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Geologists and Environmental Scientists
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March 31, 2023

Mr. Shaun Bollers
New York State Department
of Environmental Conservation
Division of Environmental Remediation
47-40 21st Street
Long Island City, New York 11101-5407

Re: **Former Sep's Cleaners**
**250 Livonia Ave.**
**Brooklyn, New York**

Dear Mr. Bollers:

Following the completion of the remediation of the above-referenced site that included soil excavation, soil vapor extraction, and groundwater remediation, Korlipara Engineering/Dermody Consulting has completed the installation of a Sub-Slab Depressurization System (SSDS) at the above-referenced site. The purpose of the SSDS is to address the potential for residual soil vapor intrusion (primarily tetrachloroethylene and trichloroethylene) into the air within the building.

It is anticipated that the SSDS will likely require operation for a minimum of 10 to 20 years, subject to the results of the proposed annual air monitoring in the building.

***Current Site Conditions***

The Site is located at the southwest corner of the intersection of Livonia and Rockaway Avenues. The building at the Site contains several units that include a deli, a Chinese restaurant, a pizza restaurant, a Pay-o-Matic check cashing business, and a supermarket. The basement contains individual units beneath the deli, the Chinese restaurant, the pizza restaurant, and the supermarket. A hallway is present along the south wall of the basement area. Figure 1 provides the layout of the basement.

***SSDS Installation***

The SSDS consists of 12 suction wells to induce negative pressures (vacuum conditions) in the sub-slab zone and thereby inhibit the intrusion of vapors into the indoor air. In addition, to determine the vacuum field created by the suction wells, 16 vacuum monitoring points were installed throughout the basement to assure that the suction wells are creating a sufficient vacuum to prevent soil vapor intrusion (Figure 1 shows the locations of the suction wells and vacuum monitoring points).

The suction wells at each location were installed by using a concrete saw to create an approximately 16x16-inch diameter hole in the concrete. Upon removal of the concrete, the soil beneath the concrete was removed to a depth of approximately 24 inches, and laterally to a diameter of a minimum of 24 inches. The underlying soil at each location generally consisted of fine to coarse sand with gravel and small brick fragments. A 20-inch length of two-inch-diameter, 0.020-inch slotted PVC screen with a bottom cap was installed below the base of the concrete and a two-inch-diameter PVC riser pipe extending above the level of the concrete was connected to the screen. All installed PVC screen and piping is Schedule 40. The PVC screen was placed in the center of the excavated hole and a two-feet diameter of No. 2 Morie-sized gravel was placed in the excavation around the screen to a level equal to the base of the concrete. Then, a 16x16-inch-diameter segment of plastic sheeting with a two-inch-diameter hole in its center was placed on the gravel (to prevent "bleeding" of the wet cement into the underlying gravel). The hole around the pipe screen was then be concreted to match the existing grade.

A four-foot section of two-inch PVC riser piping was connected to the suction well screen at each location and a RadonAway GP501 suction fan (see Attachment A for fan specifications) was installed in-line at each suction well location. Two-inch-diameter PVC piping was then installed on the discharge side of each suction fan, which runs upward to the ceiling at each location and then laterally and southwards through the rear wall of each basement unit, across the south basement hallway, and then exiting through the south exterior wall of the building. The wall perforations were sealed with concrete at each location. Each of the discharge pipes were then run upwards along the rear exterior of the building's wall to a height of approximately two feet above the building roofline. A PVC T-valve was placed on the top of the open discharge pipes to prevent the entry of rainwater.

Figure 2 provides a diagram of the typical suction well design. The discharge points were installed approximately 2 feet above the roof level. Attachment B shows photos of the exterior piping configuration.

Vacuum monitoring points were installed at 16 locations within the basement. The vacuum monitoring points were created by using a rotary hammer drill to create a one- inch diameter hole through the concrete (which is generally four to six inches thick) and a further two inches into the underlying soil. One inch of No. 2 Morie gravel was placed at the base of the hole and then a half-inch diameter brass tube connected to a brass valve at some locations (MP-9, MP-10, MP-13, MP-15, and MP-16).

The tubes were concreted into the hole to create a seal. For all other monitoring point locations, where the brass tubes may create a tripping hazard, temporary points were installed in the drill holes which consisted of one inch of No. 2 Morie-sized gravel to the base of the hole and then installed a quarter-inch diameter length of food-grade polyethylene tubing from the top of the gravel to approximately six inches above grade. Hydrated bentonite was then used to create an airtight seal around the tubing in the hole to a depth of approximately two inches below grade. Following the completion of the monitoring, the bentonite and tubing was removed and the hole was sealed with concrete using a tube of concrete and a caulking gun (this concrete can be drilled out for future vacuum monitoring).

***Pilot Testing***

For pilot testing, which was performed in June, 2022, two suction wells and vacuum monitoring points were installed in the westernmost basement (the basement under the deli). Then, vacuum field testing was performed to determine the area of the vacuum field created. The results were used to determine if the proposed SSDS design and number and placement of suction wells will be sufficient to create an adequate vacuum throughout each of the units. This entailed the operation of the two suction wells (SW-1 and SW-2) and then monitoring the vacuum at vacuum monitoring points (MP-1, MP-2, and MP-3). The pilot test vacuum monitoring showed vacuum levels well above the 0.004 inches of water vacuum guideline. Therefore, the full system installation was completed in October, 2022.

***Full-Scale Operation and Monitoring***

With all SSDS suction wells operating, vacuum monitoring was performed to assure a vacuum of at least 0.004 inches of water column throughout the floor area of each unit. The monitoring points were connected to the sampling port on each monitoring point with polyethylene tubing and then connected to an Infiltec Digital Micromanometer Model DM-1 that provides vacuum readings to the nearest 0.001 inches of water column. The vacuum monitoring results were obtained in November, 2022 with the full SSDS in operation and are provided in Table 1. The results show that sufficient vacuum was created in each unit and therefore the system is operating in a manner that will address the potential for soil vapor intrusion.

In addition, vacuum monitoring, indoor air sampling, and SSDS exhaust sampling and PID monitoring will be perfromed from each of the basement units annually during the heating season. The 2023 sampling round will be performed during the month of March. The indoor air and SSDS exhaust samples will be obtained with 6-liter Summa Canisters with flow restrictors to obtain each sample over a 8-hour period. The samples will be delivered to York Analytical Laboratories for the analysis of volatile organic compounds by Method TO-15. The results will be included an indoor air sampling report that will be completed in March, 2023.

The SVE has been shut down since the SSDS November, 2022. It will remain on site until the SSDS installation and sampling reports is approved by NYSDEC.

The Professional Engineer certification page is provided in Attachment C.

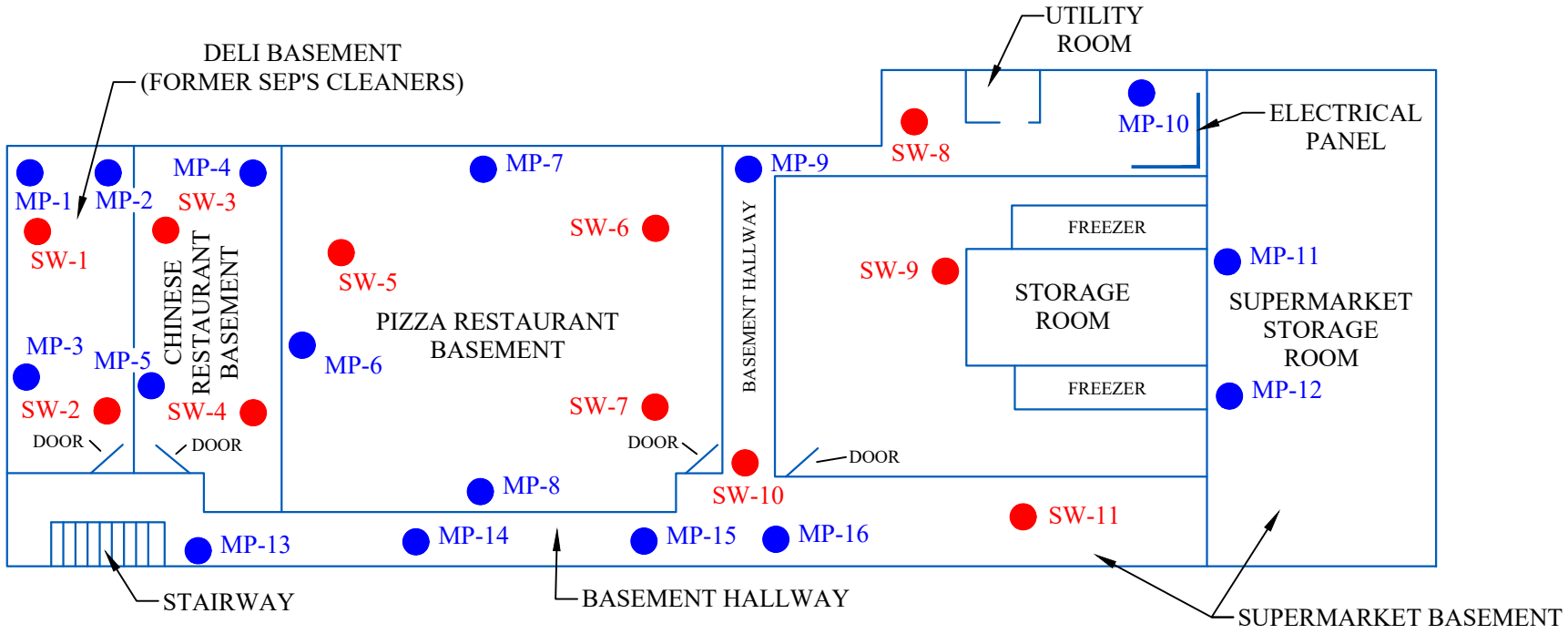
Should you have any questions or comments, please do not hesitate to contact us.

Very truly yours,

Ravi K. Korlipara, Ph.D., P.E.
Engineer

Peter Dermody, C.P.G.
Principal Hydrogeologist

cc: Andre Obligado
Barry Cohen




LEGEND

SW-1 SUBSLAB WITHDRAWAL POINT

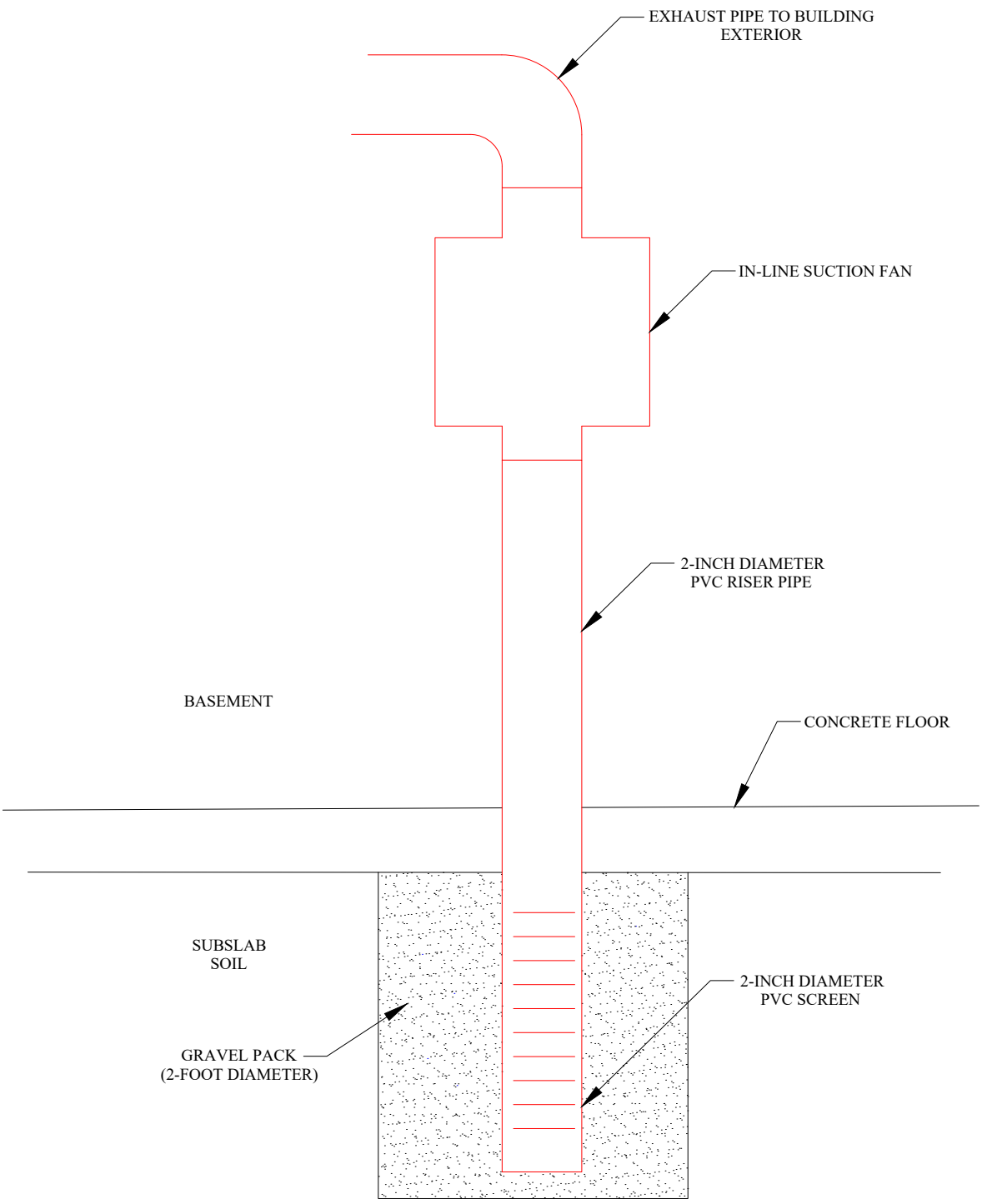
MP-1 VACUUM MONITORING POINT

SCALE 1' = 20'

Dermody Consulting
Center Moriches, New York

FIGURE 1

LAYOUT OF
SSDS SYSTEM
250 LIVONIA AVENUE
BROOKLYN, NEW YORK

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**DERMODY CONSULTING**
CENTER MORICHES, NEW YORK

FIGURE 2
SCHEMATIC DIAGRAM OF
TYPICAL SUCTION WELL / FAN
250 LIVONIA AVENUE
BROOKLYN, NEW YORK

**Table 1**
**Building Subslab Vacuum Readings**
**250 Livonia Avenue**
**Brooklyn, New York**
**November 9, 2022**

| Pressure Monitoring Point | Vacuum in Inches Water Column |
|---|---|
| MP-1 | -0.186 |
| MP-2 | -0.099 |
| MP-3 | -0.144 |
| MP-4 | -0.107 |
| MP-5 | -0.096 |
| MP-6 | -0.170 |
| MP-7 | -0.212 |
| MP-8 | -0.066 |
| MP-9 | -0.218 |
| MP-10 | -0.281 |
| MP-11 | -0.089 |
| MP-12 | -0.081 |
| MP-13 | -0.131 |
| MP-14 | -0.121 |
| MP-15 | -0.184 |
| MP-16 | -0.380 |

# Attachment A

# GP501c Radon Fan

**SKU:** 23005-1

Be the first to review this product

RadonAway's GP501c Radon Fan is built with the professional in mind and provides the ideal solution for many sub-slab radon mitigation installations. Our GP501c is designed to perform in all but the harshest climates, without additional concern for temperature and weather. It is factory sealed to control radon leakage and operates quietly and effieciently without any disturbance to the building occupants. The versatility of the GP501c makes it a great choice for installations where multiple suction points are needed. This fan is ETL listed for indoor or outdoor use and is equipt with an integrated mounting bracket for an easy installation.

- 5-year warranty if installed by a radon professional
  (1-year limited warranty for non radon professional)
- Mounts on duct pipe or with integral flange

ITEM(S) IN YOUR CART ^ or use with 3" or

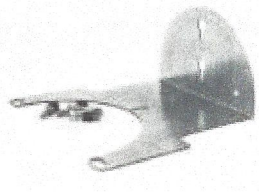
4" pipe

## RELATED PRODUCTS

- Electrical box for hard wire or plug in
- ETL [illegible] tdoor use

RadonAway RSA1 Radon System Alarm

28535



Fan Mounting Bracket

25007

3" x 3" White Spruce Flexible Coupling (Single)

79220

3" x 4" White Spruce Flexible Coupling (Single)

79221



Details

## GP5( [illegible] an Feat[illegible]

RadonAway® Easy Read Manometer – BLUE

50017

RadonAway® Easy Read Manometer – RED

50018

- 5-year warranty if installed by a radon professional (1-year limited warranty for non radon professional)
- Mounts on duct pipe or with integral flange
- 3" diameter ducts for use with 3" or 4" pipe
- Electrical box for hard wire or plug in indoor or outdoor use

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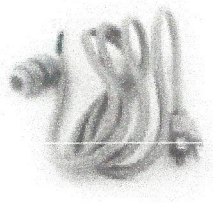
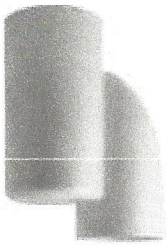
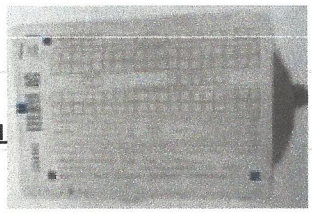




**Typical CFM vs. Static Pressure WC**

| | | | n Duct ımeter | | 1.0" | 1.5" | 2.0" | 2.5" | 3.0" | 3.5" | 4.0" |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6' Power Cord with Bushing | | | | RadonAway® Transition Fitting | | | | | | | |
| GP301c | 23006-1 | 3" | 56-100 | 2.3 | 64 | 54 | 41 | 4 | - | - | - |
| | 27005 | | | 13245 | | | | | | | |
| GP501c | 23005-1 | 3" | 68-146 | 3.8 | - | - | 66 | 58 | 50 | 27 | 4 |



Additional

Reviews

Conditions of Sale

Air Chek Short-Term Radon in Air Test Kit

28604

- 1-2 day shipping in most of US Read more...
- Five year manufacturer's warranty on RadonAway fans
- Free technical support for our customers
- Contact Us



ITEM(S) IN YOUR CART

# Attachment B


***Photograph of one of the two clusters of two-inch PVC exhaust pipes along the rear wall of the building.***

# Attachment C

## Certification

I, Dr. Ravi Korlipara, PE, PhD, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in accordance with the DER-approved work plan.

Signature/ Date/ Certification Stamp

3/31/23