1. No further action	2. Take reasonable and practical actions to identify source(s) and reduce exposures	3. Take reasonable and practical actions to identify source(s) and reduce exposures	4. Take reasonable and practical actions to identify source(s) and reduce exposures
5 to < 50	5. No further action	6. MONITOR	7. MONITOR	8. MITIGATE
50 to < 250	9. MONITOR	10. MONITOR / MITIGATE	11. MITIGATE	12. MITIGATE
250 and above	13. MITIGATE	14. MITIGATE	15. MITIGATE	16. MITIGATE

No further action:
Given that the compound was not detected in the indoor air sample and that the concentration detected in the sub-slab vapor sample is not expected to significantly affect indoor air quality, no additional actions are needed to address human exposures.

Take reasonable and practical actions to identify source(s) and reduce exposures:
The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposures accordingly (e.g., by keeping containers tightly capped or by storing volatile organic compound-containing products in places where people do not spend much time, such as a garage or outdoor shed). Resampling may be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

MONITOR:
Monitoring, including sub-slab vapor, basement air, lowest occupied living space air, and outdoor air sampling, is needed to determine whether concentrations in the indoor air or sub-slab vapor have changed. Monitoring may also be needed to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined on a site-specific and building-specific basis, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

MITIGATE:
Mitigation is needed to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system, and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

MONITOR / MITIGATE:
Monitoring or mitigation may be recommended after considering the magnitude of sub-slab vapor and indoor air concentrations along with building- and site-specific conditions.

See additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX 1

This matrix summarizes the minimum actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate building-specific conditions (e.g., dirt floor in basement, crawl spaces, etc.) and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, resampling may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Additionally, actions more protective of public health than those specified within the matrix may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action is usually undertaken for reasons other than public health (e.g., seeking community acceptance, reducing excessive costs, etc.).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of vapor contamination, nor does it preclude remediating contaminated soil vapors or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 0.25 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples, a minimum reporting limit of 5 micrograms per cubic meter is recommended for buildings with full slab foundations, and 1 microgram per cubic meter for buildings with less than a full slab foundation.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion to occur is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions may be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including the identified source of the volatile chemicals, the environmental remediation program, and site-specific and building-specific conditions. For example, to the extent that all site data and site conditions demonstrate that soil vapor intrusion is not occurring and that the potential for soil vapor intrusion to occur is not likely, the soil vapor intrusion investigation would be considered complete. In general, if indoor exposures represent a concern due to indoor sources, then the State will provide guidance to the property owner and/or tenant on ways to reduce their exposure. If indoor exposures represent a concern due to outdoor sources, then the NYSDEC will decide who is responsible for further investigation and any necessary remediation. Depending upon the outdoor source, this responsibility may or may not fall upon the party conducting the soil vapor intrusion investigation.

Soil Vapor / Indoor Air Matrix 2

October 2006

	INDOOR AIR CONCENTRATION of COMPOUND (mcg / m^3)			
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg / m^3)	< 3	3 to < 30	30 to < 100	100 and above
< 100	1. No further action	2. Take reasonable and practical actions to identify source(s) and reduce exposures	3. Take reasonable and practical actions to identify source(s) and reduce exposures	4. Take reasonable and practical actions to identify source(s) and reduce exposures
100 to < 1,000	5. MONITOR	6. MONITOR / MITIGATE	7. MITIGATE	8. MITIGATE
1,000 and above	9. MITIGATE	10. MITIGATE	11. MITIGATE	12. MITIGATE

No further action:
Given that the compound was not detected in the indoor air sample and that the concentration detected in the sub-slab vapor sample is not expected to significantly affect indoor air quality, no additional actions are needed to address human exposures.

Take reasonable and practical actions to identify source(s) and reduce exposures:
The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposures accordingly (e.g., by keeping containers tightly capped or by storing volatile organic compound-containing products in places where people do not spend much time, such as a garage or outdoor shed). Resampling may be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

MONITOR:
Monitoring, including sub-slab vapor, basement air, lowest occupied living space air, and outdoor air sampling, is needed to determine whether concentrations in the indoor air or sub-slab vapor have changed. Monitoring may also be needed to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined on a site-specific and building-specific basis, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

MITIGATE:
Mitigation is needed to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system, and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

MONITOR / MITIGATE:
Monitoring or mitigation may be recommended after considering the magnitude of sub-slab vapor and indoor air concentrations along with building- and site-specific conditions.

See additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX 2

This matrix summarizes the minimum actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate building-specific conditions (e.g., dirt floor in basement, crawl spaces, etc.) and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, resampling may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Additionally, actions more protective of public health than those specified within the matrix may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action is usually undertaken for reasons other than public health (e.g., seeking community acceptance, reducing excessive costs, etc.).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of vapor contamination, nor does it preclude remediating contaminated soil vapors or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 3 micrograms per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples, a minimum reporting limit of 5 micrograms per cubic meter is recommended.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion to occur is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions may be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including the identified source of the volatile chemicals, the environmental remediation program, and site-specific and building-specific conditions. For example, to the extent that all site data and site conditions demonstrate that soil vapor intrusion is not occurring and that the potential for soil vapor intrusion to occur is not likely, the soil vapor intrusion investigation would be considered complete. In general, if indoor exposures represent a concern due to indoor sources, then the State will provide guidance to the property owner and/or tenant on ways to reduce their exposure. If indoor exposures represent a concern due to outdoor sources, then the NYSDEC will decide who is responsible for further investigation and any necessary remediation. Depending upon the outdoor source, this responsibility may or may not fall upon the party conducting the soil vapor intrusion investigation.

ARCADIS

Appendix B

Phase II / Supplemental Phase II Environmental Site Assessment (ESA) Analytical Data Tables and Figures

TABLE 1

SAMPLE ANALYSIS AND RATIONALE SUMMARY

PHASE II/SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER BAUSCH & LOMB FRAME CENTER
CHILI, NEW YORK

						Analyses							
Project	Plant Area	Sample ID	Matrix	Sample Date	Sample Type	TCL VOCs & Freon 113	STARS VOCs	TCL SVOCs	STARS SVOCs	Site-Specific Metals	Cyanide	TOC	Rationale
Supplemental	Downgradient of Building 40	BL-04S	gw	5/22/1998	FS	X							Assess potential downgradient VOC migration from beneath Building 40.
Supplemental	Downgradient of Building 40	BL-05S	gw	5/22/1998	FS	X							
Supplemental	Downgradient of Building 40	BL-06	gw	5/22/1998	FS	X							
Supplemental	Downgradient of Building 40	BL-12S	gw	5/22/1998	FS	X							
Supplemental	Building 40	GPW-01	gw	5/14/1998	FS	X							Assess/delineate VOCs beneath the floor of Building 40.
Supplemental	Building 40	GPW-01 (0.5-1')	soil	5/13/1998	FS							X	
Supplemental	Former Wire Annealing	GPW-02	gw	5/14/1998	FS	X							
Supplemental	Building 40	GPW-03	gw	5/14/1998	FS	X							
Supplemental	Building 40	GPW-04	gw	5/15/1998	FS	X							
Supplemental	Building 40	GPW-05	gw	5/15/1998	FS	X							
Supplemental	Building 40	GPW-05	gw	5/15/1998	DUP	X							
Supplemental	Building 40	GPW-06	gw	5/15/1998	FS	X							
Supplemental	Building 40	GPW-07	gw	5/15/1998	FS	X							
Supplemental	Building 40	GPW-08	gw	5/18/1998	FS	X							
Supplemental	Building 40	GPW-08 (0.5-2.5'	soil	5/15/1998	FS							X	
Supplemental	Thin Films Area	GPW-09	gw	5/18/1998	FS	X							
Supplemental	Building 40	GPW-10	gw	5/18/1998	FS	X							
Supplemental	Building 40	GPW-11	gw	5/18/1998	FS	X							
Supplemental	Building 40	GPW-12	gw	5/19/1998	FS	X							
Supplemental	Thin Films Area	GPW-13	gw	5/19/1998	FS	X							
Supplemental	Thin Films Area	GPW-13 (2-4')	soil	5/18/1998	FS							X	
Phase II	East Pit Area	GPW-14	gw	5/19/1998	FS	X		X		X			Assess possible leakage or discharge from sumps.
Phase II	East Pit Area	GPW-14 (6-8')	soil	5/18/1998	FS	X		X		X	X		
Supplemental	Building 40	GPW-15	gw	5/21/1998	FS	X							Assess/delineate VOCs beneath the floor of Building 40.
Supplemental	Building 40	GPW-15	gw	5/21/1998	DUP	X							
Supplemental	Building 40	GPW-15 (2-4')	soil	5/18/1998	FS	X							
Supplemental	Building 40	GPW-16	gw	5/20/1998	FS	X							
Supplemental	Building 40	GPW-17	gw	5/20/1998	FS	X							
Supplemental	Building 40	GPW-18	gw	5/20/1998	FS	X							
Supplemental	Building 40	GPW-18 (0.5-2')	soil	5/19/1998	FS							X	
Phase II	Plating Area	GPW-19	gw	5/20/1998	FS	X				X			Assess possible subsurface effect of former degreaser use and plating operations.
Phase II	Plating Area	GPW-19 (0.5-2')	soil	5/19/1998	FS					X		X	
Supplemental	Thin Films Area	GPW-20	gw	5/21/1998	FS	X							Assess/delineate VOCs beneath the floor of Building 40.
Supplemental	Thin Films Area	GPW-21	gw	5/21/1998	FS	X							
Supplemental	Thin Films Area	GPW-22	gw	5/21/1998	FS	X							
Supplemental	Thin Films Area	GPW-23	gw	5/21/1998	FS	X							
Supplemental	Plating Area	GPW-24	gw	5/22/1998	FS	X							
Supplemental	Building 40	GPW-25	gw	5/22/1998	FS	X							
Supplemental	Building 40	GPW-26	gw	5/21/1998	FS	X							
Supplemental	Building 40	GPW-27	gw	5/21/1998	FS	X							
Supplemental	Building 40	GPW-27 (6-8')	soil	8/18/1998	FS	X				X	X		
Phase II	East Pit Area	GPW-28 (2-12')	gw	8/24/1998	FS	X				X	X		Assess possible leakage from sumps.
Phase II	East Pit Area	GPW-28 (8-10')	soil	8/19/1998	FS	X				X	X		
Phase II	East Pit Area	GPW-29 (2-12')	gw	8/25/1998	FS	X	X		X	X	X		
Phase II	East Pit Area	GPW-29 (8-10')	soil	8/20/1998	FS	X	X		X	X	X		
Phase II	East Pit Area	GPW-30 (2-12')	gw	8/25/1998	FS	X	X		X	X	X		
Phase II	East Pit Area	GPW-30 (8-10')	soil	8/20/1998	FS	X				X	X		
Phase II	Southern Oil Vault Area	GPW-31 (3-13')	gw	8/24/1998	FS	X				X	X		Assess possible leakage or discharge from sump.
Phase II	Southern Oil Vault Area	GPW-31 (6-8')	soil	8/20/1998	FS	X	X		X	X	X		
Phase II	Plating Area	GPW-32 (2-12')	gw	8/24/1998	FS	X				X	X		Assess possible leakage or discharge from plating pit, former chromium storage area, and sump to the subsurface.
Phase II	Plating Area	GPW-32 (8-10')	soil	8/21/1998	FS	X				X	X		
Phase II	Plating Area	GPW-33 (2-12')	gw	8/24/1998	FS	X				X	X		
Phase II	Plating Area	GPW-33 (2-12')	gw	8/24/1998	DUP	X				X	X		
Phase II	Plating Area	GPW-33 (4-6')	soil	8/21/1998	FS					X	X		
Phase II	Plating Area	GPW-33 (6-8')	soil	8/21/1998	FS	X							

TABLE 1

SAMPLE ANALYSIS AND RATIONALE SUMMARY

PHASE II/SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER BAUSCH & LOMB FRAME CENTER
CHILI, NEW YORK

						Analyses							
Project	Plant Area	Sample ID	Matrix	Sample Date	Sample Type	TCL VOCs & Freon 113	STARS VOCs	TCL SVOCs	STARS SVOCs	Site-Specific Metals	Cyanide	TOC	Rationale
Phase II	East Pit Area	GPW-34 (2-12')	gw	8/24/1998	FS	X				X	X		Assess possible leakage from sumps.
Phase II	East Pit Area	GPW-34 (6-8')	soil	8/18/1998	FS	X				X	X		
Phase II	Plating Area	GPW-35 (4-14')	gw	########	FS	X				X	X		Assess possible leakage or discharge from plating pit, former chromium storage area, and sump to the subsurface.
Phase II	Plating Area	GPW-35 (4-14')	gw	########	DUP	X				X	X		
Phase II	Plating Area	GPW-35 (6-8')	soil	########	FS	X				X	X		
Phase II	Plating Area	GPW-36 (4-14')	gw	########	FS	X				X	X		
Phase II	Plating Area	GPW-36 (6-8')	soil	########	FS	X				X	X		
Phase II	Plating Area	GPW-37 (1-4')	soil	########	FS	X				X	X		
Phase II	Plating Area	GPW-37 (1-4')	soil	########	DUP	X				X	X		
Phase II	Plating Area	GPW-37 (2-12')	gw	########	FS	X				X	X		
Phase II	Former Wire Annealing Area	SB-01 (0.5-2')	soil	3/25/1998	FS	X							Assess possible subsurface effect of former degreaser use and plating operations.
Phase II	Former Wire Annealing Area	SB-02	gw	4/1/1998	FS	X							
Phase II	Former Wire Annealing Area	SB-02 (10-12')	soil	3/26/1998	FS	X							
Phase II	Factory of the Future	SB-03 (0.5-2)	soil	3/26/1998	FS	X							
Phase II	Factory of the Future	SB-03 (9-11')	soil	3/26/1998	FS	X							
Phase II	Factory of the Future	SB-04	gw	4/1/1998	FS	X							
Phase II	Factory of the Future	SB-04 (8-10')	soil	3/27/1998	FS	X							
Phase II	Small Parts Area	SB-05 (4-6')	soil	3/27/1998	FS	X							
Phase II	Small Parts Area	SB-05 (4-6')	soil	3/27/1998	DUP	X							
Phase II	Small Parts Area	SB-06	gw	4/1/1998	FS	X							
Phase II	Small Parts Area	SB-06 (2-4')	soil	3/27/1998	FS	X							
Phase II	RMS Area	SB-07	gw	4/1/1998	FS	X							
Phase II	RMS Area	SB-07 (6-8')	soil	3/31/1998	FS	X							
Phase II	Gold Reclaim/New Products Area	SB-08 (6-8')	soil	3/31/1998	FS	X							
Phase II	Gold Reclaim/New Products Area	SB-09	gw	4/1/1998	FS	X							
Phase II	Gold Reclaim/New Products Area	SB-09	gw	4/1/1998	DUP	X							
Phase II	Gold Reclaim/New Products Area	SB-09 (8-10')	soil	3/31/1998	FS	X							
Phase II	Eyewinding Area	SB-10 (0.5-2')	soil	3/31/1998	FS	X							
Phase II	Resistance Eye Cell Area	SB-11 (6-8')	soil	3/31/1998	FS	X							
Phase II	Plating Area	SB-12	gw	4/1/1998	FS	X				X	X		Assess possible leakage or discharge from plating pit, former chromium storage area, and sump to the subsurface.
Phase II	Plating Area	SB-12 (2-4')	soil	3/31/1998	FS					X	X		
Phase II	Plating Area	SB-12 (2-4')	soil	3/31/1998	DUP					X	X		
Phase II	Plating Area	SB-12 (6-8')	soil	3/31/1998	FS	X							
Phase II	Plating Area	SB-13 (0.5-2')	soil	4/1/1998	FS					X	X		
Phase II	Plating Area	SB-13 (0.5-2')	soil	4/1/1998	DUP					X	X		
Phase II	Plating Area	SB-13 (4-6')	soil	4/1/1998	FS	X							
Phase II	Annealing Area	SB-14 (0.5-2')	soil	4/1/1998	FS	X							Assess possible subsurface effect of former degreaser use and plating operations.
Phase II	Background Area	SB-15 (2-4')	soil	4/21/1998	FS					X	X		Provide background concentrations.
Phase II	Background Area	SB-15 (2-4')	soil	4/21/1998	DUP					X	X		
Phase II	Background Area	SB-16 (2-4')	soil	4/21/1998	FS					X	X		
Phase II	UST/Building 42 Area	SB-17	gw	4/22/1998	FS		X		X				Assess possible leakage from former and/or current fuel oil UST.
Phase II	UST/Building 42 Area	SB-17 (4-6')	soil	4/22/1998	FS		X		X				

Notes:
DUP = blind duplicate field sample.
FS = Primary field sample.
GW = Ground water.
X = Analysis performed.
TCL VOCs & Freon 113 = Target Compound List (TCL) volatile organic compounds (VOCs) plus Freon 113 by USEPA Method 8260.
STARS VOCs = NYSDEC Spill Technology and Remediation Series (STARS) Memo #1 VOCs by USEPA Method 8260.
TCL SVOCs = TCL semi-volatile organic compounds (SVOCs) by USEPA Method 8270.
STARS SVOCs = NYSDEC STARS Memo #1 SVOCs by USEPA Method 8270.
Site-Specific Metals = Chromium, Lead, Nickel, and Zinc by USEPA Method 6010.
Cyanide by USEPA Method 9010.
TOC= Total Organic Carbon (TOC) by Walkley-Black method.

TABLE 2

DETECTED CONSTITUENTS IN SOIL

PHASE II/SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER BAUSCH & LOMB FRAME CENTER
CHILI, NEW YORK

Plant Area		Annealing Area	Background Area			East Pit Area					Eyewinding Area	Factory of the Future	
Location ID Depth Matrix Date	NYSDEC TAGM Protection of Ground Water/Soil Cleanup Objectives	SB-14 (0.5-2') Soil 4/1/1998	SB-15 (2-4') Soil 4/21/1998	SB-15(2-4') DUP-01 Soil 4/21/1998	SB-16 (2-4') Soil 4/21/1998	GPW-14 (6-8') Soil 5/18/1998	GPW-28 (8-10') Soil 8/19/1998	GPW-29 (8-10') Soil 8/20/1998	GPW-30 (8-10') Soil 8/20/1998	GPW-34 (6-8') Soil 8/18/1998	SB-10 (0.5-2') Soil 3/31/1998	SB-3 (9-11') Soil 3/26/1998	SB-4 (8-10') Soil 3/27/1998
Volatile Organic Compounds (ppb)													
Acetone	110/200	ND	NA	NA	NA	ND	ND	ND	ND	ND	ND	**150**	**180**
Tetrachloroethene (PCE)	1,400/1,400	ND	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
Semi-volatile Organic Compounds (ppb)													
Naphthalene	13,000/13,000	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA
Inorganics (ppm)													
Chromium	NC/50	NA	8.78	7.51	19.5	7.34	6.85	4.76	7.92	9.79	NA	NA	NA
Lead	NC/SB (12.6)*	NA	ND	ND	12.6	6.91	ND	ND	ND	ND	NA	NA	NA
Nickel	NC/13 or SB (15.1)*	NA	8.18	8.7	15.1	7.15	6.67	4.87	4.70	7.00	NA	NA	NA
Zinc	NC/20 or SB (51.9)*	NA	32.3	36.5	51.9	4.23	33.4	25.8	30.4	35.2	NA	NA	NA

TABLE 2

DETECTED CONSTITUENTS IN SOIL

PHASE II/SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER BAUSCH & LOMB FRAME CENTER
CHILI, NEW YORK

Plant Area		Former Wire Annealing Area		Gold Reclaim/New Products Area		Plating Area									
Location ID	NYSDEC TAGM	SB-1	SB-2	SB-8	SB-9	SB-12	SB-12	SB-13	SB-13(0.5-2')	SB-13	GPW-19	GPW-32	GPW-33	GPW-33	GPW-35
Depth	Protection of	(0.5-2')	(10-12')	(6-8')	(8-10')	(2-4')	(6-8')	(0.5-2')	DUP-02	(4-6')	(0.5-2')	(8-10')	(4-6')	(6-8')	(6-8')
Matrix	Ground Water/Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date	Cleanup Objectives	3/25/1998	3/26/1998	3/31/1998	3/31/1998	3/31/1998	3/31/1998	4/1/1998	4/1/1998	4/1/1998	5/20/1998	8/21/1998	8/21/1998	8/21/1998	11/24/1998
Volatile Organic Compounds (ppb)															
Acetone	110/200	ND	**570**	**530**	**370**	NA	**650**	NA	NA	53	NA	ND	NA	ND	ND
Tetrachloroethene (PCE)	1,400/1,400	ND	ND	ND	ND	NA	ND	NA	NA	ND	NA	ND	NA	ND	ND
Semi-volatile Organic Compounds (ppb)															
Naphthalene	13,000/13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (ppm)															
Chromium	NC/50	NA	NA	NA	NA	6.71	NA	12.4	5.45	NA	6.05	7.41	6.38	NA	7.00
Lead	NC/SB (12.6)*	NA	NA	NA	NA	3.77	NA	7.33	12.4	NA	5.74	ND	ND	NA	3.40
Nickel	NC/13 or SB (15.1)*	NA	NA	NA	NA	7.19	NA	11.4	6.30	NA	6.60	6.84	5.68	NA	8.10
Zinc	NC/20 or SB (51.9)*	NA	NA	NA	NA	42.5	NA	45.3	51.3	NA	37.5	32.4	29.6	NA	44

TABLE 2

DETECTED CONSTITUENTS IN SOIL

PHASE II/SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER BAUSCH & LOMB FRAME CENTER
CHILI, NEW YORK

Plant Area		Plating Area (Cont'd)			Resistance Eye Cell Area	RMS Area	Small Parts Area			Southern Oil Vault	Southwest Corner Bldg. 40	UST/ Building 42 Area
Location ID	NYSDEC TAGM	GPW-36	GPW-37	GPW-37	SB-11	SB-7	SB-5	SB-5(4-6')	SB-6	GPW-31	GPW-15	SB-17
Depth	Protection of	(6-8')	(1-4')	(1-4') DUP	(6-8')	(6-8')	(4-6')	DUP-01	(2-4')	(6-8')	(2-4')	(4-6')
Matrix	Ground Water/Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date	Cleanup Objectives	11/24/1998	11/25/1998	11/25/1998	3/31/1998	3/31/1998	3/27/1998	3/27/1998	3/27/1998	8/20/1998	5/18/1998	4/22/1998
Volatile Organic Compounds (ppb)												
Acetone	110/200	ND	ND	ND	**1500**	**240**	**110**	**260**	100	ND	ND	NA
Tetrachloroethene (PCE)	1,400/1,400	13	ND	8.0	ND	ND	ND	ND	ND	ND	ND	NA
Semi-volatile Organic Compounds (ppb)												
Naphthalene	13,000/13,000	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	3.8
Inorganics (ppm)												
Chromium	NC/50	5.90	5.90	6.10	NA	NA	NA	NA	NA	7.90	NA	NA
Lead	NC/SB (12.6)*	5.80	4.20	5.60	NA	NA	NA	NA	NA	ND	NA	NA
Nickel	NC/13 or SB (15.1)*	6.70	6.20	27	NA	NA	NA	NA	NA	8.05	NA	NA
Zinc	NC/20 or SB (51.9)*	39	42	34	NA	NA	NA	NA	NA	43.2	NA	NA

Notes:
Organic concentrations in micrograms per kilogram (ug/kg) equivalent to parts per billion (ppb).
Inorganic concentrations in milligrams per kilogram (mg/kg) equivalent to parts per million (ppm).
DUP=Duplicate field sample.
G = Guidance value.
NA = Constituent was not analyzed.
NC = No criteria given.
ND = Not detected.
NL = Not listed.
SB = Site background. * Indicates site-specific background value from SB-16 (2-4') collected 4/21/98.
New York State Department of Environmental Conservation (NYSDEC)Technical and Administrative Guidance Memorandum (TAGM) 4046: Determination of Soil Cleanup Objectives and Cleanup Levels, dated April 1995.
BOLD = Indicates concentration at or above protection of ground-water criteria.
SHADE = Indicates concentration at or above soil cleanup objective.
This table summarizes the constituents that were analyzed for and detected in at least one sample.

TABLE 3

DETECTED CONSTITUENTS IN GROUND WATER

PHASE II/SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER BAUSCH & LOMB FRAME CENTER
CHILI, NEW YORK

Plant Area		**Building 40**																
Location ID. **Depth** **Matrix** **Date**	**NYSDEC GA Standards & Guidance Values**	**GPW-1 (3-8') Water 5/14/1998**	**GPW-3 (5-10') Water 5/14/1998**	**GPW-4 (5-10') Water 5/15/1998**	**GPW-5 (5.4-10.4') Water 5/15/1998**	**GPW-5 (DUP-1) Water 5/15/1998**	**GPW-6 (6-11') Water 5/15/1998**	**GPW-7 (5-15') Water 5/15/1998**	**GPW-8 (3-13') Water 5/18/1998**	**GPW-10 (3-13') Water 5/18/1998**	**GPW-11 (3-13') Water 5/18/1998**	**GPW-12 (5-10') Water 5/19/1998**	**GPW-15 (5-15') Water 5/21/1998**	**GPW-15 (DUP-2) Water 5/21/1998**	**GPW-16 (5-15') Water 5/20/1998**	**GPW-17 (3-13') Water 5/20/1998**	**GPW-18 (3-13') Water 5/20/1998**	**GPW-25 (5-15') Water 5/22/1998**
Volatile Organic Compounds (ppb)																		
Acetone	50G	**88**	**80**	**270**	42	39	**91**	**53**	**220**	ND	41	ND	ND	ND	ND	ND	ND	ND
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**16**	ND	ND	ND	ND	ND
2-Butanone (MEK)	50G	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	14	ND	ND	ND	ND	ND
Carbon Disulfide	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**9.7**	ND	ND	ND	ND	ND
Chloroform	7	ND	ND	ND	ND	ND	5.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**93**	ND	ND	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**55**	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**8500**	**9200**	**7.0**	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**220**	ND	ND	ND	ND	ND
Freon 113	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	**30**	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	50G	ND	ND	16	ND	ND	15	ND	ND	ND	13	ND	ND	ND	ND	ND	12	ND
Methyl tertiary-butyl ether (MTBE)	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**13**	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**340**	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**6.7**	ND	ND	ND	ND	ND
Semi-volatile Organic Compounds (ppb)																		
All Compounds		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (ppm)																		
Chromium	0.050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, dissolved	0.050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead, dissolved	0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, dissolved	0.100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2 G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc, dissolved	2 G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3

DETECTED CONSTITUENTS IN GROUND WATER

PHASE II/SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER BAUSCH & LOMB FRAME CENTER
CHILI, NEW YORK

Plant Area		Building 40		Downgradient of Building 40				East Pit Area					Former Wire Annealing Area		Factory of the Future	Gold Reclaim/New Products Area	
Location ID.	NYSDEC GA	GPW-26	GPW-27	BL-4S	BL-5S	BL-6S	BL-12S	GPW-14	GPW-28	GPW-29	GPW-30	GPW-34	SB-2	GPW-2	SB-4	SB-9	SB-9
Depth	Standards &	(3-13')	(3-13')	(6-16')	(9.5-14.5')	(10-20')	(5-15')	(6-11')	(2-12')	(2-12')	(2-12')	(2-12')		(3-8')			DUP-03
Matrix	Guidance	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Date	Values	5/21/1998	5/21/1998	5/22/1998	5/22/1998	5/22/1998	5/22/1998	5/19/1998	8/24/1998	8/25/1998	8/25/1998	8/24/1998	4/1/1998	5/14/1998	4/1/1998	4/1/1998	4/1/1998
Volatile Organic Compounds (ppb)																	
Acetone	50G	ND	ND	ND	ND	31	ND	ND	ND	ND	36	ND	**330**	32	**150**	**110**	**120**
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	50G	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17	ND	12	ND	ND
Carbon Disulfide	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	16	ND	20	14	13
Chloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND	ND	**61**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	5	ND	ND	ND	ND	**120**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**46**	**32**
2-Hexanone	50G	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13	ND	ND	ND	ND
Methyl tertiary-butyl ether (MTBE)	NL	NA	NA	NA	NA	NA	NA	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5	ND	ND	ND	ND	ND	**7.8**	ND	ND	**8.2**	ND	**6.8**	ND	ND	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND	ND	**300**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	**5.2**	NA	ND	ND	NA	NA	NA	NA	NA	NA
Vinyl chloride	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-volatile Organic Compounds (ppb)																	
All Compounds		NA	NA	NA	NA	NA	NA	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA
Inorganics (ppm)																	
Chromium	0.050	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	NA
Chromium, dissolved	0.050	NA	NA	NA	NA	NA	NA	(ND)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.025	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	NA
Lead, dissolved	0.025	NA	NA	NA	NA	NA	NA	(ND)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.100	NA	NA	NA	NA	NA	NA	NA	0.0678	ND	ND	ND	NA	NA	NA	NA	NA
Nickel, dissolved	0.100	NA	NA	NA	NA	NA	NA	(ND)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2 G	NA	NA	NA	NA	NA	NA	NA	0.622	0.0701	0.0649	0.0384	NA	NA	NA	NA	NA
Zinc, dissolved	2 G	NA	NA	NA	NA	NA	NA	(0.0272)	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3

DETECTED CONSTITUENTS IN GROUND WATER

PHASE II/SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER BAUSCH & LOMB FRAME CENTER
CHILI, NEW YORK

Plant Area		Plating Area										RMS Area	Small Parts Area
Location ID.	NYSDEC GA	SB-12	GPW-19	GPW-24	GPW-32	GPW-33	GPW-33	GPW-35	GPW-35	GPW-36	GPW-37	SB-7	SB-6
Depth	Standards &		(5-10')	(5-10')	(2-12')	(2-12')	(2-12') DUP	(4-14')	(4-14') DUP	(4-14')	(2-12')		
Matrix	Guidance	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Date	Values	4/1/1998	5/20/1998	5/22/1998	8/24/1998	8/24/1998	8/24/1998	11/25/1998	11/25/1998	11/25/1998	11/25/1998	4/1/1998	4/1/1998
Volatile Organic Compounds (ppb)													
Acetone	50G	**220**	ND	ND	21	ND	ND	14	16	11	14	**250**	ND
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	50G	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	NL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12	ND
Chloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	5	ND	ND	**13**	**6.7**	ND	ND	**34**	**44**	**9**	ND	ND	ND
2-Hexanone	50G	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	ND
Methyl tertiary-butyl ether (MTBE)	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	5	ND	ND	ND	**29**	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-volatile Organic Compounds (ppb)													
All Compounds		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (ppm)													
Chromium	0.050	0.0237	ND	NA	ND	ND	ND	0.028	**0.053**	**0.35**	**0.25**	NA	NA
Chromium, dissolved	0.050	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	NA	NA
Lead	0.025	0.0117	ND	NA	ND	ND	ND	0.0092	0.024	**0.28**	**0.19**	NA	NA
Lead, dissolved	0.025	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	NA	NA
Nickel	0.100	ND	ND	NA	ND	ND	ND	0.023	0.045	**0.42**	**0.32**	NA	NA
Nickel, dissolved	0.100	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	NA	NA
Zinc	2 G	0.137	0.021	NA	0.0741	0.280	0.0946	0.044	0.13	1.9	1.3	NA	NA
Zinc, dissolved	2 G	NA	NA	NA	NA	NA	NA	0.068	0.073	0.077	0.070	NA	NA

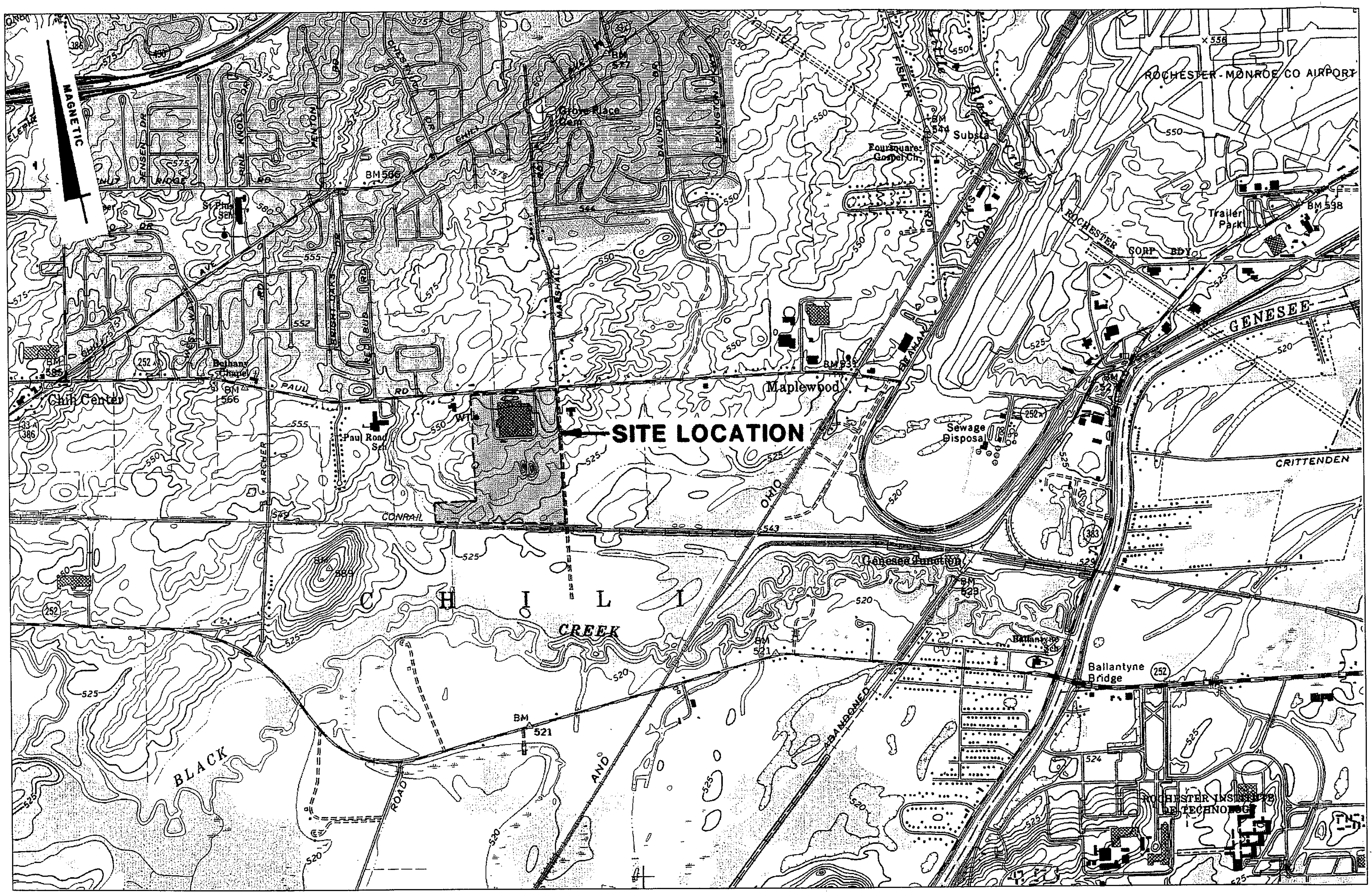
TABLE 3

DETECTED CONSTITUENTS IN GROUND WATER

PHASE II/SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT
FORMER BAUSCH & LOMB FRAME CENTER
CHILI, NEW YORK

Plant Area		Southern Oil Vault	Thin Films Area						UST/ Building 42 Area
Location ID.	NYSDEC GA	GPW-31	GPW-9	GPW-13	GPW-20	GPW-21	GPW-22	GPW-23	SB-17
Depth	Standards &	(3-13')	(3-13')	(5-15')	(2.5-12.5')	(3-13')	(5-15')	(5-15')	
Matrix	Guidance	Water	Water	Water	Water	Water	Water	Water	Water
Date	Values	8/24/1998	5/18/1998	5/19/1998	5/21/1998	5/21/1998	5/21/1998	5/21/1998	4/22/1998
Volatile Organic Compounds (ppb)									
Acetone	50G	ND	**120**	ND	25	27	ND	47	NA
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	50G	ND	ND	ND	ND	ND	ND	ND	NA
Carbon Disulfide	NL	ND	ND	ND	ND	ND	ND	ND	NA
Chloroethane	5	ND	ND	ND	ND	ND	ND	ND	NA
Chloroform	7	ND	ND	ND	ND	ND	ND	ND	NA
1,1-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	NA
1,1-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	NA
cis-1,2-Dichloroethene	5	ND	ND	**5.4**	ND	ND	ND	**60**	NA
trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	NA
Freon 113	5	ND	**74**	**9.0**	**51**	**6**	ND	**200**	NA
2-Hexanone	50G	ND	ND	ND	17	ND	ND	ND	NA
Methyl tertiary-butyl ether (MTBE)	NL	NA	NA	NA	NA	NA	NA	NA	1.6
Tetrachloroethene (PCE)	5	ND	ND	ND	**10**	ND	ND	ND	NA
Toluene	5	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5	**7.0**	ND	ND	ND	ND	ND	ND	NA
Trichloroethene (TCE)	5	ND	ND	**30**	**5.8**	ND	ND	**620**	NA
1,2,4-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	NA	ND
Vinyl chloride	2	ND	ND	ND	ND	ND	ND	ND	NA
Semi-volatile Organic Compounds (ppb)									
All Compounds		NA	NA	NA	NA	NA	NA	NA	ND
Inorganics (ppm)									
Chromium	0.050	ND	NA	NA	NA	NA	NA	NA	NA
Chromium, dissolved	0.050	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.025	ND	NA	NA	NA	NA	NA	NA	NA
Lead, dissolved	0.025	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.100	ND	NA	NA	NA	NA	NA	NA	NA
Nickel, dissolved	0.100	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2 G	0.0436	NA	NA	NA	NA	NA	NA	NA
Zinc, dissolved	2 G	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Organic concentrations in micrograms per liter (ug/L) equivalent to parts per billion (ppb).
Inorganic concentrations in milligrams per liter (mg/L) equivalent to parts per million (ppm).
DUP=Duplicate field sample. NC = No criteria given.
G = Guidance value. ND = Not detected.
NA = Constituent was not analyzed. NL = Not listed.
SB = Site background. * Indicates site-specific background value from SB-16 (2-4') collected 4/21/98.
NYSDEC GA Ground-water Standards and Guidance Values, Title 6, Chaper X, Part 703.5, Table 1;
Revised March 12, 1998.
SHADE = Indicates concentration at or above NYSDEC GA Standards or Guidance values.
( ) = in lab filter.
This table summarizes analytical data for constituents detected in at least one sample.



REFERENCE: Base Map Source, USGS 7.5 Min. Topo. Quad., West Henrietta, New York. 1978.

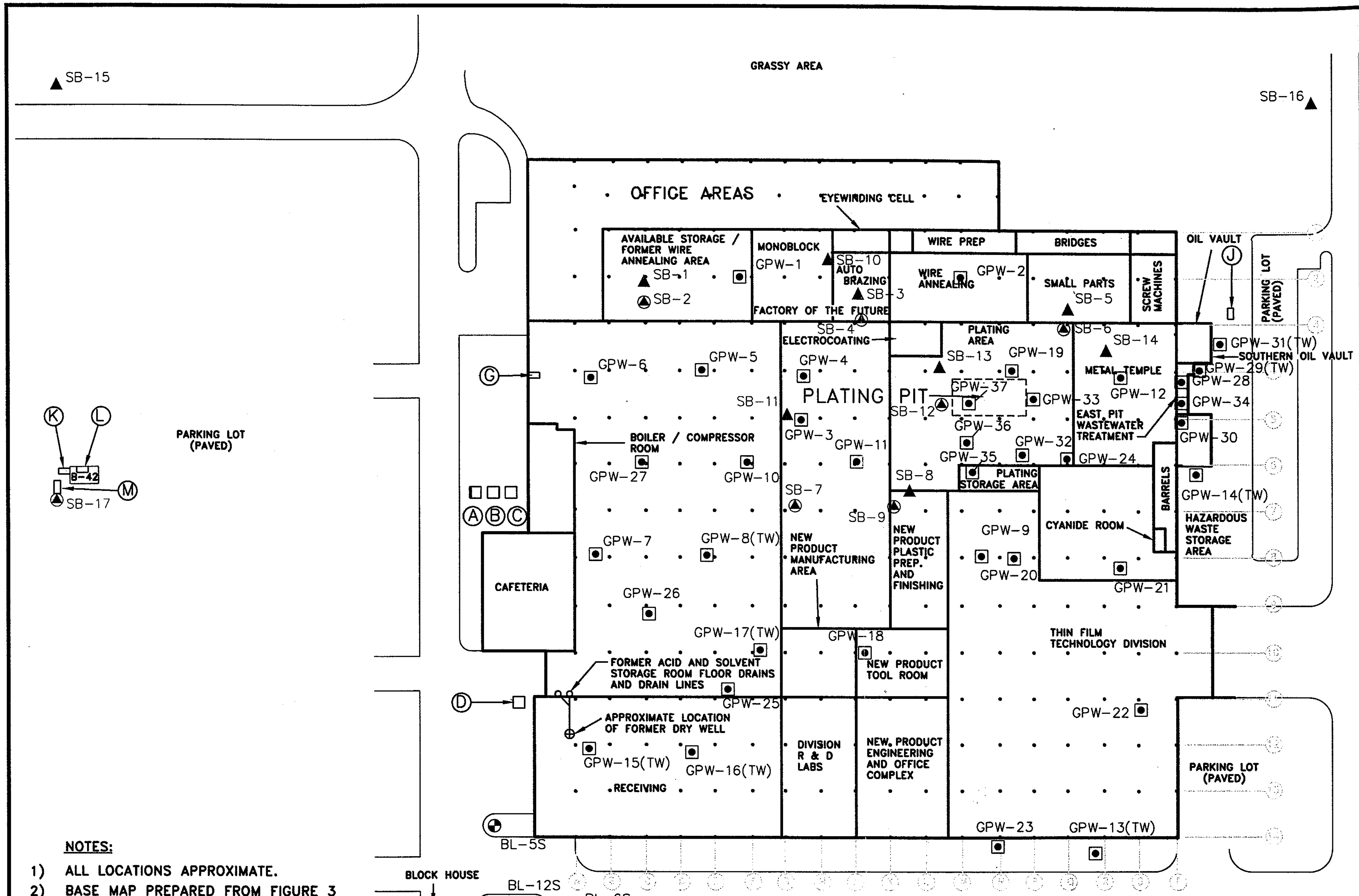
BAUSCH & LOMB INCORPORATED
FORMER FRAME CENTER
CHILI, NEW YORK

SITE LOCATION MAP

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 1

03/99 SYR-D54-DJH
34217010/34217n01.CDR



NOTES:

1) ALL LOCATIONS APPROXIMATE.
2) BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC.
3) LOCATIONS OF FEATURES SHOWN WERE OBTAINED FROM VARIOUS CONSTRUCTION DRAWINGS SUPPLIED BY BAUSCH & LOMB AND FROM INTERVIEWS WITH PLANT PERSONNEL.
4) FIGURE DEPICTS GENERAL SITE CONDITIONS DURING BAUSCH & LOMB OWNERSHIP. CURRENT SITE CONDITIONS DIFFER FROM THOSE ILLUSTRATED.

LEGEND:

- ▲ PHASE II ESA SOIL BORING
- PHASE II ESA SOIL BORING & GROUND-WATER SAMPLING POINT
- SUPPLEMENTAL PHASE II ESA GROUND-WATER SAMPLING POINT
- MONITORING WELL
- BUILDING COLUMN AND IDENTIFIER

- A, B, C: (3) 10,000 GAL. NOW REPLACED WITH (2) 15,000 GAL. No. 6 FUEL OIL UNDERGROUND STORAGE TANKS
- D: FORMER 5,000 GAL. ACETONE UNDERGROUND STORAGE TANK LOCATION
- E: FORMER LOCATION OF 250 GAL. DIESEL ABOVEGROUND STORAGE TANK
- F: FORMER 2,000 GAL. GASOLINE UNDERGROUND STORAGE TANK LOCATION
- G: ABOVEGROUND INDOOR 275 GAL. DIESEL TANK
- H: ABOVEGROUND HYDROGEN STORAGE TANK (45,000 CUBIC FT.)
- I: ABOVEGROUND LIQUID NITROGEN TANK
- J: FORMER 1,000 GAL. UNDERGROUND PROPANE STORAGE TANK LOCATION
- K: FORMER ABOVEGROUND 250 GAL. DIESEL TANK
- L: ABOVEGROUND INDOOR 275 GAL. DIESEL TANK
- M: 1,000 GAL. UNDERGROUND #2 OIL STORAGE TANK

0 100' 200'
GRAPHIC SCALE

L: ON=*;OFF=REF*
P: BM1.PCP
4/14/99 SYR-54-JMS
34217040/34217B01.DWG

BAUSCH & LOMB INCORPORATED
FORMER FRAME CENTER
CHILI, NEW YORK
ENVIRONMENTAL SITE ASSESSMENT

SITE MAP

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 2

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Appendix C

Operation, Maintenance & Monitoring Plan

ARCADIS
Infrastructure, environment, facilities

Imagine the result

Bausch & Lomb

Appendix C

Operation, Monitoring & Maintenance Plan

Interim Remedial Measure Final Engineering Report for Construction of Vapor Intrusion Mitigation Systems

Former Frame Center
Chili, New York

August 2008

ARCADIS

Joseph Molina III

Joseph Molina, III, P.E.
Vice President

Lynette B. Mokry

Lynette B. Mokry
Senior Geologist/Project Manager

Appendix C
Operation, Monitoring & Maintenance Plan

Interim Remedial Measure Final Engineering Report for Construction of Vapor Intrusion Mitigation Systems

Former Frame Center
Chili, New York

Prepared for:
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Our Ref.:
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Date:
August 2008

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Table 1 Sub-Slab Depressurization Systems OM&M Form

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Figure 1 Sub-Slab Depressurization System Locations and Profile

Attachments

A RadonAway™ GP Series Fan Information Sheet

B RadonAway™ Installation and Warrantee Information

1. Introduction

This *Operation, Maintenance and Monitoring Plan* (OM&M Plan) is an appendix to the *Interim Remedial Measure Final Engineering Report* (IRM FER; ARCADIS, 2008), which was prepared by ARCADIS on behalf of Bausch & Lomb to document the IRM remedial action (RA) activities conducted at the former Bausch & Lomb Frame Center Site located in Chili, New York (site). As described in the IRM FER, these RA activities were performed to address vapor intrusion conditions by installing sub-slab depressurization systems (SSDSs) in four areas of the site (Figure 1). This OM&M Plan describes the methods to be used to continually implement, maintain and monitor the SSDSs, and will be provided to the current site owner to facilitate their understanding of the SSDSs.

1.1 OM&M Plan Objectives

As required by the Draft DER-10 *Technical Guidance for Site Investigation and Remediation* (New York State Department of Environmental Conservation [NYSDEC], 2004), this OM&M Plan presents the site-specific program developed to operate, maintain and monitor the SSDSs. Applicable OM&M Plan requirements from the Draft DER-10 guidance and New York State Department of Health (NYSDOH) *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* are addressed in an April 25, 2008 e-mail correspondence with the NYSDEC's project manager, and are generally consistent with the IRM Work Plan (ARCADIS, 2007a). Accordingly, this OM&M Plan:

- describes the installation and function of the SSDSs
- describes the process for maintaining and monitoring the SSDSs
- provides instructions for the owner or tenant to check if a SSDS is operating
- lists appropriate actions for the owner or tenant to take if a SSDS warning device (manometer) indicates system degradation or failure
- provides contact information for the owner or tenant for questions, comments or concerns
- describes the proper operating procedures for the SSDSs, including manufacturer's operation and maintenance instructions and warrantees

1.2 Site Description

The site is located on the south side of Paul Road, approximately 1½ miles east of the intersection of State Route 33A and Paul Road in Chili, New York (IRM FER Appendix B, Figure 1). The site is approximately 89 acres in size and is bordered to the north by Paul Road.

The site comprises one main building (Building 40) located in the northern portion of the site and a smaller building (Building 41) located adjacent to and south of Building 40 (IRM FER Figure 1). Building 41 is approximately 5,000 square feet in size and was used by Bausch & Lomb for vehicle maintenance and general storage. Building 40 is approximately 354,000 square feet in size and housed the production area, as well as offices, cafeteria and other associated facilities when owned by Bausch & Lomb. The former Frame Center was constructed in 1961 and was enlarged in 1966. Based on site history and a review of the building construction, it was determined that the southern portion of Building 40 (i.e., the area south of column line 11) is located on a separate foundation system from the balance of the building; this area represents the 1966 addition to the original building.

Since Bausch & Lomb sold the property, the space within Building 40 has gradually shifted from an unoccupied large open space, to subdivided areas occupied by various tenants for use as warehousing, manufacturing and office space. Three companies (CEVA [previously known as Eagle Freight Company], Skooba Design [space previously occupied by Cure on Demand Adhesive Company (CODACO)] and Applied Coatings) occupy the southern portion of Building 40, and one company (Pierce Industries) occupies the northwestern portion of Building 40, as shown on Figure 1. The northern and northeastern portion of the building has recently become occupied by Lifetime Assistance, Guardian Insulation, Kayex and First Choice Glass. Building 41 is currently occupied by Gordon-Smith Contracting, Inc.

1.3 OM&M Plan Organization

This OM&M Plan is organized into the sections identified in the table below.

Section	Description
1. Introduction	Presents the site description and report organization.

Section	Description
2. RA Activities	Summarizes the remedial action background and activities performed to construct the SSDSs.
3. SSDS Operation, Monitoring & Maintenance	Describes the procedures to operate, monitor and maintain the SSDSs.
4. Documentation	Describes the documentation necessary for the implementation of this OM&M Plan and for the Annual Report.
5. Conclusions	Describes the general operating plan for the SSDSs.
6. References	Lists references cited in this report.

For additional information including the site history, sampling and analysis program, and SSDS location selection, please refer to the IRM FER (ARCADIS, 2008).

2. RA Activities

This section presents an overview of the RA activities implemented to construct the SSDSs at the former Frame Center to meet the objectives of the NYSDEC-approved IRM Work Plan (ARCADIS, 2007a). As described in Section 2 of the IRM FER, the SSDSs were constructed in accordance with the NYSDEC-approved IRM Work Plan (ARCADIS, 2007a) and any field modifications agreed upon with the on-site NYSDEC/ NYSDOH personnel. The RA activities implemented consist of a combined approach of:

- sealing potential subsurface vapor entry points, which can significantly improve SSDS performance by reducing the flow of sub-slab vapors into a building
- installing and operating SSDSs to lower the sub-slab air pressure relative to indoor air pressure

Specifically, the RA activities covered in the IRM FER include the installation of SSDSs in four areas of the site:

- Building 40, former dry well area: SV-1N (with one fan for suction points SV-1NA, SV-1NB and exhaust point SV-1NX) and SV-1S (with one fan for suction points SV-1SA, SV-1SB, SV-1SC and exhaust point SV-1SX)
- Building 40, former plating pit area: SV-4N (with one fan for suction point SV-4N and exhaust point SV-4NX) and SV-4S (with one fan for suction points SV-4S and SV-4SA and exhaust point SV-4SX)
- Building 40, former wastewater treatment area: SV-13 (with one fan for suction point SV-13 and exhaust point SV-13X)
- Building 41: SV-5 (with one fan for suction point SV-5 and exhaust point SV-5X)

These areas were identified as having sub-slab soil and/or groundwater with constituents of interest (COIs) relevant to the potential vapor intrusion pathway (e.g., trichloroethene [TCE]) present at relatively elevated concentrations, based on a review of extensive historical sub-slab soil and groundwater analytical data acquired during Phase II/Supplemental ESA investigations (BBL, 1999). An iterative sampling and RA approach was used to initially address the areas beneath Buildings 40 and 41 most likely contributing volatile organic compounds (VOCs) to sub-slab vapors, followed by additional sampling to refine the SSDSs. This resulted in the sub-slab depressurization of each of these areas, as demonstrated by the pressure field extension tests described in Section 2.3 of the IRM FER (ARCADIS, 2008).

A timeline of SSDS installation and modification events is provided below:

- <u>October 2006:</u> An IRM Work Plan (ARCADIS, 2007a) was submitted to the NYSDEC for installing SSDSs in three areas (near sampling locations SV-1, SV-4 and SV-5).

- <u>Fourth Quarter 2006:</u> SSDSs were installed near SV-1, SV-4 and SV-5.

- <u>November 2006:</u> Initial startup of the SSDSs commenced during the first week of November. A pilot study was conducted through January 2007 to monitor system performance and to evaluate whether additional testing was needed.

- <u>August 2007</u>: The SSDSs were modified based on March 2007 analytical results from co-located indoor air and sub-slab vapor sampling locations.

- <u>February 2008</u>: One additional SSDS was installed near SV-13, based on November 2007 analytical results.

2.1 Description of the SSDSs

Bausch & Lomb retained Mitigation Tech (a National Environmental Health Association-certified radon mitigation contractor) to install SSDSs in four areas (initially for three areas in the immediate vicinity of SV-1, SV-4 and SV-5, and subsequently near SV-13) to mitigate potential vapor intrusion conditions. Each SSDS consists of a fan-powered vent and piping to draw vapors from sub-slab soils (i.e., essentially creating a vacuum beneath the slab) and discharging the vapors to the atmosphere. The SSDS installation included sealing expansion joints, cracks and penetrations, as well as installing and operating venting systems in accordance with the United States Environmental Protection Agency's (USEPA's) radon mitigation standard 402-R93-078.

2.1.1 SSDS Components

The SSDSs consist of four major components (see Figure 1 for a generalized system profile), which include:

- RadonAway™ GP-501 centrifugal in-line fans with an approximate 0 to 95 cubic feet per minute (cfm) flow at 0 to 4 inches of water vacuum (see Attachment A for a RadonAway™ GP Series Fans Information Sheet)

- 3-inch-diameter, Schedule 40 polyvinyl chloride (PVC) pipe installed a minimum of 1 inch below the concrete floor slab to conduct soil vapor vertically from below the slab to the in-line fan

- appropriate brackets to attach piping to building columns, walls and other areas

- manometer (u-tube type) at the suction end of the system, to obtain pressure readings

2.1.2 SSDS Installation

The SSDSs were installed at the approximate locations shown on Figure 1, consistent with the generalized system profile also shown on Figure 1. Each SSDS consists of a 3-inch-diameter PVC pipe installed a minimum of 1 inch below the concrete floor slab to conduct soil vapor vertically from below the slab to the in-line fan. Soil vapor is then carried through a 3-inch-diameter PVC discharge pipe mounted to building columns and discharged at the following approximate locations:

- 12 inches above the roof line
- 10 feet above ground level
- 10 feet away from any opening that is less than 2 feet below the exhaust point
- 10 feet from any adjoining or adjacent buildings, intakes or supply registers

In addition, the in-line fan and discharge piping were not located in or below an occupied area of the buildings.

A total of six RadonAway™ GP-501 centrifugal in-line fans were installed during the RA activities:

- five for the initial SSDSs (SV-1N and SV-1S in the former dry well area, SV-4N and SV-4S in the former plating pit area, and SV-5 for Building 41)

- one later for the SV-13 SSDS (SV-13 in former wastewater treatment area)

Multiple suction points are associated with the two fans installed in the former dry well area and for one fan in the former plating pit area. Approximate system suction locations are shown on Figure 1.

2.2 SSDS Startup and Continuous Operation

The SSDSs have continued to operate with minimal, if any, interruptions. Operating information through August 2007 is included in the IRM FER (ARCADIS, 2008) and the 2007 *Annual Report* (ARCADIS, 2007b). Similar documentation will be presented in subsequent annual reports, as defined in this OM&M Plan.

3. SSDS Operation, Monitoring and Maintenance

This section discusses proper operation and routine and nonroutine maintenance procedures for the SSDSs, based on the NYSDOH guidance (2006) and manufacturer's information (Attachments A and B). In addition to the routine OM&M activities described in this section, the building's owner will also be given information packages that explain SSDS operation, maintenance and monitoring. Therefore, at any time during SSDS operation, the building's owner or tenants may check that the SSDSs are operating properly.

3.1 Routine Operation

The SSDSs should run continuously and only be shut down in case of emergency. During normal operation, the u-shaped manometer should show a differential pressure (indicated by a difference in height between the two sides of the manometer) of 1 to 4 inches of water. This indicates that sub-slab depressurization is continuing to be maintained.

Each SSDS was clearly labeled to avoid accidental modifications or changes to the system that could disrupt its function. If at any time during routine operation, the owner or tenant believes that the SSDS is malfunctioning or requires maintenance, they must contact Mr. Frank Chiappone, Bausch & Lomb, at (585) 338-5087 or (585) 764-7556. Possible signs that the SSDSs may not be functioning properly include:

- Lack of adequate pressure differential, as indicated by less than 1 inch in fluid level height on the u-shaped manometer. In this way, the manometer acts as a warning device.

- Excessive noise and/or vibration, or unusual sounds (e.g., hissing from air escaping through the piping).

- System components become loose, cracked or broken.

Other conditions that may require SSDS maintenance or modification include:

- A change in the work pattern, such that the SSDS could be struck by equipment, or is otherwise in the way.

- Repairs are made to the floor or walls near any portion of the SSDSs.

- New/additional gas combustion or vented appliances are installed.

- New/additional air intake vents are installed.

3.2 Routine Monitoring

From November 2007 through July 2008, monitoring was performed weekly. Monitoring frequency will continue quarterly and will be reduced to semiannually after the first year. This routine monitoring will include:

- visual inspection of the equipment and piping

- inspection of exhaust points to verify that no air intakes have been located nearby

- identification and subsequent repair of any leaks

- inspection of the exhaust and discharge points to verify that air intakes are not nearby

- audible operational status check of the fan to verify the fan's operational performance

- measurement of differential pressure between the indoor air and the sub-slab to maintain a lower pressure in the sub-slab relative to indoor ambient air, as indicated by the manometer on the fan suction pipe

Table 1 provides a checklist for SSDS monitoring.

3.3 Routine Maintenance

Routine maintenance will commence within 18 months after the system becomes operational, and will occur every 12 to 18 months thereafter. During routine maintenance, the following activities (at a minimum) will be conducted:

- visual inspection of the complete system (e.g., vent fan, piping, manometer, labeling on systems)

- identification and repair of leaks

- inspection of the exhaust or discharge point to verify no air intakes have been located nearby

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

If significant changes are made to the system or when the system's performance is unacceptable, the system may need to be redesigned and restarted.

3.4 Nonroutine Maintenance

Nonroutine maintenance may also be required during operation of the SSDSs. This may include the following:

- building's owners or occupants report that the warning device (e.g., the u-shaped manometer) indicates that the SSDS is not operating properly

- SSDS becomes damaged

- building has undergone renovations that may reduce the effectiveness of the SSDS

Activities conducted during nonroutine maintenance visits will vary depending upon the reason for the visit. In general, building-related activities may include examining the building for structural or HVAC system changes, or other changes that may affect the performance of the SSDS (e.g., new combustion appliances, deterioration of the concrete slab or significant changes to the building). SSDS-related activities may include examining the manometer operation and the vent fan, or the extent of sub-slab depressurization.

Repairs or adjustments will be made to the system as appropriate. If appropriate, the system will be redesigned and restarted.

3.5 Termination of SSDS Operations

SSDSs will remain in place and operational (except in emergency situations) until they are no longer needed to address current or potential exposures related to vapor intrusion. This determination will be based upon several factors, including the following:

- subsurface sources (e.g., groundwater, soil) of volatile chemical contamination in subsurface vapors have been remediated based upon an evaluation of appropriate post-remedial sampling results

- residual contamination, if any, in subsurface vapors is not expected to affect indoor air quality significantly based upon soil vapor and/or sub-slab vapor sampling results

- residual contamination, if any, in subsurface vapors is not affecting indoor air quality when active mitigation systems are turned off based upon indoor air, outdoor air and sub-slab vapor sampling results at a representative number of buildings

- there is no "rebound" effect observed for which additional mitigation efforts would be appropriate when the mitigation system is turned off for prolonged periods of time

This determination will be based upon indoor air, ambient air and/or sub-slab vapor sampling from the building during an established time period, determined by site-specific conditions.

4. Documentation

This section summarizes the documentation required for SSDS OM&M.

4.1 OM&M Forms

As described in Section 3, field forms (Table 1) will be used to document the frequency and content of periodic SSDS inspections. These forms will be kept in the project files and will be included in the Annual Report.

4.2 Annual Certification

SSDSs are considered engineering controls, and submission of an annual certification to the NYSDEC is required. Beginning in 2007, the *Annual Report* (ARCADIS, 2007b) for the existing Groundwater Collection and Treatment System (GWCTS) was revised to include the SSDSs. Specifically, the annual certification was amended to certify that on-site engineering controls (i.e., the SSDSs) remain in place, are performing properly and remain effective. The information to be included in future annual reports is listed in Section 4.3.

4.3 Annual Report

In addition to the required certification described in Section 4.2, the Annual Report will also include:

- summary of the SSDS monitoring program, including frequency and relevant findings

- summary of any SSDS-related routine or nonroutine maintenance completed during the preceding year

- field forms will be included in an Appendix of the Annual Report

5. Conclusions

This OM&M Plan provides the requirements for the ongoing operation, maintenance and annual inspections of the SSDSs. As stated in the NYSDOH Guidance (2006), “mitigation is considered to be an interim measure to address exposures until contaminated environmental media are remediated, or until mitigation is no longer needed to address exposures related to soil vapor intrusion.” Because the SSDSs are not meant to remediate the sub-slab media, we anticipate that the systems will continue to operate until such time as remediation is conducted or further investigation shows it is not necessary, or there is a change in land use. The SSDSs will continue to operate under the OM&M Plan until further notice.

6. References

ARCADIS. 2007a. *Interim Remedial Measure Work Plan*. Prepared for Bausch & Lomb, Rochester, New York (February 2007).

ARCADIS. 2007b. *Annual Report.* Former Bausch & Lomb Frame Center (November 2007).

ARCADIS. 2008. *Interim Remedial Measure Final Engineering Report.* Prepared for Bausch & Lomb, Rochester, New York (August 2008).

Blasland, Bouck & Lee, Inc. 1999. *Phase II/Supplemental Phase II Environmental Site Assessment.* Bausch & Lomb Frame Center, 465 Paul Road, Chili, New York (April 1999).

New York State Department of Environmental Conservation. 2004. Draft DER-10 *Technical Guidance for Site Investigation and Remediation*.

New York State Department of Health. 2006. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, Decision Matrices*, October 2006 (and Draft February 2005).

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TABLE

Former Bausch Lomb Framer Center, Chili, NY; OM&M Plan; Sub-Slab Depressurization System Monitoring and Maintenance Form

Sub-Slab Depressurization System ID:_______________ **Inspected By:_________________________**

Location (Building, Area):_________________________ **Date:_______________**

Structure Review	**Yes**	**No**	**Comments**
Have the owner(s) / occupant(s) changed?			
Have any changes been made to the structure?			
Are there any new/additional gas combustion appliances? If yes, evaluate the potential for backdrafting.			
Are there any new/additional air intakes? If yes, describe, including distance to closest system exhaust.			
Have there been any repairs made or recent damage to the floor or walls near the systems? If yes, check for leaks.			
Are there any leaks or cracks that need to be addressed? (Check for leaks at piping joints or in floor or wall penetrations using a smoke puffer and listening for any whistling or other air movement-related noises).			
Are revisions needed to the site map? If yes, describe and provide markup (use space below, attach figure with markup if needed).			
Mitigation System Review	**Yes**	**No**	**Comments**
Is the fan operating normally (e.g., there are no unusual sounds or vibrations; describe if present)? (Do not attempt to open fan			
Is the fan and associated piping mounted securely, vibration free, and intact?			
Is the u-tube manometer operating normally and securely mounted?			

Former Bausch Lomb Framer Center, Chili, NY; OM&M Plan; Sub-Slab Depressurization System Monitoring and Maintenance Form

Sub-Slab Depressurization System ID:_______________ **Inspected By:_________________________**

Location (Building, Area):_________________________ **Date:_______________**

Mitigation System Review (Cont.)	**Yes**	**No**	**Comments**
Is the pressure differential in the system piping on the suction side of the fan consistent with the prior reading(s)? (Record the reading, and if pressure differential is less than prior reading(s), then sub-slab communication testing should be performed. Verify less than maximum operating pressure; e.g., 3.8" for GP-501 fan at sea level.)			
Does the fan shut off and on as expected when the switch is turned off and on? (make sure fan is locked in on position before			
Does the electrical system conduit and/or wiring appear secure and intact (e.g., is the insulation free of cracks)?			
Is the system labeling intact, visible and accurate?			
Overall System Performance			
Is the system not operating? (fan may need to be replace and/or an electrical issue may require an electrical contractor or licensed electrician).			
Is sub-slab communication testing required? (This is indicated if the pressure differential in the system piping on the suction side of the fan differs significantly from the previous reading.)			
If leaks or cracks were identified, have they been addressed?			
If backdrafting conditions were identified, have they been addressed?			
Does any additional maintenance need to be scheduled?			

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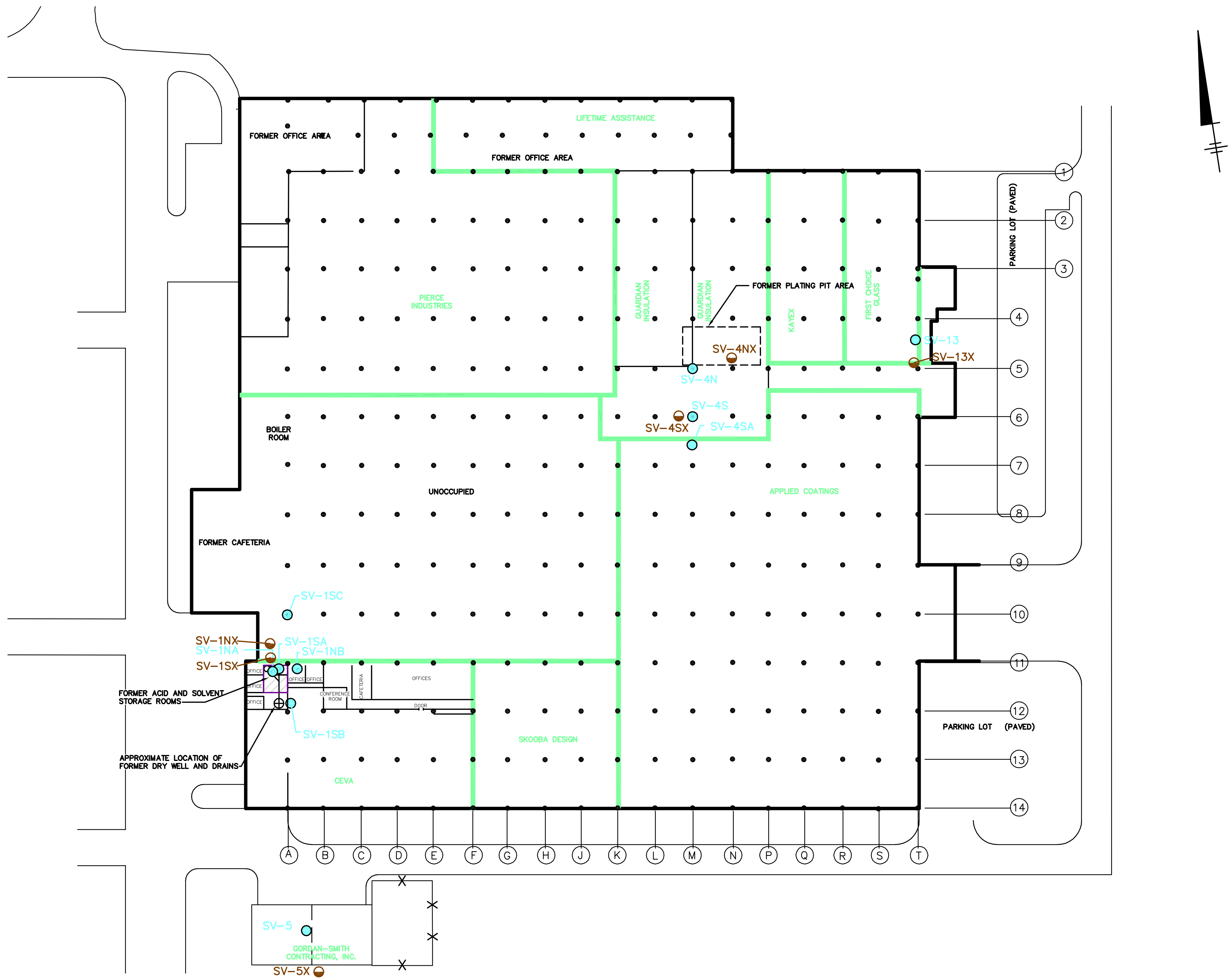
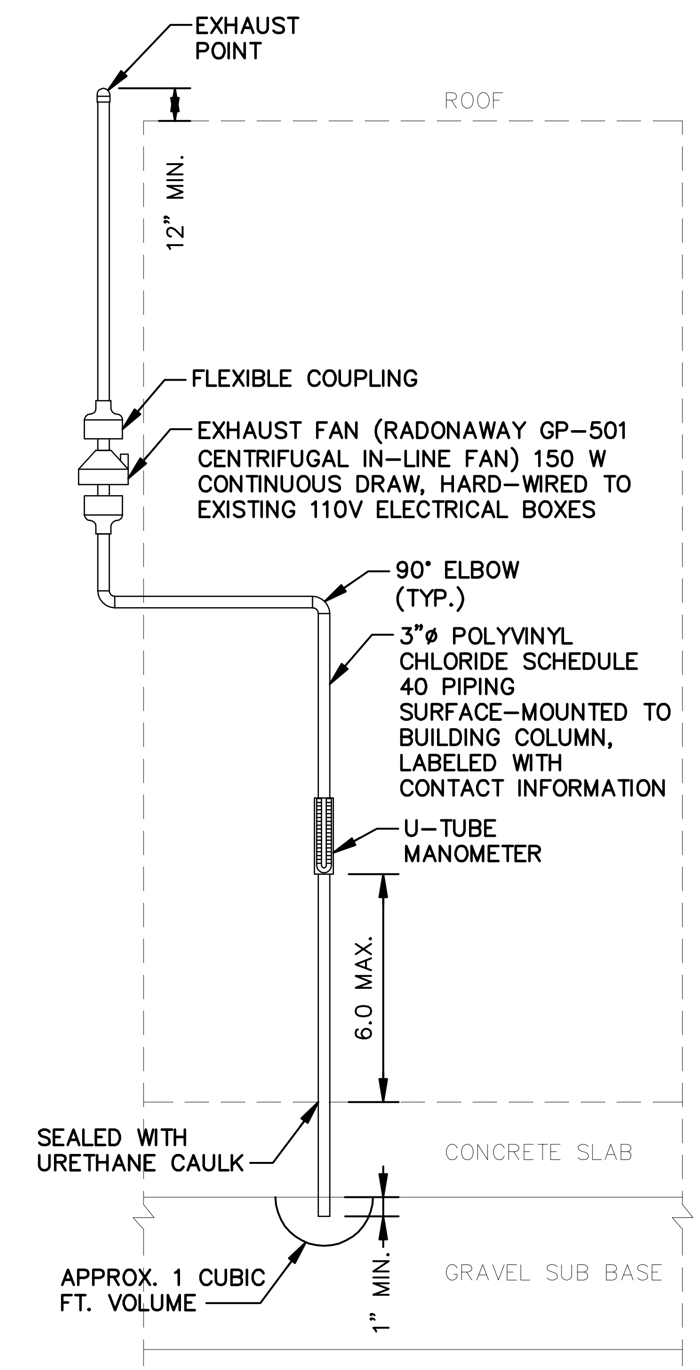
FIGURE





GENERAL SYSTEM PROFILE

NOT TO SCALE

LEGEND:

- INTERIOR WALL
- LIMIT OF OCCUPANCY
- BUILDING COLUMN AND IDENTIFIER
- SV-5 APPROXIMATE SYSTEM SUCTION LOCATION
- SV-5X APPROXIMATE SYSTEM EXHAUST LOCATION

0 100' 200'
GRAPHIC SCALE

NOTES:

1. ALL LOCATIONS APPROXIMATE.
2. BASE MAP PREPARED FROM FIGURE 3 OF THE REMEDIAL INVESTIGATION REPORT (REVISED OCTOBER 1993) PREPARED BY BLASLAND, BOUCK & LEE, INC. MODIFIED BY SITE OBSERVATIONS ON DECEMBER 13, 2005.

BAUSCH & LOMB
FORMER FRAME CENTER
CHILI, NEW YORK
OM&M PLAN

SUB-SLAB DEPRESSURIZATION SYSTEMS DETAIL

ARCADIS

FIGURE
1

CITY:Syracuse GROUP:Env-141 DB:AMS PGL RCB PM:L.MOKRY LYR:ON=*;OFF=REF (FRZ) PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 7/24/2008 2:49 PM BY: BASSETT, RICHARD
G:\CAD\ACT\B0034220\0000\00007\DWG\34220G16.DWG LAYOUT: 1 SAVED: 7/24/2008 2:49 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: ----
XREFS: 34220X01 IMAGES: PROJECTNAME: ---

ARCADIS

ATTACHMENTS

ARCADIS

Attachment A

RadonAway™ GP Series Fan Information Sheet

RadonAway™

The World's Leading Radon Fan Manufacturer

GP Series

Radon Mitigation Fans

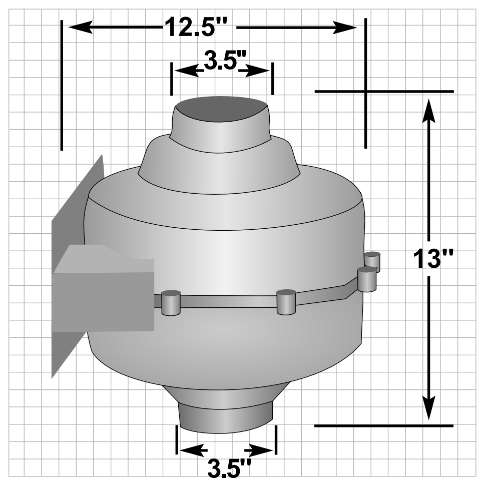
All RadonAway fans are specifically designed for radon mitigation. GP Series Fans provide a wide range of performance that makes them ideal for most sub-slab radon mitigation systems.

Features:

- Five-year hassle-free warranty
- Mounts on duct pipe or with integral flange
- 3.5" diameter ducts for use with 3" or 4" pipe
- Electrical box for hard wire or plug in
- ETL Listed - for indoor or outdoor use
- Meets all electrical code requirements
- Thermally protected
- Rated for commercial and residential use.

Model	Watts	Max. Pressure "WC	Typical CFM vs. Static Pressure WC 1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
GP201	40-60	2.0	82	58	5	-	-	-	-
GP301	55-90	2.6	92	77	45	10	-	-	-
GP401	60-110	3.4	93	82	60	40	15	-	-
GP501	70-140	4.2	95	87	80	70	57	30	10

Choice of model is dependent on building characteristics including sub-slab materials and should be made by a radon professional.



For Further Information Contact:

03/08
P/N 02002

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Attachment B

RadonAway™ Installation and Warrantee Information

XP/GP/XR Series Fan Installation Instructions

Please Read And Save These Instructions.

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

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

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

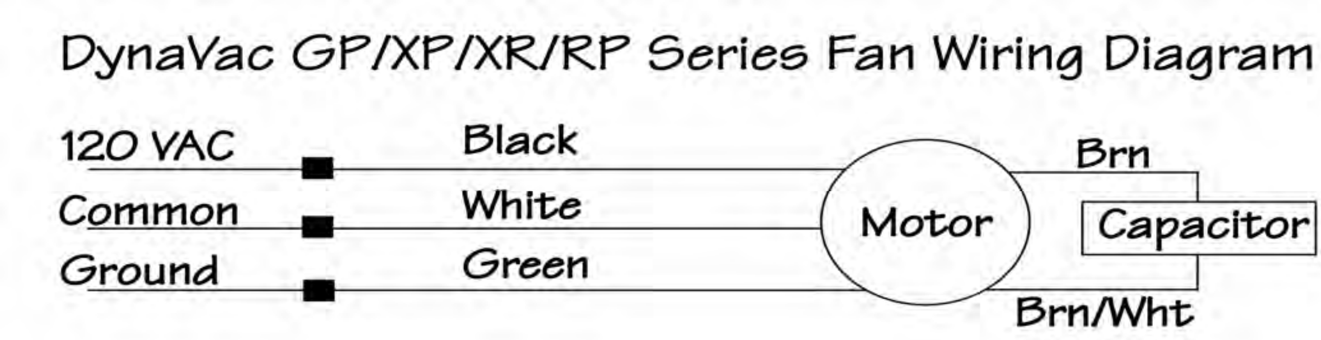
3. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.

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

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

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

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



RadonAway™

INSTALLATION INSTRUCTION IN014 Rev F

DynaVac - XP/XR Series		DynaVac - GP Series	
XP101	p/n 23008-1,-2	GP201	p/n 23007-1
XP151	p/n 23010-1,-2	GP301	p/n 23006-1,-2
XP201	p/n 23011-1,-2	GP401	p/n 23009-1
XR161	p/n 23018-1,-2	GP501	p/n 23005-1,-2
XR261	p/n 23019-1,-2		

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

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

1.2 ENVIRONMENTALS

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

1.3 ACOUSTICS

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

1.4 GROUND WATER

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

1.5 SLAB COVERAGE

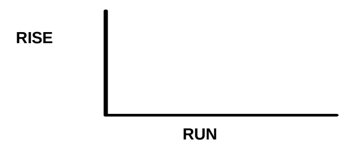
The GP/XP/XR Series Fan can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the GP/XP/XR Series Fan best suited for the sub-slab material can improve the slab coverage. The GP & XP series have a wide range of models to choose from to cover a wide range of subslab material. The higher static suction fans are generally used for tighter subslab materials. The XR Series is specifically designed for high flow applications such as stone/gravel and drain tile. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

1.6 CONDENSATION & DRAINAGE

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

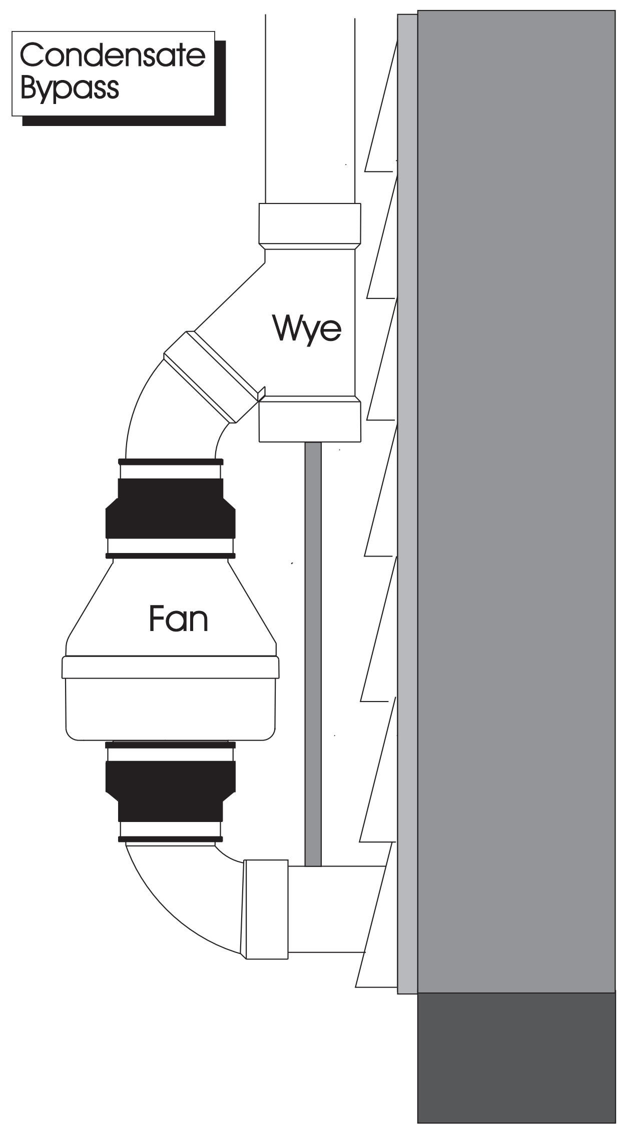
For GP/XP/XR Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

Pipe Dia.	Minimum Rise per Foot of Run* @25 CFM	@50 CFM	@100 CFM
4″	1/8″	1/4″	3/8″
3"	1/4"	3/8"	1 1/2"



*Typical GP/XP/XR Series Fan operational flow rate is 25 - 90 CFM.
(For more precision, determine flow rate by using the chart in the addendum.)

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



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

1.7 "SYSTEM ON" INDICATOR

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

1.8 ELECTRICAL WIRING

The GP/XP/XR Series Fans operate on standard 120V 60 Hz. AC. All wiring must be performed in accordance with the National Fire Protection

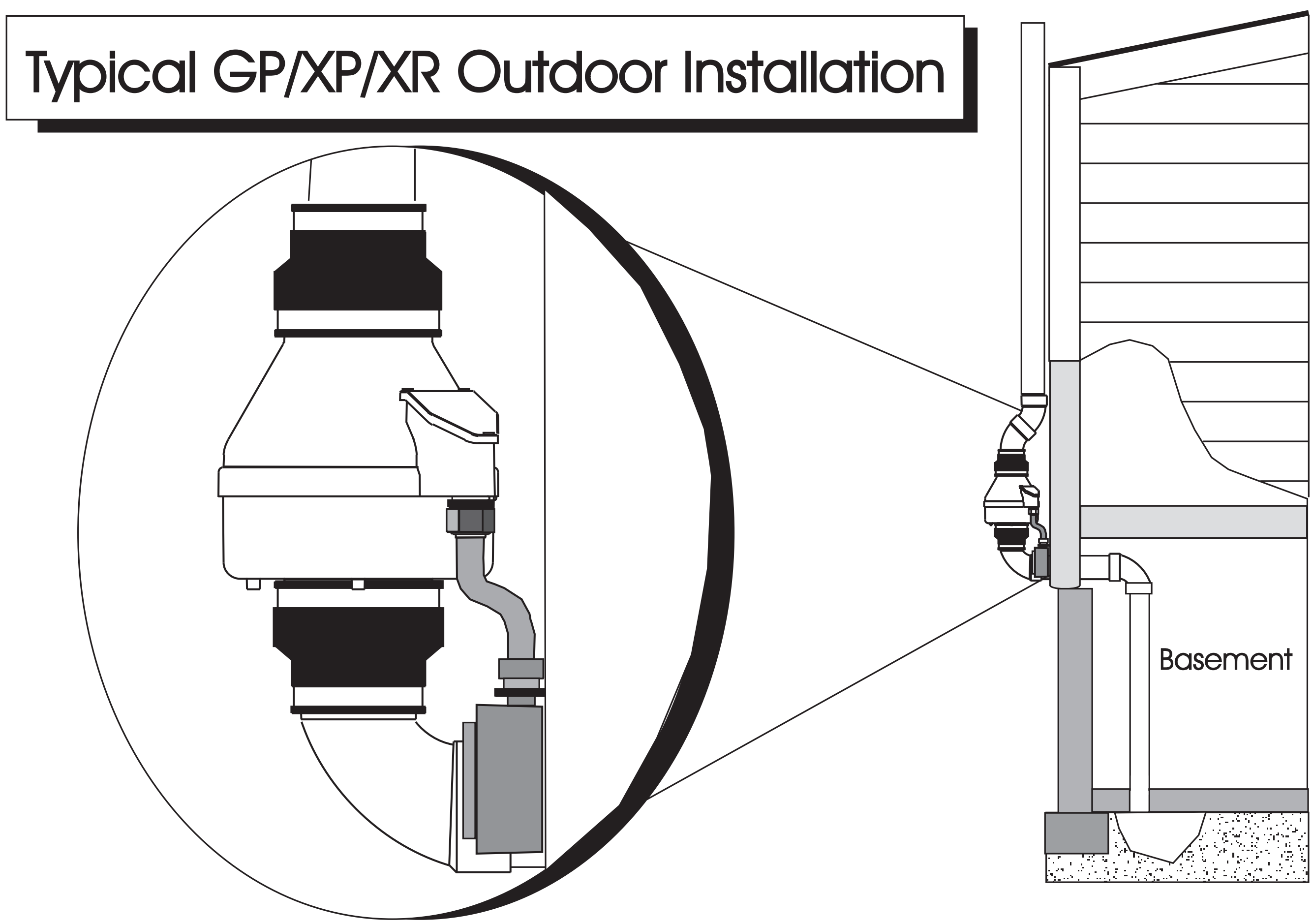
Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician. Outdoor installations require the use of a U.L. listed watertight conduit.

1.9 SPEED CONTROLS

The GP/XP/XR Series Fans are rated for use with electronic speed controls ,however, they are generally not recommended.

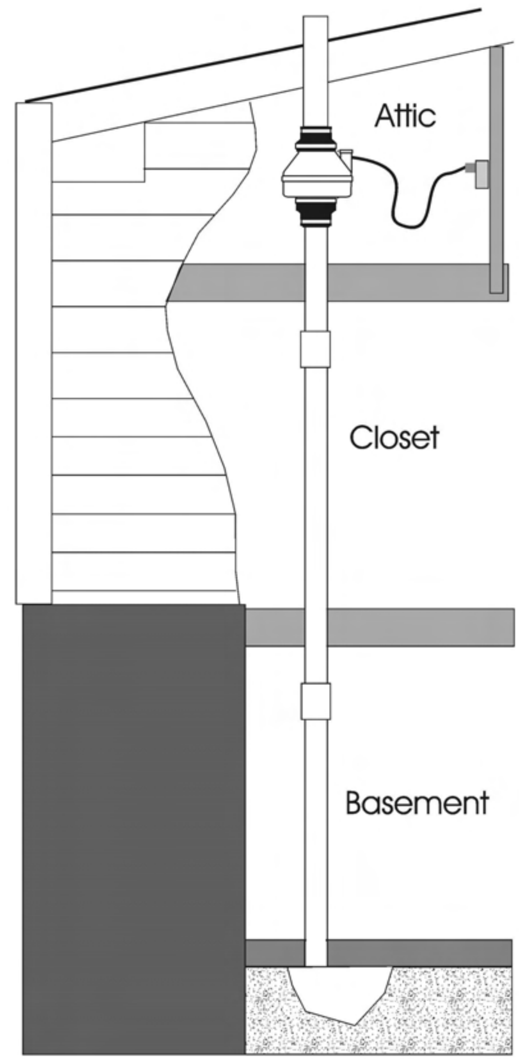
2.0 INSTALLATION

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



2.1 MOUNTING

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



2.2 MOUNTING BRACKET (optional)

The GP/XP/XR Series fan may be optionally secured with the integral mounting bracket on the GP Series fan or with RadonAway P/N 25007-2 mounting bracket for an XP/XR Series fan. Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

2.3 SYSTEM PIPING

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

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections:

Fan Wire	Connection
Green	Ground
Black	AC Hot
White	AC Common

2.5 VENT MUFFLER (optional)

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

2.6 OPERATION CHECKS

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

_____ **Insure** the GP/XP/XR Series Fan and all ducting is secure and vibration-free.

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

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

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

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

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

XP/XR SERIES PRODUCT SPECIFICATIONS

The following chart shows fan performance for the XP & XR Series Fan:

Typical CFM Vs Static Suction "WC	0"	.25"	.5"	.75"	1.0"	1.25"	1.5"	1.75"	2.0"
XP101	125	118	90	56	5	-	-	-	-
XP151	180	162	140	117	78	46	10	-	-
XP201	150	130	110	93	74	57	38	20	-
XR161	215	175	145	105	75	45	15	-	-
XR261	250	215	185	150	115	80	50	20	-

Maximum Recommended Operating Pressure*		
XP101	0.9" W.C.	(Sea Level Operation)**
XP151	1.3" W.C.	(Sea Level Operation)**
XP201	1.7" W.C.	(Sea Level Operation)**
XR161	1.3" W.C.	(Sea Level Operation)**
XR261	1.6" W.C.	(Sea Level Operation)**

**Reduce by 10% for High Temperature Operation*

***Reduce by 4% per 1000 feet of altitude*

Power Consumption @ 120 VAC	
XP101	40 - 49 watts
XP151	45 - 60 watts
XP201	45 - 66 watts
XR161	48 - 75 watts
XR261	65 - 105 watts

XP Series Inlet/Outlet: 4.5" OD (4.0" PVC Sched 40 size compatible)

XR Series Inlet/Outlet: 5.875" OD

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

Recommended ducting: 3" or 4" Schedule 20/40 PVC Pipe

Storage temperature range: 32 - 100 degrees F.

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

Maximum inlet air temperature: 80 degrees F.

Size: 9.5H" x 8.5" Dia. **Weight**: 6 lbs. (XR261 - 7 lbs)

Continuous Duty **Thermally protected**

Class B Insulation **3000 RPM**

Residential Use Only **Rated for Indoor or Outdoor use**

LISTED
Electric Fan

Tested to
UL
Std. 507

77728

GP SERIES PRODUCT SPECIFICATIONS

The following chart shows fan performance for the GPx01 Series Fan:

Typical CFM Vs Static Suction "WC	1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
GP501	95	87	80	70	57	30	5
GP401	93	82	60	38	12	-	-
GP301	92	77	45	10	-	-	-
GP201	82	58	5	-	-	-	-

Maximum Recommended Operating Pressure*		
GP501	3.8" W.C.	(Sea Level Operation)**
GP401	3.0" W.C.	(Sea Level Operation)**
GP301	2.4" W.C.	(Sea Level Operation)**
GP201	1.8" W.C.	(Sea Level Operation)**

**Reduce by 10% for High Temperature Operation*

***Reduce by 4% per 1000 feet of altitude*

Power Consumption @ 120 VAC	
GP501	70 - 140 watts
GP401	60 - 110 watts
GP301	55 - 90 watts
GP201	40 - 60 watts

Inlet/Outlet: 3.5" OD (3.0" PVC Sched 40 size compatible)

Mounting: Fan may be mounted on the duct pipe or with integral flanges.

Weight: 12 lbs.

Size: 13H" x 12.5" x 12.5"

Recommended ducting: 3″ or 4" Schedule 20/40 PVC Pipe

Storage temperature range: 32 - 100 degrees F.

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

Maximum inlet air temperature: 80 degrees F.

Continuous Duty

Class B Insulation

3000 RPM

Thermally protected

Rated for Indoor or Outdoor Use

GP301C / GP501C Rated for Commercial Use

LISTED
Electric Fan

Tested to
UL
Std. 507

77728

IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the GPx01/XP/XR Series Fan for shipping damage within 15 days of receipt. Notify RadonAway of any damages immediately. Radonaway is not responsible for damages incurred during shipping. However, for your benefit, Radonaway does insure shipments.

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

Install the GPx01/XP/XR Series Fan in accordance with all EPA standard practices, and state and local building codes and state regulations.

WARRANTY

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

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

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

5 YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

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

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

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

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

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

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

Record the following information for your records:

Serial No.______________________________________
Purchase Date______________________________

ARCADIS

Appendix D

RadonAway™ GP Series Fans
Information Sheet

RadonAway™

The World's Leading Radon Fan Manufacturer

GP Series

Radon Mitigation Fans

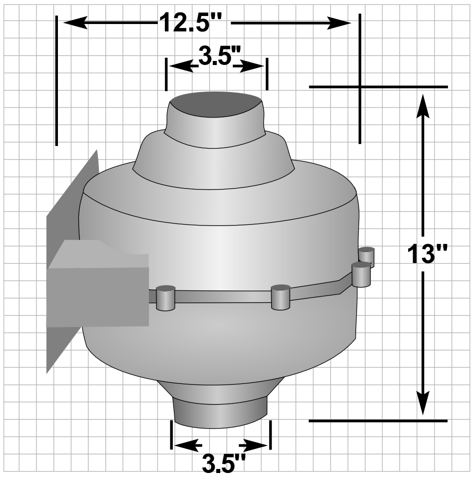
All RadonAway fans are specifically designed for radon mitigation. GP Series Fans provide a wide range of performance that makes them ideal for most sub-slab radon mitigation systems.

Features:

- Five-year hassle-free warranty
- Mounts on duct pipe or with integral flange
- 3.5" diameter ducts for use with 3" or 4" pipe
- Electrical box for hard wire or plug in
- ETL Listed - for indoor or outdoor use
- Meets all electrical code requirements
- Thermally protected
- Rated for commercial and residential use.

Model	Watts	Max. Pressure "WC	Typical CFM vs. Static Pressure WC						
			1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
GP201	40-60	2.0	82	58	5	-	-	-	-
GP301	55-90	2.6	92	77	45	10	-	-	-
GP401	60-110	3.4	93	82	60	40	15	-	-
GP501	70-140	4.2	95	87	80	70	57	30	10

Choice of model is dependent on building characteristics including sub-slab materials and should be made by a radon professional.



For Further Information Contact:

03/08
P/N 02002