

# **VAPOR INTRUSION MITIGATION PLAN**

**FORMER TETERS FLORAL PROPERTY  
912 SOUTH CHURCH AVENUE  
LOUISVILLE, MISSISSIPPI**

**ACRES NO. 237224**

**PPM PROJECT NO. 30065902-04-CAP01**

**JULY 7, 2023**



**VAPOR INTRUSION MITIGATION PLAN**

**FOR**

**TEAM MOTORS – S. CHURCH SHELL  
112 CAGLE STREET  
LOUISVILLE, MISSISSIPPI**

**ACRES #237224**

**PREPARED FOR:**

**CITY OF LOUISVILLE  
2000 SOUTH CHURCH AVENUE  
LOUISVILLE, MISSISSIPPI 39339**



**PPM PROJECT NO. 30065902-04-CAP01**

**JULY 7, 2023**

**PREPARED BY:**

A handwritten signature in black ink, appearing to read "Ben Lightsey", written over a horizontal line.

**BENJAMIN LIGHTSEY, P.E.  
SENIOR ENGINEER**

**REVIEWED BY:**

A handwritten signature in blue ink, appearing to read "Anna C. McIlwain", written over a horizontal line.

**ANNA C. MCILWAIN, P.E.  
PRINCIPAL ENGINEER**

**PPM CONSULTANTS, INC.  
289 COMMERCE PARK DRIVE, SUITE D  
RIDGELAND, MISSISSIPPI 39157  
(601) 956-8233**

# TABLE OF CONTENTS

	<b>Page</b>
<b>1.0 INTRODUCTION.....</b>	<b>1</b>
1.1 Site Location and Description.....	1
1.2 Environmental Site Assessment (ESA) History .....	2
1.2.1 Phase I ESA Report (July 9, 2018).....	2
1.2.2 Phase II ESA Report (November 16, 2018).....	3
1.2.3 Phase III ESA Report (May 15, 2020) .....	6
1.2.4 Sub-Slab and Indoor Air Sampling Event (October 22, 2020) .....	7
1.2.5 Indoor Air Sampling Event (January 2, 2022).....	8
1.2.6 Pilot Test and Sub-Slab Depressurization System Sizing.....	8
1.3 Scope of Work.....	9
<b>2.0 REMEDIAL IMPLEMENTATION .....</b>	<b>10</b>
2.1 Sub-Slab depressurization system .....	10
2.2 Contingency Plan .....	13
<b>3.0 SCHEDULE .....</b>	<b>13</b>
<b>4.0 PERFORMANCE MONITORING PLAN .....</b>	<b>14</b>
<b>5.0 HEALTH AND SAFETY PLAN .....</b>	<b>14</b>

## FIGURES

Figure 1 – Site Location Map

Figure 2 – Site Map

Figure 3 – Sub-Slab Depressurization Points, Piping and Exhaust System

Figure 4 – Sub-Slab Depressurization Point Schematic

Figure 5 – Block-Wall Depressurization Schematic

## APPENDICES

Appendix A – Figures

Appendix B – Technical Data for Sub-Slab Depressurization Blower

## 1.0 INTRODUCTION

PPM Consultants, Inc. (PPM) was retained by the City of Louisville to develop a Vapor Intrusion Mitigation Plan utilizing Sub-Slab Depressurization System (SSDS) for the former Teters Floral site [Assessment, Cleanup, and Redevelopment Exchange System (ACRES) No. 237224] located at 912 South Church Avenue in Louisville, Mississippi. The purpose of the Vapor Intrusion Mitigation Plan is to reduce the volatile organic compound (VOC) concentrations directly beneath the slab-on-grade foundation and mitigate the vapor intrusion pathway of the site, thereby protecting human health and the environment at the site.

### 1.1 SITE LOCATION AND DESCRIPTION

The Teters Floral Property site (ACRES No. 237224) is located at 912 South Church Avenue in Louisville, Winston County, Mississippi, 39339. The facility is located in Section 4, Township 14 North, Range 12 East of the Choctaw, Mississippi Meridian. More specifically, the site is located at 33° 06' 00.11" North latitude and 89° 03' 31.70" West longitude. Site location is depicted in **Figure 1, Site Location Map, Appendix A, Figures.**

The property is located south of downtown Louisville in a mixed-use area that includes industrial, commercial, and residential properties. The surrounding properties currently consist of commercial properties to the west, including an animal clinic, a storage facility, a construction material yard, and a convenience store. An industrial plywood facility is located to the northeast beyond Hughes Creek, and a multi-family residential property is located to the south. Historically, the surrounding land use consisted of residential and agricultural land until the early 1970s when developments in the vicinity of the subject property began to resemble what is present today. Surrounding properties are depicted in **Figure 2, Surrounding Area Map.**

The property currently consists of an approximately 400,000-square-foot brick and metal building that houses multiple businesses and a large amount of vacant warehouse space. Occupants of the building include Birmingham Fasteners, Hardwire, and Taylor Machine Works. Site features are included in **Figure 3, Site Map.**

## 1.2 ENVIRONMENTAL SITE ASSESSMENT (ESA) HISTORY

### 1.2.1 Phase I ESA Report (July 9, 2018)

Recognized Environmental Conditions (REC) were identified in the July 9, 2018, Phase I ESA performed on the property by PPM. RECs identified in the Phase I ESA were as follows:

- **Historical use(s) of the property prior to current use.**
  - **Current use(s) of the property.** The site is primarily vacant warehouse space, with some areas of the building being occupied by various organizations and businesses. The northern portion of the building is occupied by East Central Community College offices, a martial arts school, and the Prairie Opportunity community agency. The Hewlett Manufacturing, which manufactures offshore oil filters and other products, conducts plastic molding in the northwestern portion of the building. The Hewlett company maintains machinery that perform the molding, shaping, and cutting processes used to manufacture their products. Some flammable liquids are stored within the building, but are kept in secured chemical cabinets. A Super Grip tire distributor and Taylor Machine Works operate in the southern portion of the building. These companies use the building for warehousing and distribution. Three unlabeled 55-gallon drums and one 300-gallon tote were observed on the western portion of the property. Staining was observed both within and outside of the shallow containment basin the drums were located in. The presence of unidentified materials within these storage containers is a REC.
  - **Historical use(s) of the property prior to current use.** Interviews and historical records indicate that the property was first developed in the early 1960s by the Spartus Clock Manufacturing Company, which operated at the property until 1996, when Spartus was acquired by General Time Corporation. The Spartus Company manufactured clocks at the facility, which included painting and plating operations. The property was acquired by Winston County in 1997 and leased to the Teters Floral company, which used the building as a distribution center where silk flowers were received from China and shipped to retail stores. The eastern portion of the building was destroyed by a tornado in 2014, and the Teters Floral company moved out of the property in January 2017. Spartus conducted metal plating operations prior to the advent of regulations for storage,

transportation, and disposal of hazardous materials. The potential for unrecorded release and/or onsite disposal of hazardous materials is a REC.

- **Woods Grocery.** The Woods Grocery is located adjacent to the west of the subject property. This facility operated with two 500-gallon gasoline USTs for approximately 13 years until the tanks were taken out of service, and filled with an unknown material in 1988. The operation and closure in place of USTs on an adjacent property prior to state and federal regulations and without environmental testing represent a REC.

### 1.2.2 Phase II ESA Report (November 16, 2018)

On August 8, 2018, through August 9, 2018, PPM and its subcontractor advanced nine soil borings at the site using direct push technology (DPT). Soil borings SB-1 through SB-9 were advanced based on RECs identified during the previous Phase I ESA. Borings were advanced to depths of approximately 16 to 24 feet below ground surface (BGS).

Soil samples collected from SB-1 through SB-5 and SB-7 through SB-9 and groundwater samples collected from temporary wells TW-1 through TW-5 and TW-8 were analyzed for cyanide per EPA Environmental Protection Agency (EPA) Method 9012B, Resource Conservation and Recovery Act (RCRA) Metals per EPA Method 6010B and 7471A, and VOCs per EPA Method 8260B. Samples collected from soil boring SB-4 and temporary well TW-4 were also analyzed for semi-volatile organic compounds (SVOC) per EPA Method 8270C. Samples collected from soil boring SB-6 and temporary well TW-6 were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) per EPA Method 8260B, total petroleum hydrocarbons (TPH)- gasoline-range organics (GRO) and TPH- diesel-range organics (DRO) by EPA Method 8015 Modified, and polycyclic aromatic hydrocarbons (PAH) per EPA Method 8270C-SIM. The soil and groundwater samples collected from the soil borings and temporary wells were analyzed by Pace Analytical, Inc., of Mount Juliet, Tennessee.

The findings of the Phase II ESA are summarized as follows:

- Soil beneath the western portion of the site consists of sandy silts, silts, sandy clays, and/or clays underlain by silty or clayey sands. The sands were underlain by sandy clays.

- Soil beneath the eastern portion of the site consists of silty clays and clays underlain by sandy clays or sandy silts. The sandy clays and sandy silts were underlain by clayey sand layers. Clays were under the sandy clay layers and extended to boring terminations.
- Groundwater elevations measured at the temporary wells ranged from 488.25 feet (TW-8) to 498.26 feet (TW-3). Based on the potentiometric surface map, groundwater beneath the site appear to move eastward.
- VOCs, TPH-GRO, and TPH-DRO were detected in soil samples at concentrations below their Mississippi Department of Environmental Quality (MDEQ) Tier 1 Unrestricted Target Remediation Goals (TRG).
- The RCRA metals barium, chromium, lead, and mercury were detected in the soil samples at concentrations below their MDEQ Tier 1 Unrestricted TRGs.
- Arsenic concentrations exceeded MDEQ Tier 1 Unrestricted TRG in the soil samples collected from the soil borings SB-2, SB-4, SB-5, SB-7, and SB-9. The arsenic concentration detected in soil sample collected from soil boring SB-9 [4.08 micrograms per liter ( $\mu\text{g/L}$ )] was above the MDEQ Tier 1 Restricted TRG. The concentrations detected in soil borings are considered to be consistent with background levels in the subject area.
- RCRA metals barium and lead were detected in the groundwater samples at concentrations below their MDEQ Tier 1 TRGs.
- Cis-1,2-dichloroethene was detected in the groundwater samples collected from temporary wells TW-2 (342  $\mu\text{g/L}$ ) and TW-8 (86.0  $\mu\text{g/L}$ ) at concentrations above the MDEQ Tier 1 TRG of 70  $\mu\text{g/L}$ .
- Tetrachloroethene (TCE) was detected in groundwater samples collected from temporary wells TW-2 (552  $\mu\text{g/L}$ ) and TW-8 (49.8  $\mu\text{g/L}$ ) at concentrations above the MDEQ Tier 1 TRG of 5  $\mu\text{g/L}$ .
- TCE was detected in the groundwater samples collected from the temporary wells TW-2 (60.4  $\mu\text{g/L}$ ), TW-5 (16.2  $\mu\text{g/L}$ ), and TW-8 (110  $\mu\text{g/L}$ ) at concentrations above the MDEQ Tier 1 TRG of 5  $\mu\text{g/L}$ .
- 1,2,4-Trimethylbenzene was detected in the groundwater sample collected from temporary well TW-2 (1,000  $\mu\text{g/L}$ ) at a concentrations above the MDEQ Tier 1 TRG of 12.3  $\mu\text{g/L}$ .

- 1,3,5-Trimethylbenzene was detected in groundwater sample collected from temporary well TW-2 (270 µg/L) at a concentration above the MDEQ Tier 1 TRG of 12.3 µg/L.
- Vinyl chloride was detected in the groundwater samples collected from temporary wells TW-4 (66.4 µg/L) and TW-5 (41.0 µg/L) at concentrations above the MDEQ Tier 1 TRG of 2 µg/L.

The following conclusions were based on, or were reasonably ascertainable from, published information, field observations, and the results of specific laboratory analyses:

- Based on the findings of this assessment, the former underground storage tank (UST) site (Woods Grocery) located on the adjacent property to the west of the subject property is located upgradient from the subject property. The soil boring/temporary well, SB-6/TW-6, was installed to intersect groundwater downgradient of the Woods Grocery site. The analytical results of the soil and groundwater samples indicate concentrations of BTEX, TPH-GRO, TPH-DRO, and PAHs were not detected at concentrations above the MDEQ Tier 1 TRGs. Therefore, petroleum hydrocarbon fuel constituents are not migrating onto the subject property from Woods Grocery, and the associated REC from the Phase I ESA is not substantiated.
- Elevated concentrations of perchloroethylene (PCE) and its degradation products, TCE, cis-1,2-dichloroethene, and vinyl chloride are present in the groundwater on the western portion of the site and downgradient on the eastern portion of the site. The source of PCE, TCE, and their degradation products are commonly related to the use of solvents and degreasers. Elevated concentrations of 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene were also detected in the groundwater collected from the temporary well TW-2 on the western portion of the site. The constituents are typically associated with degraded petroleum fuel and hydrocarbon solvents. The detected concentration of VOCs in the western portion of the site appears to be related to past site operations. Therefore, the REC from the Phase I ESA for the past use of the site for manufacturing clocks is substantiated.
- The 55-gallon drums and 300-gallon tote contain unidentified materials and pose a material threat of future release; therefore, the presence of the drums and tote is still considered to represent a REC.



### 1.2.3 Phase III ESA Report (May 15, 2020)

Based on the findings of the Phase II ESA performed in October 2018, a Phase III ESA was conducted in January 2020. Two soil borings were converted to temporary wells (TW-10 and TW-11). Soil and groundwater samples were collected from each of the soil borings/temporary wells and submitted for laboratory analysis. Surface water samples (SW-1 and SW-2) were collected from Hughes Creek. Two near-slab vapor samples and one ambient air sample were also collected. The surface water and vapor samples were submitted for laboratory analysis.

The following conclusions were based on or were reasonably ascertainable from, published information, field observations, and the results of specific laboratory analyses from the Phase III.

- Elevated concentrations of PCE and its degradation products, TCE and vinyl chloride, are present in the groundwater at the temporary well TW-10 location on the eastern portion of the site and downgradient of the western portion of the site. PCE, TCE, and their degradation products are commonly related to the use of solvents and degreasers. The detected concentration of VOCs from the Phase II ESA conducted in October 2018 on the western portion of the site appears to be related to past clock manufacturing operations by Spartus Clock Manufacturing Company, which was acquired by General Time Corporation. The Phase II ESA groundwater elevation data indicate groundwater beneath the site flows eastward toward Hughes Creek. The PCE and TCE concentrations detected in groundwater samples collected from temporary wells – upgradient of temporary monitoring well TW-10 location – installed during the October 2018 Phase II ESA were higher than the concentrations detected in groundwater samples collected from temporary well TW-10 during the Phase III ESA, indicating the TCE and PCE contamination plume is migrating with groundwater flow eastward towards Hughes Creek.
- The TCE concentrations detected in the surface water samples are below the TCE concentrations detected in the groundwater sample collected from temporary well TW-10 but are relatively similar. These similar concentrations, coupled with known groundwater flow direction, indicate that Hughes Creek is a receiving stream.
- The PCE concentration detected in the near slab vapor sample SV-1 that is above the applicable residential EPA Vapor Intrusion Screening Level (VISL) but below the applicable commercial EPA VISL is not a concern because the property is currently, and will likely continue to be, used as a commercial property.

#### 1.2.4 Sub-Slab and Indoor Air Sampling Event (October 22, 2020)

The sub-slab soil gas samples from SS-1 through SS-3 were collected on October 22, 2020, and submitted to the analytical laboratory for VOC analysis. VOCs were detected in all three of the sub-slab soil gas samples submitted.

VOCs detected in one or more of the soil gas samples collected from SS-1 through SS-3 include the following: benzene, 2-butanone (MEK), chloroform, chloromethane, dichlorodifluoromethane, ethanol, methylene chloride, propylene, PCE, and TCE. Chloroform concentrations detected in the sub-slab soil gas samples collected from SS-1 [78.5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )] and SS-3 ( $18.5 \mu\text{g}/\text{m}^3$ ) were above the applicable commercial EPA VISL value ( $17.8 \mu\text{g}/\text{m}^3$ ). TCE concentrations detected in the sub-slab soil gas samples collected from SS-3 ( $274 \mu\text{g}/\text{m}^3$ ) were above the applicable commercial EPA VISL value ( $29.2 \mu\text{g}/\text{m}^3$ ).

A total of eight indoor air samples were collected on January 30, 2021, and submitted to the analytical laboratory for VOC analysis. VOCs were detected in five of the eight indoor samples submitted. VOCs were not detected in the ambient air sample (#13001 – Entrance), the indoor air samples #13008 – Shipping/Receiving, or #13009 – Super Grip.

The VOCs cis-1,2-dichloroethene, tetrachloroethene, and trichloroethene were detected in one or more of the indoor air samples submitted for laboratory analysis.

Cis-1,2-dichloroethene was detected in indoor air samples #13002 – Back Side of Office ( $2.0 \mu\text{g}/\text{m}^3$ ) and #13004 – Transformer ( $2.0 \mu\text{g}/\text{m}^3$ ). There is not a commercial VISL value assigned to cis-1,2-dichloroethene for indoor air.

PCE was detected in indoor air samples #13002 – Back Side of Office ( $2.6 \mu\text{g}/\text{m}^3$ ) and #13004 – Transformer ( $3.5 \mu\text{g}/\text{m}^3$ ). A Brake Parts Cleaner manufactured by Berryman Products, Inc. containing approximately 5-15% by weight PCE was confirmed to be present and utilized within the facility by The Taylor Group. The detected tetrachloroethene concentrations were below the commercial VISL value of  $17.5 \mu\text{g}/\text{m}^3$ .

TCE was detected in indoor air samples #13002 – Back Side of Office ( $38.6 \mu\text{g}/\text{m}^3$ ), #13003 – SS-3 ( $6.3 \mu\text{g}/\text{m}^3$ ), #13004 – Transformer ( $23.8 \mu\text{g}/\text{m}^3$ ), #13005 – Planting Area East ( $1.2 \mu\text{g}/\text{m}^3$ ), and #13007 – Defense East ( $0.94 \mu\text{g}/\text{m}^3$ ). The detected trichloroethene concentrations in samples #13002 – Back Side of Office ( $38.6 \mu\text{g}/\text{m}^3$ ), #13003 – SS-3 ( $6.3 \mu\text{g}/\text{m}^3$ ), #13004 – Transformer ( $23.8 \mu\text{g}/\text{m}^3$ ) were above the commercial VISL value of  $2.99 \mu\text{g}/\text{m}^3$ .

### 1.2.5 Indoor Air Sampling Event (January 2, 2022)

A total of four indoor air samples and one ambient air sample were collected on January 2, 2022, and submitted to a laboratory for VOC analysis. VOCs were detected in three of the four indoor samples submitted. VOCs were not detected in the ambient air sample (AMB) or the indoor air sample IA-4. The indoor air samples were evaluated against the USEPA VISLs utilizing a commercial worker scenario, a Hazard Quotient of 1, and an acceptable Target Risk of  $10^{-6}$ .

The findings of this assessment are summarized as follows:

- Cis-1,2-dichloroethene was detected in indoor air samples IA-1 ( $2.19 \mu\text{g}/\text{m}^3$ ), IA-2 ( $3.03 \mu\text{g}/\text{m}^3$ ), and IA-3 ( $1.99 \mu\text{g}/\text{m}^3$ ). There is not a commercial VISL screening value assigned to cis-1,2-dichloroethene for indoor air.
- PCE was detected in indoor air samples IA-1 ( $1.91 \mu\text{g}/\text{m}^3$ ), IA-2 ( $2.83 \mu\text{g}/\text{m}^3$ ), and IA-3 ( $2.84 \mu\text{g}/\text{m}^3$ ). A brake parts cleaner manufactured by Berryman Products, Inc. containing PCE at approximately five to 15 percent by weight was confirmed to be present and currently utilized within the facility. The detected PCE concentrations were below the commercial VISL screening value of  $47.2 \mu\text{g}/\text{m}^3$  and the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) of  $678,000 \mu\text{g}/\text{m}^3$ .
- TCE was detected in indoor air samples IA-1 ( $37.6 \mu\text{g}/\text{m}^3$ ), IA-2 ( $32.8 \mu\text{g}/\text{m}^3$ ), and IA-3 ( $21.1 \mu\text{g}/\text{m}^3$ ). ZEP Aerosolv II and Dry Graphite manufactured by Acuity Specialty Products Group, Inc. containing TCE at approximately 90 to 100 percent by weight, was confirmed to be present and currently utilized within the facility. The detected TCE concentrations were above the commercial VISL screening value of  $2.99 \mu\text{g}/\text{m}^3$  but significantly below the OSHA PEL of  $537,000 \mu\text{g}/\text{m}^3$ .

### 1.2.6 Pilot Test and Sub-Slab Depressurization System Sizing

PPM mobilized to the site on August 11, 2022, to perform a sub-slab depressurization system sizing action within the northwest corner of the existing structure. PPM cored a 4-inch hole through the concrete slab near the reported former degreasing area. A radon-style blower was fashioned to the core hole, and exhaust piping routed any exhaust gases to the building exterior. Test points were installed through the concrete slab at distances of 10, 15, 20, 25,

and 30 feet from the blower. Magnahelic® differential pressure gauges were installed in each test point to monitor changes from static pressure once the blower was activated. Once pressure readings from the gauges were recorded, the core-hole and test points were sealed with concrete cement repair.

PPM tested the sub-slab radius of influence of an RN-3 Radon fan within the former degreaser area of the structure. The RN-3 radon fan is capable of generating an airflow of over 350 cubic feet/minute with over 2.3 inches of water column. PPM observed pressure differential of over 2.5 inches of water column as far as 25 feet from the extraction point. The pressure differential decreased to approximately 0.1 inches of water 30 feet from the extraction point. Footers were encountered during the sizing test and resulted in a barrier to the depressurization system's effective radius of influence. The footers were observed to be located approximately every 30 feet and oriented in an east-to-west fashion.

### **1.3 SCOPE OF WORK**

The scope of work for this Mitigation Plan includes:

- Develop a Health and Safety Plan (HASP) for the project;
- Mobilize an environmental construction contractor to the property to coordinate plumbing and electrical needs for operating the designed SSDS system;
- Installation of 12 radon-style exhaust fans in connection to the sub-slab environment of the site;
- Construction of a manifold system so that all exhaust emanating from the SSDS is routed to the building's exterior and vented six feet above the rooftop;
- Collection of four indoor air samples within the area of mitigation and immediately surrounding to evaluate effectiveness of the SSDS two weeks after system start-up;
- Preparation of a detailed report presenting the scope of work, site background, system installation methodology, analytical data tables, figures, findings, conclusions, and recommendations for further action.

## 2.0 REMEDIAL IMPLEMENTATION

### 2.1 SUB-SLAB DEPRESSURIZATION SYSTEM

Winston County proposes to construct a sub-slab depressurization system within the northwest section of the existing 400,000-square-foot brick and metal building to mitigate vapor intrusion concerns caused by the property's use as a clock manufacturer in the 1960s. Vapor intrusion is the process by which vapor-forming chemicals (particularly VOCs) migrate from a subsurface source into an overlying building. The area within the proposed vapor mitigation system footprint has documented subsurface impacts from VOCs, and the vapor intrusion pathway appears to be complete. To protect health of employees and future occupants, a vapor intrusion mitigation system will be installed through the concrete slab foundation of the current structure. SSDS uses an electric fan to create a pressure gradient across the subgrade portion of the building to mitigate the potential for vapor intrusion from the subsurface into the building. When a negative pressure is present within the building envelope relative to surrounding soil, advective gas flow from the soil into the indoor air can occur. Soil gas entry pathways can be cracks through the slab or wall(s), improperly sealed utilities, etc. Depressurizing the soils below the slab with an SSDS will create a low pressure that reverses or alters the direction of soil gas flow, thus mitigating vapor intrusion. The types of fans/blowers used for SSD can vary depending on sub-slab material permeability, as well as the building type, construction quality, and size of the building being mitigated. SSD may be limited to the portion of the floor slab where VOC vapor concentrations exceed generic or building-specific screening action levels for vapor intrusion (VI).

SSD suction points can be constructed by coring through the slab or foundation, trenching in the slab, directional drilling from outside the building, or other methods of accessing the sub-slab soil. Typical system schematics are shown in **Figures 4 and 5**, located in **Appendix A, Figures**. Most commonly, a vertical pipe of 3- to 6-inch nominal diameter is installed through a cored hole in the floor. A suction pit or cavity is created below the floor by removing approximately 1 cubic foot of soil or fill material to reduce resistance to flow and enhance vacuum propagation. The piping is sealed to the slab or foundation at the connection point with the cavity using durable caulking or air-tight pipe fittings. The permeability of the subgrade soils and the presence of cracks and openings in the building floor slab will affect the performance of the SSD. Best performance is obtained when the suction pit is left open (not backfilled with stone or other material) and cracks/openings in the floor are sealed. Practitioners should understand vacuum, air flow, pressure differential(s), and the effects each has on the system design and operation.

Detailed design specifications for design and construction of SSD systems are beyond the scope of this technology information sheet, but information regarding design and operation can be found from the American Association of Radon Scientists and Technologists (AARST) and the Environmental Security Technology Certification Program (ESTCP). The American National Standards Institute (ANSI) / AARST standards are consensus-based standards by which certified installers of radon and soil gas mitigation systems in new buildings may be held accountable. ESTCP resources provide technical information that can inform mitigation system design and operation.

Active SSD technology requires an electric fan/blower connected via piping to the space directly below the floor slab. The electric fan/blower can be installed on either the outside or inside of a building, depending on locations available.

Typically, fans are installed on the outside of the building due to access issues both for system installation and for ongoing system operation, maintenance, and monitoring (OM&M). Fans installed on the outside of a building are subject to changing weather conditions and, depending on the geographic region, this may cause condensate issues and/or additional wear on the fan. Fans installed in interior spaces (for example, attics) must be fully excluded from occupied and/or insulated interior spaces (i.e., fans need to be located outside the occupiable building envelope) to mitigate the potential for leaks in the fan's vent from entering the occupied space. Fans installed in weather-protected spaces such as attics have a longer and more consistent operating life because they are protected from extreme weather conditions, but also require permission from and coordination with the property owner to obtain access for each OM&M visit.

The vent pipe from the fan/blower is exhausted above the roofline and away from building openings to avoid re-entrainment of exhausted vapors. Optional components depending on operational and regulatory considerations, include vapor-liquid separators or moisture knockout tanks upstream of blowers to manage significant entrained liquids and air emissions treatment (i.e., activated carbon) downstream of blowers.

Other features typical of an active SSD include:

- System piping, including a sampling port for conducting system diagnostic testing (i.e., vacuum and air velocity/flow) and for collecting samples to measure VOC concentrations in the effluent in support of sub-slab vapor flux calculations, if desired
- Permanent u-tube manometer (Figure 5), vacuum gauge, or pressure sensor on the system piping to monitor system pressures

- Balancing valves on the system piping, which provide an efficient way to adjust system flow from multiple suction points, to account for increased pressure gradients due to drying out of the subsurface soils, and/or to reconfigure the system footprint as sub-slab vapor concentrations diminish over time. Blowers that have variable speeds may also be used to balance or rebalance a system over its operational life.

Installation of the SSDS will consist of the following:

- As discovered during the previous Pilot Test performed on August 11, 2022, the SSDS requires concrete coring of twelve locations, two locations between each footer boundary, so as to create an overlapping radius of influence. The core locations will be located near interior and exterior walls, considering deep footer locations, in order to remain as unobtrusive as possible, remain protected from forklift traffic, and minimize encumbering future use of the space.
- The installation contractor will install 4-inch PVC piping within each concrete core and seal the penetration. Additionally, a piping elbow will be welded (as will all joints) and installed to penetrate the concrete block wall near each slab penetration and sealed. A ball valve will be fitted inline to each elbow in order to control the vacuum induced at each wall penetration.
- An inline radon style fan capable of moving (at a minimum) 310 cubic feet of air per minute at 0.20 inches of water column will be installed ahead of the elbow for each penetration and at a minimum of 5 feet above grade in order to minimize condensate from forming within the piping. Each individual riser (vent stack) will be equipped with a shut-off valve and manometer connection. The manometer connection and shut-off valves are designed to assist in the evaluation of system performance. The shut-off valves can be used to close individual vent risers, should testing be needed, to demonstrate that the vent risers are in communication with sub-slab conditions and demonstrate continuity of the system. Additionally, the fans will be equipped with an audible alarm to alert facility personnel in the event that the fans malfunction and needs to be repaired/replaced.
- Each exhaust riser will be plumbed to the 6-inch trunk line routed near the buildings ceiling utilizing a 45-degree attachment. The trunk line will be routed through the concrete block wall, near the ceiling so as to not create any roof penetrations, and the block wall will be sealed around the PVC trunk line. Once outside the building, a 90-degree fitting will be attached to the trunk line to route the exhaust from the system to a minimum elevation of 5 feet above the building's rooftop prior to

discharge. The trunk line’s exterior riser pipe will be equipped with a vent cap to prevent rain and debris intrusion. Roof-top mounted heating, cooling systems (RTUs) should not be located within 15 feet of the vapor mitigation vent pipes.

- Upon completion of the SSDS, system testing will consist of air flow readings at each extraction location and the exhaust vent.
- Approximately two weeks after system start-up, indoor air samples will be collected to evaluate effectiveness of the SSDS in mitigating the observed vapor intrusion in the northwest corner of the structure.

The SSD points and exhaust piping system is depicted in **Figure 3**, included in **Appendix A**, and details of the individual blowers are included in **Appendix B**.

## 2.2 CONTINGENCY PLAN

Per this mitigation plan, indoor air sampling events will be performed monthly for one quarter following the installation of the SSDS. If, after the implementation of the SSDS, contaminants of concern (COC) exceed the VISLs, additional remedial measures will be suggested for implementation, such as the use of solvent-resistant membrane barrier.

## 3.0 SCHEDULE

### Remedial Site Activities:

	Year 1											
Month	1	2	3	4	5	6	7	8	9	10	11	12
SSDS Installation												
Confirmation Air Sampling												
Monthly Air Sampling												
Reports												



## **4.0 PERFORMANCE MONITORING PLAN**

Field activities will be conducted in general accordance with applicable sections of the EPA, Region 4, *Quality Systems and Technical Procedures (2010-2017)* and the MDEQ Groundwater Assessment and Remediation Branch regulations, requirements, and protocols. PPM will perform engineering oversight, SSDS, and vent pipe oversight, and reporting for the Mitigation Plan activities previously outlined. Conditions encountered in the field that impact the cost of the project or stated project goals will be promptly relayed to the client and the MDEQ project managers. The work plan will then be modified, if necessary, to address feedback from the client and the MDEQ.

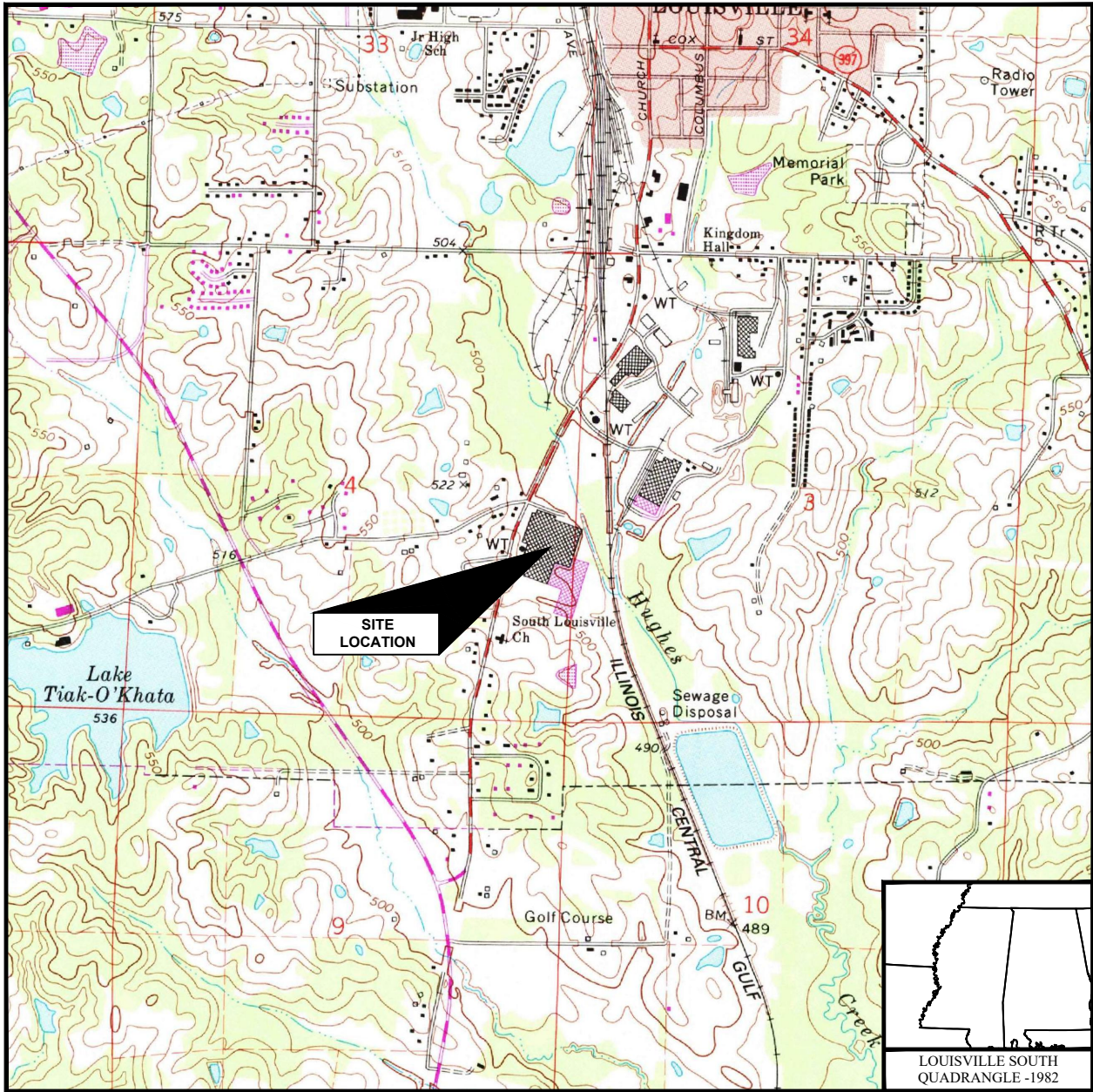
Analytical results for all indoor air confirmation samples collected will be analyzed for VOCs per EPA Method TO-15. Quality Assurance/Quality Control (QA/QC) samples during indoor air confirmation monitoring will consist of one duplicate sample and one ambient air sample, which will all be analyzed for VOCs per EPA Method TO-15.

## **5.0 HEALTH AND SAFETY PLAN**

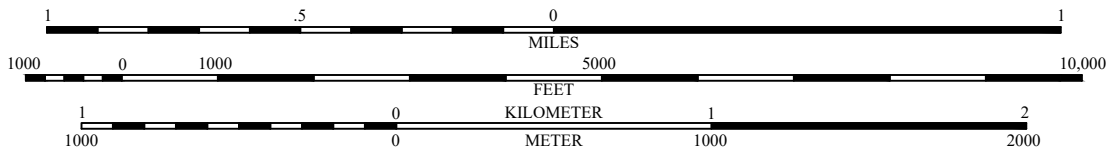
The PPM Project Manager will serve as the Site Safety Officer for the duration of the remediation project. PPM personnel and subcontractors will provide documentation of current OSHA 40 CFR 1910.120 training and annual medical surveillances. A HASP has will be prepared prior to commencing field activities. The HASP and documentation of OSHA training will be available for review at the site (during the field activities) and will be retained in the project file at PPM's office in Ridgeland, Mississippi.


## **APPENDICES**

## **APPENDIX A - FIGURES**



SCALE: 1 : 24,000



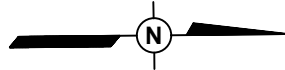
 <b>PPM CONSULTANTS, INC.</b> www.ppmco.com	
DRAWN BY: <b>JCP</b>	DRAWN DATE: <b>06/22/23</b>
PROJECT NUMBER: <b>30065902</b>	PHASE: <b>04-CAP-01</b>

**CITY OF LOUISVILLE**  
**FORMER TETERS FLORAL PROPERTY**  
 912 SOUTH CHURCH STREET  
 LOUISVILLE, MISSISSIPPI

**SITE LOCATION MAP**

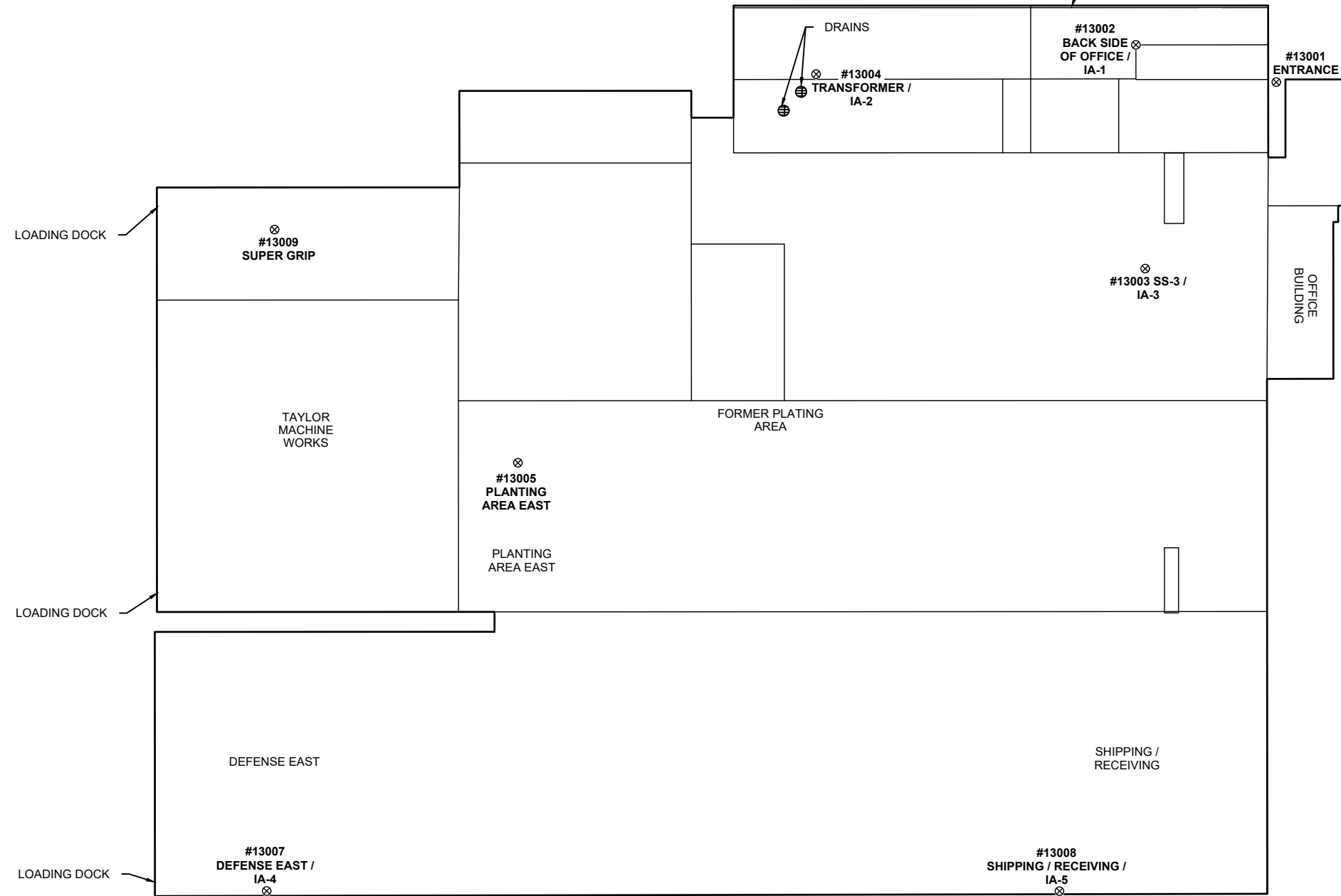
FIGURE NUMBER

**1**



0 50 100

SCALE: 1"=100'  
(Approximate)



LEGEND:

⊗ INDOOR AIR SAMPLING LOCATION

**PPM** PPM CONSULTANTS, INC.  
www.ppmco.com

DRAWN BY: JCP  
DRAWN DATE: 06/22/23

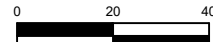
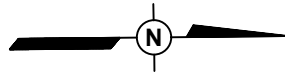
PROJECT NUMBER: 30065902  
PHASE: 04-CAP-01

CITY OF LOUISVILLE  
**FORMER TETERS FLORAL PROPERTY**  
912 SOUTH CHURCH STREET  
LOUISVILLE, MISSISSIPPI

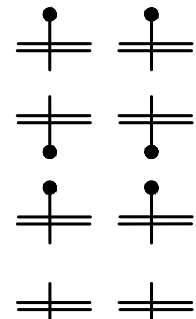
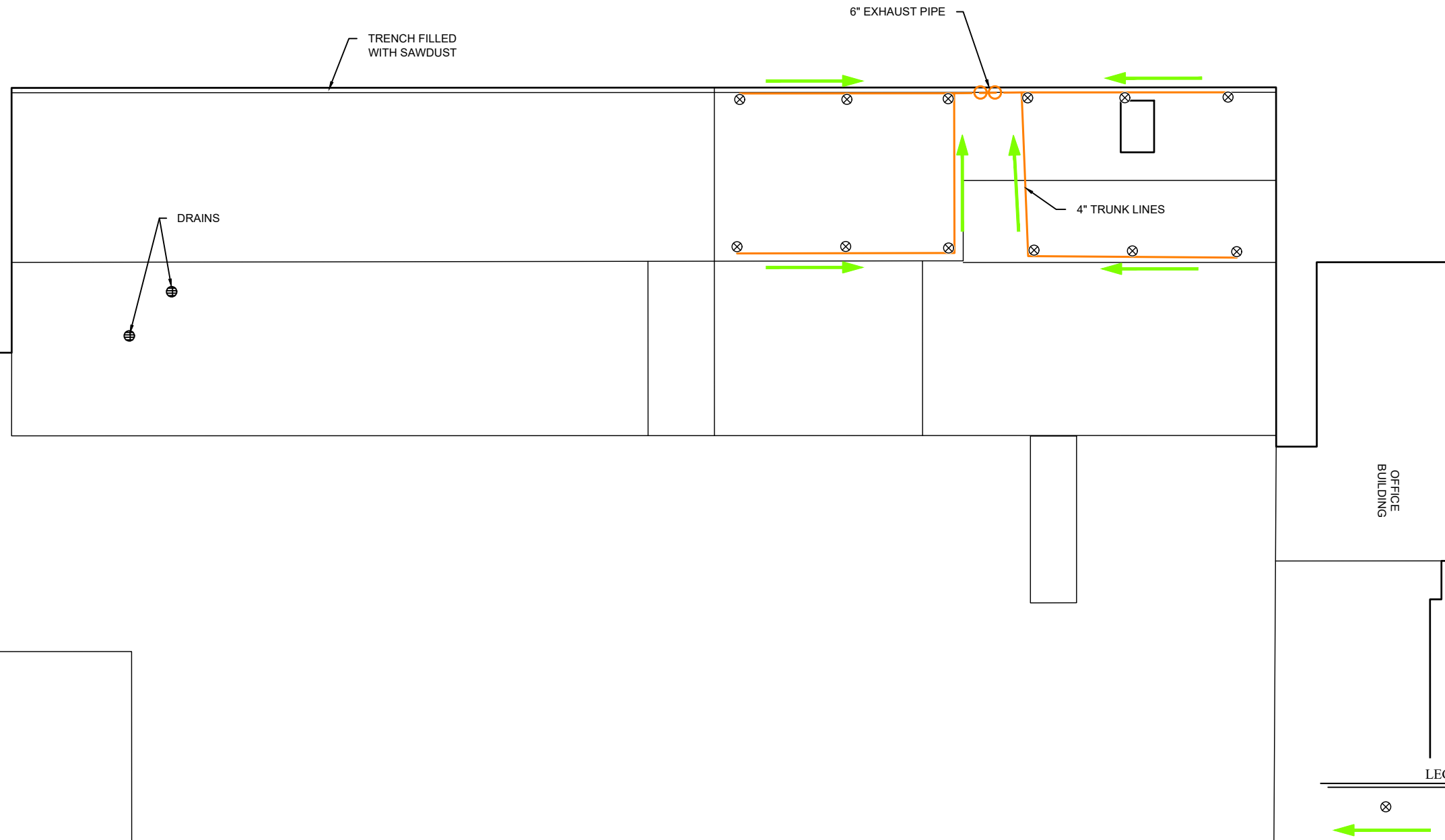
SITE MAP

FIGURE NUMBER

2



SCALE: 1"=40'  
(Approximate)

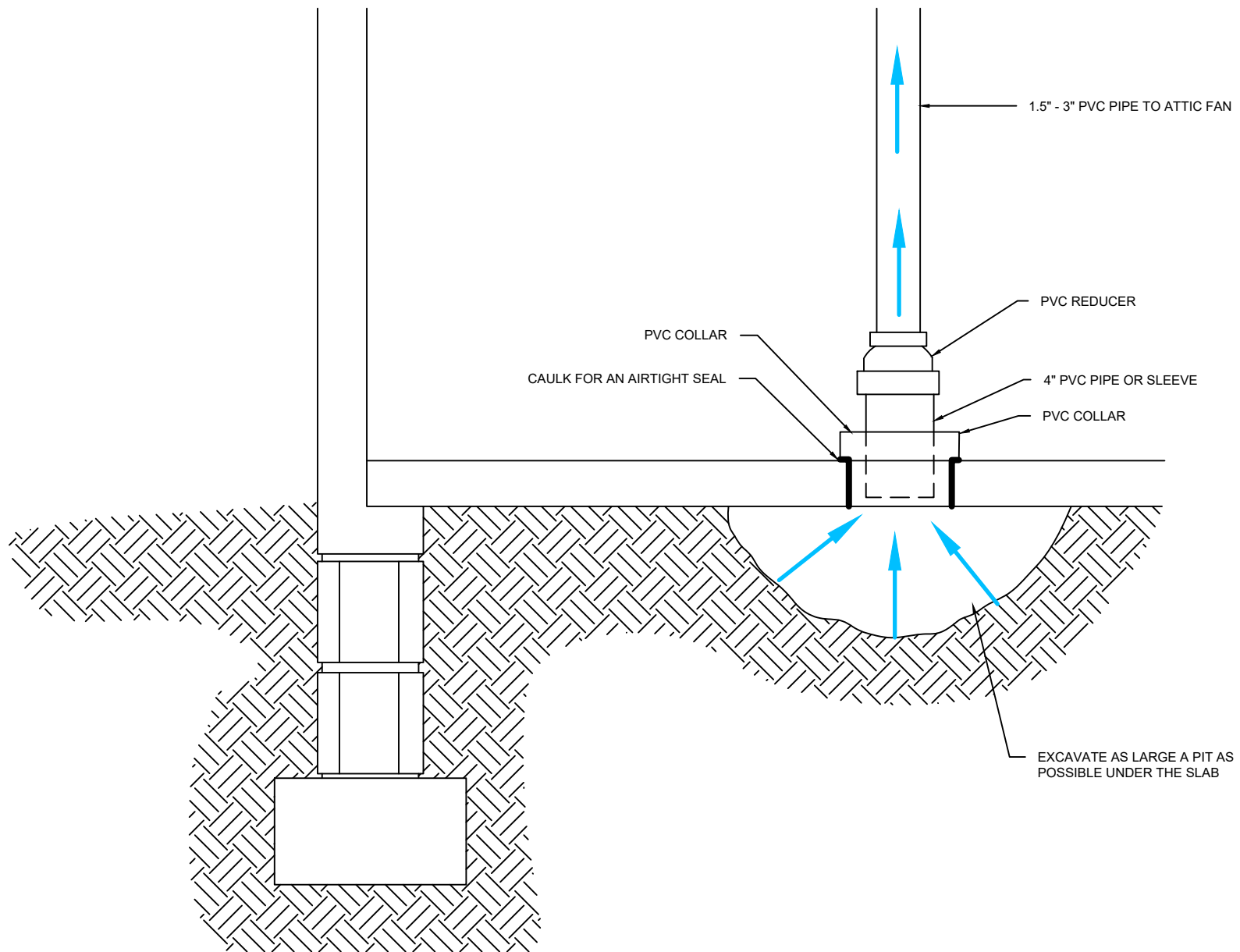



<b>PPM</b> PPM CONSULTANTS, INC. www.ppmco.com	
DRAWN BY: JCP	DRAWN DATE: 06/22/23
PROJECT NUMBER: 30065902	PHASE: 04-CAP-01

CITY OF LOUISVILLE  
FORMER TETERS FLORAL PROPERTY  
912 SOUTH CHURCH STREET  
LOUISVILLE, MISSISSIPPI

SUB-SLAB DEPRESSURIZATION POINTS, PIPING,  
AND EXHAUST SYSTEM

FIGURE  
NUMBER  
**3**

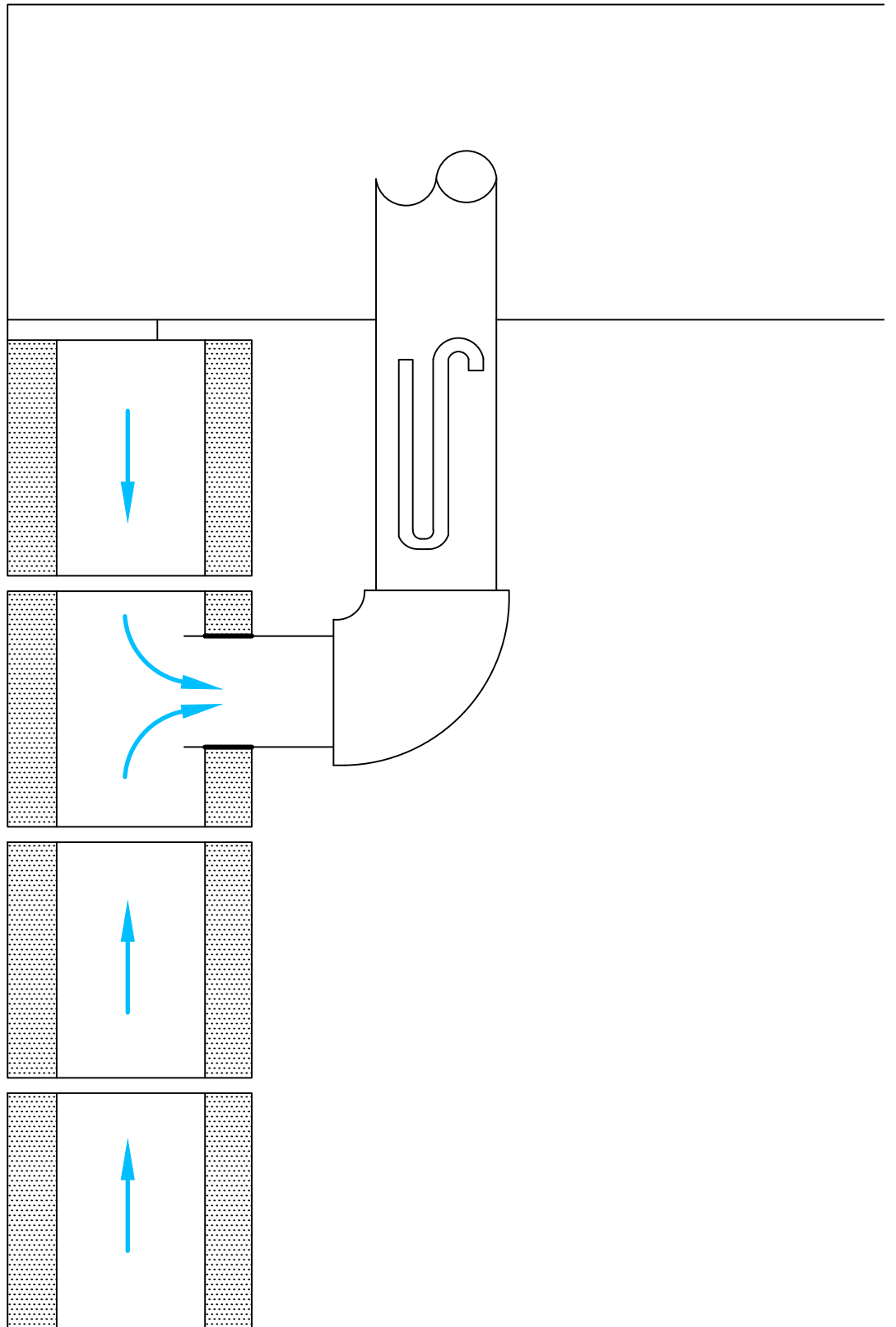


 <b>PPM CONSULTANTS, INC.</b> www.ppmco.com	
DRAWN BY: <b>JCP</b>	DRAWN DATE: <b>06/22/23</b>
PROJECT NUMBER: <b>30065902</b>	PHASE: <b>04-CAP-01</b>

**CITY OF LOUISVILLE**  
**FORMER TETERS FLORAL PROPERTY**  
 912 SOUTH CHURCH STREET  
 LOUISVILLE, MISSISSIPPI

**SUB-SLAB DEPRESSURIZATION**  
**POINT SCHEMATIC**

FIGURE  
 NUMBER  
**4**



**PPM** PPM CONSULTANTS, INC.  
www.ppmco.com

DRAWN BY:  
JCP

DRAWN DATE:  
06/22/23

PROJECT NUMBER:  
30065902

PHASE:  
04-CAP-01

CITY OF LOUISVILLE  
**FORMER TETERS FLORAL PROPERTY**  
912 SOUTH CHURCH STREET  
LOUISVILLE, MISSISSIPPI

BLOCK WALL  
DEPRESSURIZATION  
SCHEMATIC

FIGURE  
NUMBER

**5**



**APPENDIX B**  
**TECHNICAL DATA FOR SUB-SLAB DEPRESSURIZATION BLOWER**

# Installation and Operation Manual Manuel d'installation et d'opération

Item #: 484840  
Rev Date: 2022-10-12

## Rn Series • Série Rn

Inline Radon Fans • Ventilateur pour radon en ligne

### THIS BOX INCLUDES:

Inline Radon Fan Rn, 1 pc  
Operation and Installation Manual, 1 pc

### CETTE BOÎTE COMPREND:

Ventilateur pour radon en ligne Rn, 1 pc  
Manuel d'installation, 1 pc



\* Rn1 and Rn2X are the only ENERGY STAR® products

Rn1 et Rn2X sont les seuls produits ENERGY STAR®



Rn1  
Rn2



Rn2X  
Rn3

### Technical / Customer Support:






Support technique et service à la clientèle

United States / États-Unis Tel.: 800.747.1762

Canada Tel.: 800.565.3548



**fantech**®  
a systemair company

				
Note	Warning / Important note	Information	Technical information	Practical tip



**DO NOT CONNECT POWER SUPPLY until fan is completely installed.  
Make sure electrical service to the fan is in the locked "OFF" position.**

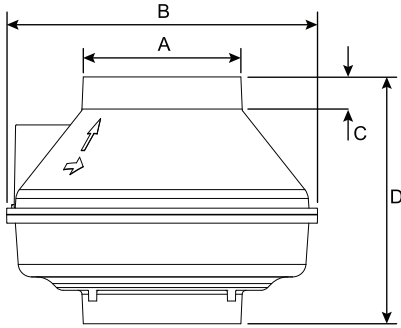
1. These fans have rotating parts and safety precaution should be exercised during installation, operation and maintenance.
2. **WARNING! TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS - OBSERVE THE FOLLOWING:**
  - a. Use this unit in the manner intended by the manufacturer. If you have any questions, contact your manufacturer's representative or contact us directly.
  - b. **CAUTION:** Before installation, servicing or cleaning unit, switch power off at service panel and lock the service disconnection means to prevent power from being switched on accidentally. When the service disconnection means cannot be locked, securely fasten a prominent warning device, such as tag, to the panel.
  - c. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
  - d. The combustion airflow needed for safe operation of fuel burning equipment may be affected by this unit's operation. Follow the heating equipment manufacturer's guidelines and safety standards such as those published by the National Fire Protection Association (NFPA), the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) and the local code authorities.
  - e. When cutting or drilling into wall and ceiling, do not damage electrical wiring and other hidden utilities.
  - f. Ducted fans must always be vented to the outdoors.
3. **WARNING!** Check voltage at the fan to see if it corresponds to the motor name plate.
4. For radon mitigation use only. **DO NOT** use to exhaust hazardous or explosive materials and vapors.
5. Do not use these fans with any solid state speed control device.

**GUARDS MUST BE INSTALLED WHEN FAN IS WITHIN REACH OF PERSONNEL OR WITHIN SEVEN (7) FEET OF WORKING LEVEL OR WHEN DEEMED ADVISABLE FOR SAFETY.**



The ducting from this fan to the outside of the building has a strong effect on the air flow, noise and energy use of the fan. Use the shortest, straightest duct routing possible for best performance, and avoid installing the fan with smaller ducts than recommended. Insulation around the ducts can reduce energy loss and inhibit mold growth. Fans installed with existing ducts may not achieve their rated air flow.

# DIMENSIONS



Model/Modèle	A	B	C	D
Rn1	4 15/32 (114)	10 (254)	1 1/4 (32)	9 1/4 (235)
Rn2	4 15/32 (114)	10 (254)	1 1/4 (32)	9 1/4 (235)
Rn2X	5 7/8 (149)	11 1/2 (292)	1 1/4 (32)	9 1/4 (235)
Rn3	5 7/8 (149)	11 1/2 (292)	1 1/4 (32)	9 1/4 (235)

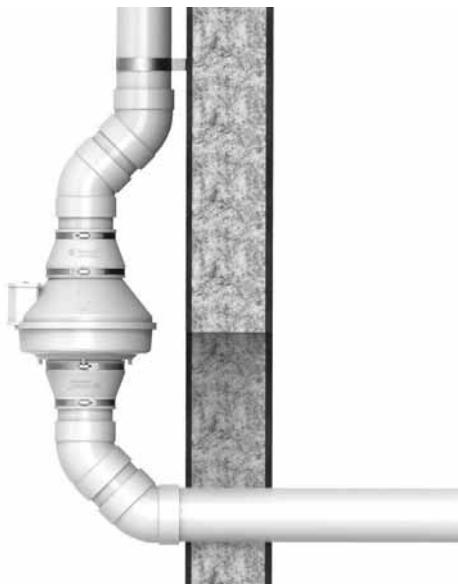
# INSTALLATION

The Rn1, Rn2, Rn2X, and Rn3 are designed for use with 3" and 4" schedule 40 PVC pipe, when appropriate LDVI™ coupling is used.

Prior to installation, the suction pipe should be terminated at the exterior wall. The suction pipe should be installed with slight incline to drain water from the fan.

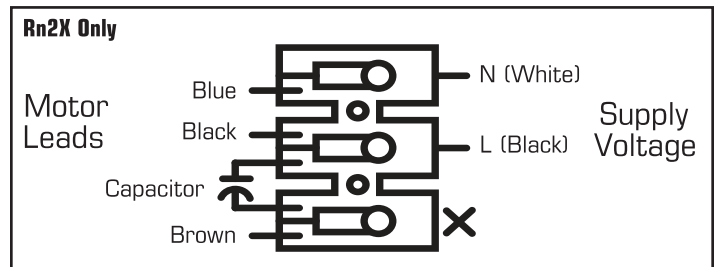
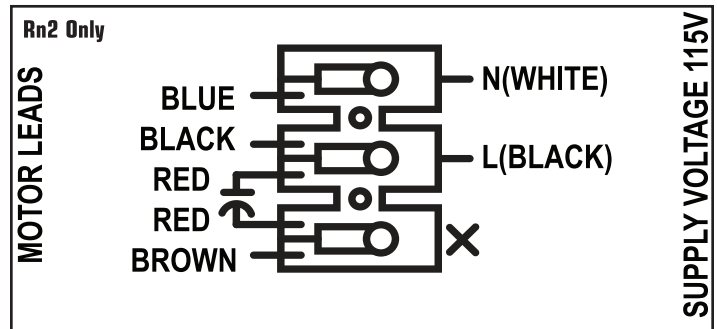
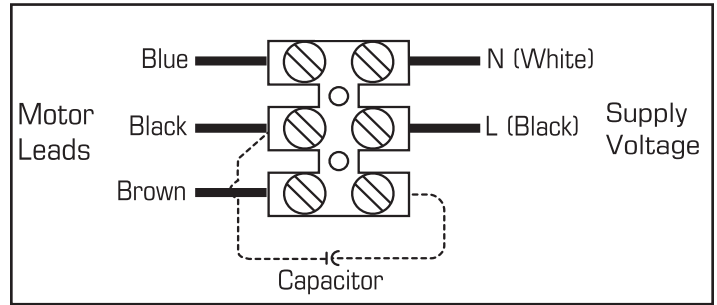


Radon fans are to be installed in the vertical orientation ONLY.



DO NOT connect fan directly to building structure

# WIRING DIAGRAM



There are typically three wires to be connected to an electrical fan; Load, Neutral and Ground. Load provides power to the fan, Neutral is for returning current and closing the electrical circuit, and Ground is for an additional path to safely return current to the ground, in case of an accidental electrical short in the fan and/or discharging of fan metal components.

Fantech radon fans are permanently connected appliances employing a reinforced polymeric construction. The non-conductive construction functions as a "Double Insulated" protective System (Complies with Standard for Double Insulation Systems for Use in Electrical Equipment, UL 1097), thus eliminating the need for a grounding conductor. All Fantech radon fans are tested and reviewed by Underwriter Laboratories, a 3rd party independent safety governing body, and deemed suitable for outdoor use (Standard for Safety-Electric Fans, UL 507).

Please contact Fantech Technical Support if additional information is needed regarding this matter.

	Voltage	Max Amp	Max Watts	Phase	RPM	CFM/Watts	Energy Star	CFM @ Static Pressure						Max
								0.00	0.20	0.50	1.00	1.50	2.00	
Rn1	120	0.17	19.7	1	3100	7.30	Yes	160	130	80	-	-	-	0.89
Rn2	120	0.48	58.0	1	2700	2.59	No	160	150	120	80	40	-	1.97
Rn2X	120	0.61	69.0	1	2541	4.00	Yes	316	280	216	120	34	-	1.70
Rn3	120	1.20	141.2	1	2700	2.42	No	370	340	280	180	120	50	2.36

# WARRANTY

## Five (5) Year Factory Limited Warranty

This warranty supersedes all prior warranties

### DURING ENTIRE WARRANTY PERIOD:

Fantech will repair or replace any part which has a factory defect in workmanship or material. Product may need to be returned to the Fantech factory, together with a copy of the bill of sale and identified with RMA number.

### FOR FACTORY RETURN YOU MUST:

- Have a Return Materials Authorization (RMA) number. This may be obtained by calling Fantech either in the USA at 1.800.747.1762 or in CANADA at 1.800.565.3548. Please have bill of sale available.
- The RMA number must be clearly written on the outside of the carton, or the carton will be refused.
- All parts and/or product will be repaired/replaced and shipped back to buyer; no credit will be issued.

### OR

The Distributor may place an order for the warranty part and/or product and is invoiced. The Distributor will receive a credit equal to the invoice only after product is returned prepaid and verified to be defective.

FANTECH WARRANTY TERMS DO NOT PROVIDE FOR REPLACEMENT WITHOUT CHARGE PRIOR TO INSPECTION FOR A DEFECT. REPLACEMENTS ISSUED IN ADVANCE OF DEFECT INSPECTION ARE INVOICED, AND CREDIT IS PENDING INSPECTION OF RETURNED MATERIAL. DEFECTIVE MATERIAL RETURNED BY END USERS SHOULD NOT BE REPLACED BY THE DISTRIBUTOR WITHOUT CHARGE TO THE

## Limitation of Warranty and Liability

This warranty does not apply to any Fantech product or part which has failed as a result of faulty installation or abuse, incorrect electrical connections or alterations made by others, or use under abnormal operating conditions or misapplication of the product or parts. We will not approve for payment any repair not made by us or our authorized agent without prior written consent. The foregoing shall constitute our sole and exclusive warranty and our sole exclusive liability, and is in lieu of any other warranties, whether written, oral, implied or statutory. There are no warranties which extend beyond the description on the page hereof. In no event, whether as a result of breach of contract, or warranty or alleged

## Warning

Fantech products are designed and manufactured to provide reliable performance, but they are not guaranteed to be 100% free from defects. Even reliable products will experience occasional failures and this possibility should be recognized by the user. If these products are used in a

END USER, AS CREDIT TO DISTRIBUTOR'S ACCOUNT WILL BE PENDING INSPECTION AND VERIFICATION OF ACTUAL DEFECT BY FANTECH.

### THE FOLLOWING WARRANTIES DO NOT APPLY:






- Damages from shipping, either concealed or visible. Claim must be filed with freight company.
- Damages resulting from improper wiring or installation.
- Damages or failure caused by acts of God, or resulting from improper consumer procedures, such as:
  1. Improper maintenance
  2. Misuse, abuse, abnormal use, or accident, and
  3. Incorrect electrical voltage or current.
- Removal or any alteration made on the Fantech label control number or date of manufacture.
- Any other warranty, expressed, implied or written, and to any consequential or incidental damages, loss or property, revenues, or profit, or costs of removal, installation or reinstallation, for any breach of warranty.

### WARRANTY VALIDATION

- The user must keep a copy of the bill of sale to verify purchase date.
- These warranties give you specific legal rights, and are subject to an applicable consumer protection legislation. You may have additional rights which vary from state to state.

negligence, defect incorrect advice or other causes, shall Fantech be liable for special or consequential damages, including, but not limited to, loss of profits or revenue, loss of use of equipment or any other associated equipment, cost of capital, cost of substitute equipment, facilities or services, downtime costs, or claims of customers of purchase for such damages. Fantech neither assumes or authorizes any person to assume for it any other liability in connection with the sale of product(s) or part(s). Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages so the above limitations and exclusions may not apply to you.

life support ventilation system where failure could result in loss or injury, the user should provide adequate backup ventilation, supplementary natural ventilation, failure alarm system, or acknowledge willingness to accept the risk of such loss or injury.

				
Note	Avertissement / Note importante	Information	Information technique	Conseil pratique



**NE PAS BRANCHER À L'ALIMENTATION ÉLECTRIQUE avant l'installation complète du ventilateur.**  
**Assurez-vous que l'alimentation électrique du ventilateur est en position hors tension verrouillée (OFF).**

1. Ces ventilateurs comportent des pièces rotatives; il est essentiel de faire preuve de prudence pendant l'installation, le fonctionnement et l'entretien.
2. AVERTISSEMENT! POUR RÉDUIRE LE RISQUE D'INCENDIE, D'ÉLECTROCUTION OU DE BLESSURES, VEUILLEZ RESPECTER LES RÈGLES SUIVANTES :
  - a. Utilisez cet appareil de la manière prévue par le fabricant. Si vous avez des questions, communiquez avec le représentant du fabricant ou directement avec nous.
  - b. MISE EN GARDE : Avant d'installer, de réparer ou de nettoyer l'appareil, coupez l'alimentation électrique au panneau de service et bloquez les dispositifs de sectionnement pour éviter que l'alimentation ne soit rétablie par accident. Si les dispositifs de sectionnement ne peuvent pas être bloqués, apposez une note d'avertissement bien visible, comme une étiquette, sur le panneau de service.
  - c. Tous les travaux relatifs à l'installation et aux fils électriques devraient être effectués par un technicien qualifié, conformément aux normes et aux règlements en vigueur, y compris les travaux de construction classés résistants au feu.
  - d. Le fonctionnement de cet appareil pourrait modifier la circulation d'air de combustion nécessaire au fonctionnement sécuritaire des appareils de combustion. Suivez les consignes du fabricant pour les appareils de chauffage et respectez les normes de sécurité comme celles établies par la National Fire Protection Association (NFPA), la American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) ainsi que les codes des autorités locales.
  - e. Lorsque vous coupez ou percez un mur ou un plafond pour l'installation de l'appareil, assurez-vous de ne pas endommager le câblage électrique et les autres services publics cachés.
  - f. Les conduits d'air des ventilateurs doivent toujours être éventés à l'extérieur.
3. AVERTISSEMENT! Vérifiez la tension du ventilateur pour confirmer qu'elle correspond à celle inscrite sur la plaque signalétique du moteur.
4. Uniquement pour la mise en oeuvre de mesures d'atténuation du radon. NE PAS utiliser pour évacuer des vapeurs ou des substances dangereuses ou explosives.
5. Ne pas utiliser cet appareil avec une commande de vitesse à semiconducteurs.

**DES DISPOSITIFS PROTECTEURS DOIVENT ÊTRE INSTALLÉS SI LE VENTILATEUR SE TROUVE À PORTÉE DE MEMBRES DU PERSONNEL OU À SEPT (7) PIEDS OU MOINS DU NIVEAU DE FONCTIONNEMENT OU LORSQU'ILS SONT JUGÉS NÉCESSAIRES POUR DES RAISONS DE SÉCURITÉ**



Le conduit de raccordement de ce ventilateur avec l'extérieur de l'immeuble a un effet important sur le débit d'air, le bruit et la consommation d'énergie du ventilateur. Veuillez utiliser le conduit le plus court et le plus droit possible pour obtenir un rendement optimal, et évitez d'installer des conduits plus petits que ceux recommandés pour le ventilateur. L'isolation autour des conduits peut réduire les pertes d'énergie et empêcher la moisissure. Les ventilateurs installés avec des conduits existants pourraient ne pas offrir le débit d'air nominal.

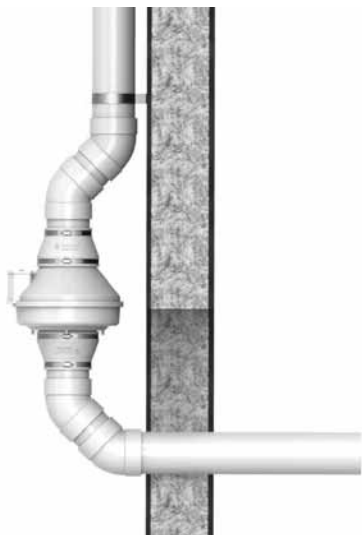
# INSTALLATION

Les modèles Rn1, Rn2, Rn2X, et Rn3 sont conçus pour un usage avec des conduits de PVC de série 40 de 3 et 4 po, lorsque le manchon LDVI™ approprié est utilisé.

Avant l'installation, il faut prévoir une sortie pour le tuyau d'aspiration sur un mur extérieur. Le tuyau d'aspiration devrait être installé avec une pente légère pour drainer l'eau du ventilateur.

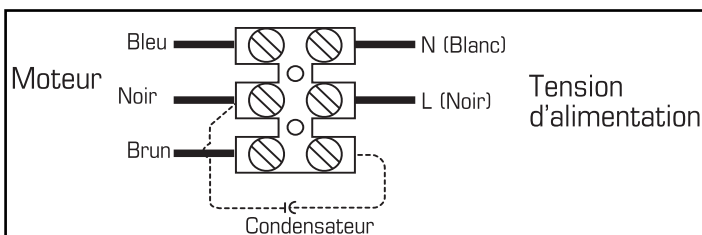


Les ventilateurs à radon doivent être installés dans le sens vertical SEULEMENT.

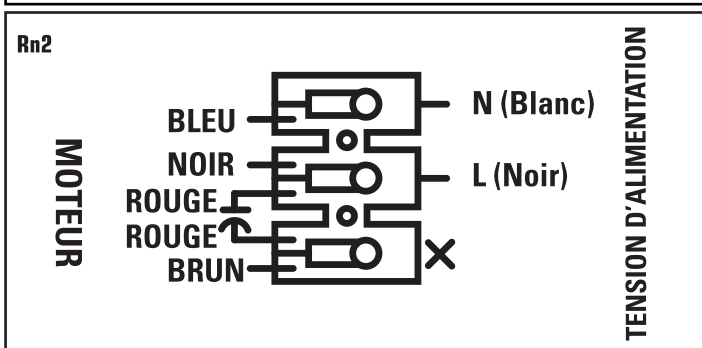


NE PAS brancher le ventilateur directement dans la structure du bâtiment.

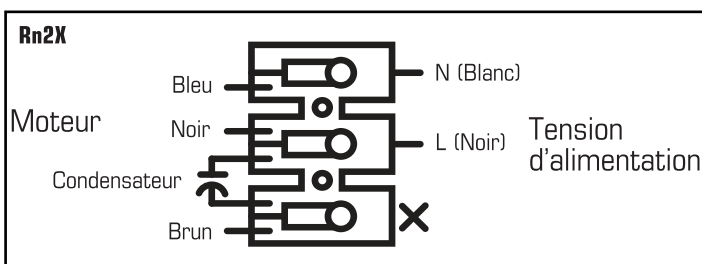
## SCHÉMA ÉLECTRIQUE



Il y a généralement trois fils à connecter à un ventilateur électrique, charge, neutre et mise à terre. La charge alimente le ventilateur, le neutre sert à rétablir le courant et à fermer le circuit électrique, et le fil de mise à terre à un chemin supplémentaire permettant de renvoyer le courant au sol en toute sécurité, en cas de court-circuit accidentel du ventilateur et / ou de décharge du ventilateur composants métalliques.



Les ventilateurs pour radon Fantech sont des appareils connectés en permanence utilisant une construction en polymère renforcé. La construction non conductrice fonctionne comme un système de protection «à double isolation» (conforme à la norme pour les systèmes à double isolation pour utilisation dans les équipements électriques, UL 1097), éliminant ainsi la nécessité d'un conducteur de mise à la terre. Tous les ventilateurs pour radon Fantech sont testés et examinés par Underwriter Laboratories, organisme de réglementation de la sécurité indépendant, et jugés utilisables à l'extérieur (norme relative aux ventilateurs électriques de sécurité, UL 507).



Veillez contacter le support technique de Fantech si des informations supplémentaires sont nécessaires à ce sujet.

# GARANTIE

## Garantía limitada del fabricante para 5 años

*Cette garantie remplace toutes les garanties précédentes.*

### DURANT TOUTE LA PÉRIODE DE GARANTIE:

Fantech s'engage à réparer ou à remplacer toute pièce présentant un défaut d'usine en matière de qualité d'exécution ou de matériau. Il sera peut être nécessaire de retourner le produit à l'usine Fantech, accompagné d'une copie du contrat de vente et du numéro d'autorisation de retour.

### POUR RETOURNER UN PRODUIT À L'USINE, VOUS DEVEZ:

- Obtenir un numéro d'autorisation de retour; pour ce faire, communiquer avec Fantech aux États-Unis au numéro 1.800.747.1762, ou au Canada, au numéro 1.800.565.3548. Veuillez avoir votre contrat de vente à portée de la main.
- S'assurer que le numéro d'autorisation de retour est lisible sur l'extérieur de la boîte, sinon la boîte sera refusée.
- Toutes les pièces et/ou le produit seront réparés ou remplacés puis retournés à l'acheteur. Aucun crédit ne sera accordé.

OU

Le Distributeur peut commander une pièce ou un produit couvert par la garantie; la facture lui sera envoyée. Le distributeur ne sera crédité du montant de sa facture qu'après que le produit a été retourné port payé et qu'il a été trouvé défectueux.

LES TERMES DE LA GARANTIE DE Fantech NE PRÉVOIENT PAS DE REMPLACEMENT SANS FRAIS AVANT QUE LA PIÈCE OU LE PRODUIT DÉFECTUEUX AIT ÉTÉ INSPECTÉ. LES PRODUITS OU PIÈCES REMPLACÉS AVANT L'INSPECTION DE LA DÉFECTUOSITÉ SERONT FACTURÉS ET LE MONTANT DU CRÉDIT EST FONCTION DE L'INSPECTION DE LA PIÈCE OU DU PRODUIT RETOURNÉ. LE DISTRIBUTEUR NE DOIT PAS REMPLACER SANS FRAIS POUR

## Limites de garanties et de responsabilités

Cette garantie ne s'applique à aucun produit de Fantech ou à aucune pièce détachée dont la défectuosité relève d'une erreur d'installation ou d'abus ou de mauvaise installation électrique ou dut à des modifications extérieures ou utilisées dans des conditions anormales ou encore une mauvaise installation du produit ou des pièces détachées. Nous n'approuverons aucun remboursement pour des réparations qui ne sont pas effectuées par un agent américain ou un agent autorisé sans un accord écrit. Ce dernier constituera notre seule et exclusive garantie et notre seule exclusive responsabilité et tient lieu de toute autre garantie ou bien écrite ou orale implicite ou statuaire. Aucune garantie ne s'appliquera au-delà des descriptions faites de la page ci-dessus. En aucun cas, que ce soit pour une rupture de contrat ou de garanties ou

## Avertissement

Les produits de Fantech sont conçus et fabriqués pour produire des performances fiables, mais il n'y a aucune garantie qu'ils soient 100% sans défaut. Les plus produits les plus fiables ont occasionnellement des défectuosités et cette possibilité devrait être reconnu par les usagers. Si ces produits sont utilisés comme une source de ventilation ou leur panne risque de mettre en danger des vies humaines ou entraîner des

L'UTILISATEUR FINAL L'ÉQUIPEMENT DÉFECTUEUX RETOURNÉ PAR L'UTILISATEUR FINAL, CAR LE COMPTE DU DISTRIBUTEUR NE SERA CRÉDITÉ QU'APRÈS L'INSPECTION ET LA VÉRIFICATION PAR FANTECH DE LA DÉFECTUOSITÉ.

### LES GARANTIES NE S'APPLIQUENT PAS DANS LES CAS SUIVANTS:

- Dommages dus au transport (dissimulés ou visibles). Les réclamations doivent être faites à la compagnie de fret.
- Dommages dus au mauvais câblage ou à l'installation inappropriée.
- Dommages ou défectuosité causés par une calamité naturelle ou résultant d'une procédure irrégulière de l'acheteur, notamment :
  1. Entretien irrégulier
  2. Mauvais usage, usage abusif, usage anormal ou accident
  3. Tension ou courant électrique incorrect
- Enlèvement ou toute modification du numéro de contrôle ou de la date de fabrication de l'étiquette Fantech
- Toute autre garantie expresse, écrite ou implicite, pour les dommages accidentels ou indirects, perte de biens, de recettes, manque à gagner ou coûts relatifs à la dépose, à l'installation ou à la réinstallation, en cas de violation de garantie.

### CERTIFICATION DE LA GARANTIE:

- L'utilisateur doit conserver une copie du contrat de vente pour confirmer la date d'achat.
- Les présentes garanties vous donnent des droits spécifiques reconnus par la loi et sont régies par les lois sur la protection du consommateur appropriées. Il est possible que différents états offrent d'autres droits.

des dommages dut à la négligence ou a des conseils incorrects ou autres causes, Fantech ne pourra être tenu pour responsable des dommages particuliers ou consécutifs, incluant mais pas limités aux pertes et profits ou bénéfices perte de matériel ou autres matériels associés. Coût du capital, coût des équipements de remplacement, matériels ou services, coût de temps d'arrêt ou les réclamations des clients pour de tels dommages. Fantech ne délègue ou autorise aucune personne d'assumer sa responsabilité sur la vente du produit ou des pièces détachées. Certaines juridictions ne permettent pas l'exclusion de la limitation des dommages accidentels ou consécutifs ainsi ces limitations ci-dessus et les exclusions ne s'appliquent pas à vous.

blessures, les usagers devront avoir une source de ventilation de secours en addition à une ventilation naturelle, le défaut de système d'alarme ou la connaissance de ces conditions entraînent sa responsabilité envers de telles pertes ou blessures.



Fantech reserves the right to make technical changes.  
For updated documentation please refer to [www.fantech.net](http://www.fantech.net)

Fantech se réserve le droit de faire des changements techniques. Pour de la documentation à jour, s'il vous plaît se référer au [www.fantech.net](http://www.fantech.net)

Fantech®

# Simplifying the Complex

[ppmco.com](http://ppmco.com)