



March 2, 2021

Mr. Emil Booher  
M and E Rentals, LLC  
2536 Plover Road  
Plover, Wisconsin 54913

**Subject: Sub-Slab Depressurization System Installation Report**  
1835 East Edgewood Drive  
Appleton, Wisconsin  
Enviroforensics Project #200019  
DNR BRRTS Activity # 02-45-586961

Dear Mr. Booher:

Enviroforensics, LLC (Enviroforensics) is pleased to submit this *Sub-Slab Depressurization System Installation Report* documenting the installation and start-up of an active vapor mitigation system in the former Donaldson Cleaners tenant space located at 1835 East Edgewood Drive, in Appleton Wisconsin. Previous sub-slab vapor sampling at the Site identified concentrations of volatile organic compounds (VOCs) in the subsurface present a vapor intrusion risk to potential occupants within the onsite building. The installation of a sub-slab depressurization system (SSDS) designed to mitigate the human exposure risk from vapor-phase VOCs.

We installed an SSDS comprised of three (3) extraction points within the Former Donaldson's Cleaners suite of your single-story building, the Ballard Plaza. Following installation, the system was started and monitored to ensure proper operation. Work completed was consistent with applicable recommendations by the American National Standards Institute (ANSI) and the American Association of Radon Scientists and Technologists (AARST) from the following document: *Radon Mitigation Standards for Schools and Large Buildings* (ANSI/AARST RMS-LB-2018).

## **1.0 SCOPE OF WORK**

The following scope of work was completed:

- Based on the available known building conditions and pressure field extension testing (discussed below), a three (3) extraction points were installed in the building

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Enviroforensics, LLC  
N16 W23390 Stone Ridge Drive, Suite G  
Waukesha, WI 53188  
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to establish radial removal coverage of sub-slab vapors. Each point was equipped with a flow control valve and vacuum gauge. Each point was connected to a header that terminates at the building exterior. One (1) RadonAway model GP501 mitigation fan was installed in-line at the building's exterior. The exhaust stack was extended up and terminated no less than 12 inches above the roof line of the building.

- One (1) audible/visual alarm was installed at the interior to notify building occupants in the event that the system loses negative pressure.
- All electrical work including required permitting was performed by Cummings Electric, of Neenah, Wisconsin
- 120-volt service was connected to the mitigation fan located at the building exterior through an all-weather toggle switch.
- Confirmation sampling of indoor air in Site suites 101 and 102 and providing results letters to owner and tenants.
- Submittal of this *Vapor Mitigation System Installation Report* with Operation & Maintenance (O&M) Plan (this report) to the Wisconsin Department of Natural Resources (WDNR).

## **2.0 PRE-MITIGATION DIAGNOSTIC TESTING AND SSDS DESIGN**

On January 19, 2021 on-Site diagnostic testing comprised of pressure field extension (PFE) testing, where test points were cored through the interior building floor slab and fans of various flow and vacuum capacities were used to evaluate pressure communication beneath the slab was conducted. The diagnostic testing results were evaluated and utilized to determine required blower and piping size(s) and piping layout.

## **3.0 SSDS INSTALLATION**

The following sections provide details regarding:

- Permitting and Licensing
- Health & Safety Plan (HASP)
- Waste Management
- Installation considerations



The system was designed and installed under the supervision of a Wisconsin Professional Engineer and National Radon Proficiency Program (NRPP) Certified Radon Mitigator. The design met applicable *Radon Mitigation Standards for Schools and Large Buildings* (ANSI/AARST RMS-LB-2018).

### **3.1 PERMITTING AND LICENSING**

Enviroforensics contacted the City of Appleton and it was determined that the scope of work did not require any permits.

### **3.2 HEALTH & SAFETY PLAN (HASP)**

SSDS installation activities followed a general HASP. The HASP provided information on the potential hazards and general health and safety guidance for personnel conducting field activities at the Site and vicinity.

### **3.3 WASTE MANAGEMENT**

Construction wastes were generated during the installation of the SSDS. These wastes were stored on-Site pending off-Site disposal.

### **3.4 INSTALLATION**

The SSDS installations were completed by EnviroForensics personnel. Information for each major contractor/subcontractor and their role is as follows:

#### **Enviroforensics LLC**

N16 W23390 Stone Ridge Drive, Suite G  
Waukesha, WI 53188  
(262) 290-4001

Role: Contractor for Building PFE Testing, Design, Installation, and Construction Management

### **Cummings Electric**

6364 County Rd. A  
Neenah, WI 54956  
(920) 722-1240

Role: Licensed electrician for installation of all necessary electrical components

### **RadonAway**

567 Industrial Drive  
Carmel, IN 46032  
(800) 523-2084

Role: Mitigation system component distributor

Installation activities took place between January 19, 2021 and January 21, 2021. Photographs taken during installation activities are provided as **Attachment A**.

#### 3.4.1 Piping and Extraction Points

##### Piping

- Hangers / clamps were used to secure horizontal pipe runs at least every 6 feet and vertical pipe runs at least every 8 feet.
- No water traps were created in SSDS pipe.
- All system piping was installed to allow in-pipe condensation to run back into a single extraction point.
- Fire collars and / or fire rated putty was used on all firewall penetrations.
- 4-inch diameter Schedule 40 PVC pipe and fittings were used at all interior and exterior locations with the exception of the fan connection which were flexible couplings.
- All hard PVC joined pipes were solvent welded with heavy duty PVC primer and cement.
- PVC gate valves of 4-inch diameter were used at each extraction point/well.

##### Extraction Points

- The extraction points were installed through the concrete floor with a 5-inch diameter hole, minimum.
- Piping entering the extraction point was sealed into the concrete floor slab and sealed airtight with polyurethane caulk or concrete.
- A ball valve was installed at the extraction point pipe.

### 3.4.2 Pathway Sealing

During the installation of each SSDS, floor penetrations observed to be significantly contributing to short circuiting were sealed airtight with polyurethane caulk for penetrations 5/8-inch wide or less and with backer and self-leveling caulk for openings larger than 5/8-inch.

### 3.4.3 Electrical Connections

- One (1) all-weather toggle switch was installed at the exterior of the building within 6 feet of the SSDS system components to be used as a manual power disconnect.
- An electrical receptacle was installed to power the alarm.
- System electric service was connected to the existing building electric system.
- All electrical connections were made by Cummings Electric.

### 3.4.4 System Fan

- One RadonAway GP501 installed according to the manufacturer’s specifications on the building exterior wall.
- Influent and Exhaust piping was connected to either side of the fan and secured to the building with the Exhaust piping terminating above the roof line.
- Detailed fan information can be found in **Attachment B**.

# Of Fans Installed	Fan Model	Fan Power Requirements
1	RadonAway GP501	120 Volt/Single Phase

### 3.4.5 System Exhaust

- The exhaust pipe was installed to a termination point no less than 12-inches above the roof line.
- The exhaust termination point was installed at a minimum of 10 feet above grade, and at a minimum distance of 10 feet away from and 2 feet above any intakes or openings that may act as possible re-entry points of vapors.

### 3.4.6 System Monitoring

- A Dwyer 0 to 5 inches of water column (“wc) magnehelic gauge was installed at each extraction point and were oriented in a manner to which it will be clearly visible and easy to read during system inspections and balancing.
- A Checkpoint IIA Mitigation System Alarm (visual and audible low-pressure alarm) was incorporated into the system conveyance piping at a location inside that is easily reached and can be clearly heard should the alarm sound.
- Detailed gauge and alarm information is provided in **Attachment B**.

### 3.4.7 System Labelling

- Extraction lines are labeled for identification.
- Piping labeled at least once per room and is readable from a distance of three (3) feet.

## 4.0 VERIFICATION TESTING

On January 21, 2021, February 18, 2021, and March 2, 2021, PFE verification testing was completed throughout the building footprint following SSDS installation to verify adequate subsurface depressurization. PFE testing results are considered reliable for depressurization of the slab on grade foundation when a recommended minimum vacuum of  $-0.020$ “wc is observed. PFE testing involved the use of sub-slab vapor points through the concrete slab to collect vacuum readings. Please see the Sub-Slab Depressurization Layout presented as **Figure 1** in **Attachment C** for the locations of the extraction points, extraction piping, mitigation fan, and sub-slab vapor points. PFE verification testing data are presented in **Attachment C** also.

## 5.0 OPERATION & MAINTENANCE GUIDANCE

The following section offers general guidance pertaining to the proper operation and maintenance practices regarding an SSDS.

### 5.1 OPERATING PROCEDURES

#### 5.1.1 System Start-up

Start of the SSDS shall adhere to the following procedure:

- Review the O&M Guidance section of this report including the manufacturer information for individual system components.
- Switch “off” power to fan via its toggle switch mounted next to the fan.
- Check exhaust discharge pipe for potential blockage (i.e. air-tight cap or plastic cover from “moth balling,” ice accumulation, etc.).
- Inspect the system piping and extraction points for breeches or deficiencies. Repair any observed deficiencies.
- Verify the electrical breaker serving the system fan is on.
- Turn the adjacent toggle switch “on”.
- Observe the fan. If unusual noise or no operation is observed, turn toggle switch “off” and proceed to Section 5.3 Maintenance Procedures.
- If fan appears to operate normally, compare system pressures with previously recorded operating extraction point and system pressures and evaluate for suitability. If unacceptable difference in pressures is observed, switch off power to fan and proceed to Section 5.3 Maintenance Procedures.

#### 5.1.2 System Balancing and Optimization

During the initial start-up of the SSDS the system was balanced to optimize the PFE. Balancing is performed by adjusting inline ball valves located at each extraction point. Any adjustments to the balancing of the PFE should be undertaken with consideration of the intended influence of the system and Performance Criteria.

- Review the O&M Guidance section including the manufacturer information for individual system components.
- With the system fan operating, use a digital manometer to measure the sub-slab pressure within applicable sub-slab monitoring points.
- Adjust extraction point valves as needed to distribute the PFE.
- Re-test negative pressures at applicable sub-slab monitoring points.

#### 5.1.3 System Shutdown

Review the O&M Guidance section including the manufacturer information for system components.

- Switch “off” power to fan via its toggle switch mounted next to the fan.
- If system is to be off for an extended amount of time, consider covering the exhaust pipe with a screw on flexible PVC cover. If the cover is applied over the exhaust stack, place a notification covering the entire system pressure monitoring gauge. The notification should clearly identify the exhaust stack is not functional due to a sealed cover that is in place.

#### 5.1.4 System Operation

Following the start-up of the SSDS, no operational control or adjustments are needed. System Monitoring and Periodic Inspection during the system operation are performed to identify system problems and deficiencies.

## 5.2 MONITORING PROCEDURES

Please refer to Section 4.4.6 System Monitoring

## 5.3 MAINTENANCE PROCEDURES

This section presents procedures and schedules for the maintenance of the equipment and instrumentation, troubleshooting information, and periodic inspection procedure and documentation.

#### 5.3.1 System Fan

- For maintenance procedures and warranty information please refer to Page 8 of the Installation Instructions provided in **Attachment B**.
- For warranty purposes the date of warranty is January 21, 2021.

#### 5.3.2 System Monitoring Devices

- No maintenance is required for the installed monitoring devices.
- For warranty information on the alarms please refer to the Installation and Operating Instructions provided in **Attachment B**. For warranty purposes the date of warranty is January 21, 2021.



### 5.3.3 System Periodic Inspection

A periodic inspection is recommended to verify the SSDS is operating as designed. At a minimum, an annual inspection should be performed.

#### Inspection Procedures:

- **System Fan:** Observe the fan during operation. Pay special attention to any abnormal noises coming from the fan, such as buzzing or scraping, cyclical pointed sounds, or no operational sound at all, etc. Repair or replace any observed damage affecting fan operation. Also, observe the exhaust stack for possible obstructions (e.g. ice).
- **System Piping and Connections:** Inspect the exposed system piping and connections for any breach or damage. Repair or replace any observed damage affecting system operation.
- **Slab / System Interface Seals:** Inspect the caulk seal at each of the extraction points (a breach in the seal should produce an air leak noise when the system is in operation). If breach is observed, caulk with polyurethane caulk. Check concrete floors and sumps for cracks or broken seals and repair as necessary.
- **Pressure Gauges:** Test system pressure gauges for functionality. Remove input line or shut down system to verify pressure gauges return to a zero reading. Replace any dysfunctional pressure gauges and restore sub-system operation.
- **Electrical:** Observe electrical components for damage and have repaired/replaced by licensed electrician. Test system electrical disconnects / switches / receptacles for function. A licensed electrician should repair/replace dysfunctional components.
- **Documentation:** Complete logs provided in **Attachment D** for each periodic inspection and maintain a logbook of the periodic inspections for the life of the SSDS.

## 6.0 COMMISSIONING AIR SAMPLING

On February 18, 2021, EnviroForensics collected two (2) indoor air samples, one (1) from the Former Donaldson's Cleaners in Suite 101, and one (1) from and Edward Jones investment services office in Suite 102. Samples were collected in individually certified 6-liter vacuum canisters positioned within the breathing space, 3-5 feet above the floor surface over an 8-hour period. The samples were submitted to EnvisionAir under chain-of-custody for analysis of VOCs according to EPA Test Method TO-15. Temperatures during the event were approximately 24° Fahrenheit and represent worst case heating season sampling criteria. All results were below

the laboratory detection limits and therefore below the vapor action levels (VALs) for small commercial spaces. Sample results notifications were submitted to the occupants of Suite 102 as well as the property owner. The laboratory analytical report for each space are presented in **Attachment E**.

If you have any questions regarding the information presented above, please contact the undersigned at your convenience.

Sincerely,

**Enviroforensics, LLC**

A handwritten signature in black ink that reads "Bradley W. Cord".

Bradley W. Cord, NRPP Certified Radon Mitigator  
Vapor Mitigation Specialist

A handwritten signature in blue ink that reads "Robert S. Fedorchak".

Robert S. Fedorchak, P.E.  
Senior Engineer

**Attachments:**

- Attachment A: Installation Photographs
- Attachment B: Detailed Fan, Alarm, and Gauge Information
- Attachment C: PFE Verification Testing Information
- Attachment D: Template O&M Logs
- Attachment E: Laboratory Analytical Reports

## **Attachments:**

Attachment A: Installation Photographs

Attachment B: Detailed Fan, Alarm, and Gauge Information

Attachment C: PFE Verification Testing Information

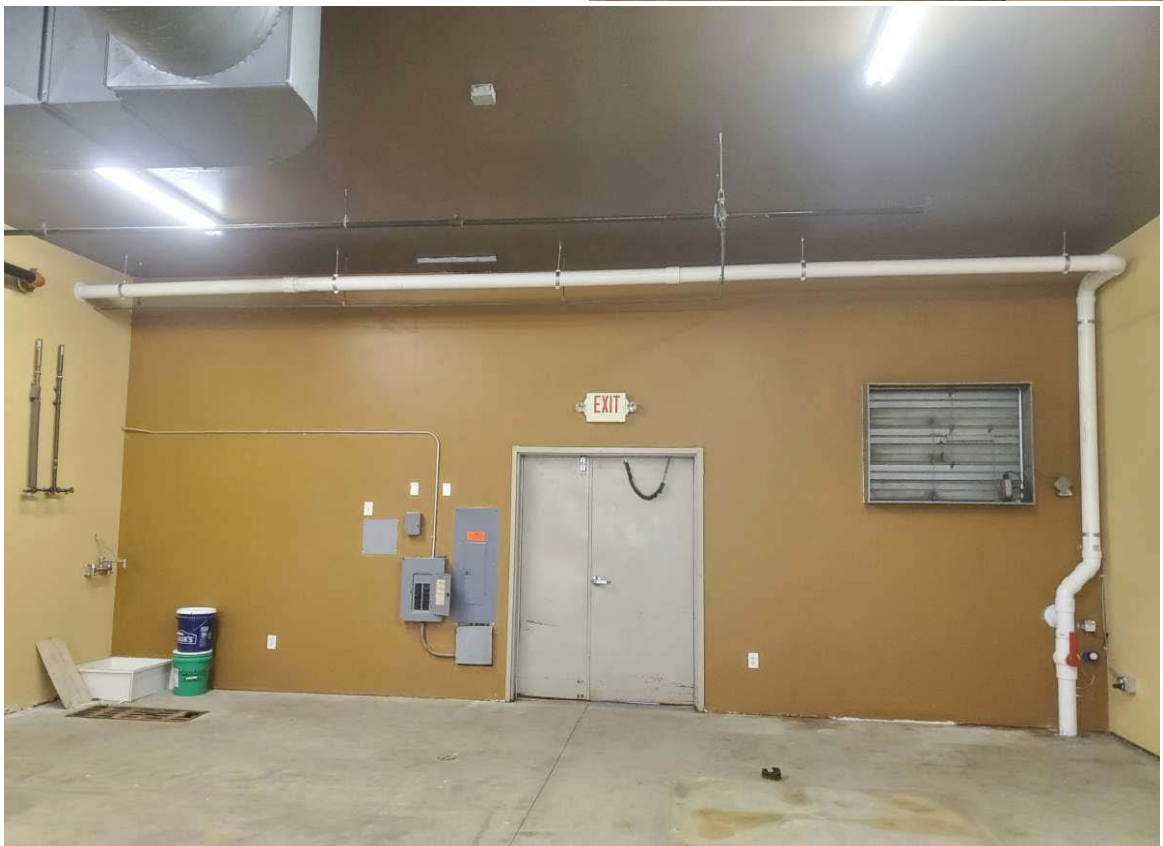
Attachment D: Template O&M Logs

Attachment E: Laboratory Analytical Reports



## Attachment A

### Installation Photographs









## Attachment B

### Detailed Fan, Alarm, and Gauge Information



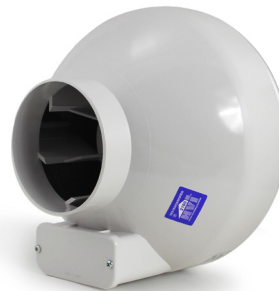
## INSTALLS WHITE, STAYS WHITE

### Radon Mitigation Fan

All RadonAway® fans are specifically designed for radon mitigation. RP Series Fans provide superb performance, run ultra-quiet and are attractive. They are ideal for most sub-slab radon mitigation systems.

### Features

- NEW Stay-White™ housing
- Energy efficient
- RP140 - ENERGY STAR Most Efficient 2018
- Ultra-quiet operation
- Meets all electrical code requirements
- Water-hardened motorized impeller
- Seams sealed to inhibit radon leakage (RP140 & RP145 double snap sealed)
- ETL Listed - for indoor or outdoor use
- Thermally protected motor
- Rated for commercial and residential use



MODEL	P/N	FAN DUCT DIAMETER	WATTS	RECOM. MAX. OP. PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC				
					0"	.5"	1.0"	1.5"	2.0"
RP140	28460	4"	15-21	0.7	135	70	-	-	-
RP145	28461	4"	41-72	1.7	166	126	82	41	3
RP260	28462	6"	47-65	1.3	251	157	70	-	-
RP265	28463	6"	95-139	2.3	375	282	204	140	70
RP380*	28208	8"	96-138	2.0	531	415	268	139	41

Model	A	B	C
RP140	4.5"	9.7"	8.5"
RP145	4.5"	9.7"	8.5"
RP260	6"	11.75"	8.6"
RP265	6"	11.75"	8.6"
RP380	8"	13.41"	10.53"

\*Currently not stay-white material.



with U.S. and imported parts.



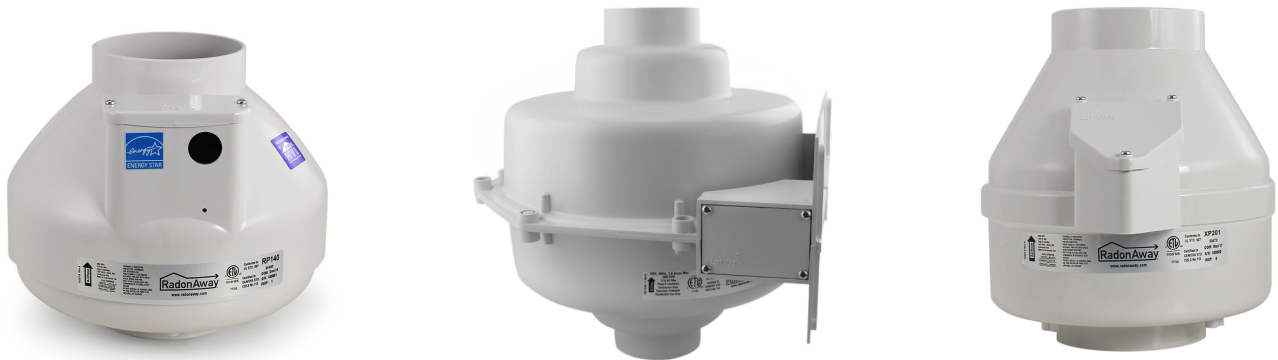
ETL Listed



All RadonAway® inline radon fans are covered by our 5-year, hassle-free warranty.



For Further Information, Contact Your Radon Professional



# RP, GP, XP Pro Series Installation Instructions



**Fan Installation & Operating Instructions**  
**RP, GP, XP Pro Series Fans**  
*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!** For General Ventilating Use Only. Do Not Use to Exhaust Hazardous, Corrosive or Explosive Materials, Gases or Vapors. See Vapor Intrusion Application Note #AN001 for important information on VI Applications. [RadonAway.com/vapor-intrusion](http://RadonAway.com/vapor-intrusion)
2. **NOTE:** Fan is suitable for use with solid state speed controls; however, use of speed controls is not generally recommended.
2. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.
3. **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.
4. **NOTICE!** There are no user serviceable parts located inside the fan unit.  
**Do NOT attempt to open.** Return unit to the factory. (See Warranty, p. 8, for details.)
5. **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.
6. **WARNING!** TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:
  - a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer. (See p. 8.)
  - b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service 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) Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturers’ guidelines and safety standards such as those published by any National Fire Protection Association, and the American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), and the local code authorities.
  - e) When cutting or drilling into a wall or ceiling, do not damage electrical wiring and other hidden utilities.
  - f) Ducted fans must always be vented to outdoors.
  - g) If this unit is to be installed over a tub or shower, it must be marked as appropriate for the application and be connected to a GFCI (Ground Fault Circuit Interrupter) protected branch circuit.



**Fan Installation & Operating Instructions**

RP Pro Series		GP Pro Series		XP Pro Series	
RP140	P/N 28460	GP201	P/N 28465	XP151	P/N 28469
RP145	P/N 28461	GP301	P/N 28466	XP201	P/N 28470
RP260	P/N 28462	GP401	P/N 28467		
RP265	P/N 28463	GP501	P/N 28468		
RP380	P/N 28464				

## 1.0 SYSTEM DESIGN CONSIDERATIONS

### 1.1 INTRODUCTION

The RP, GP and XP Pro Series Radon Fans are intended for use by trained, professional, certified/licensed radon mitigators. The purpose of these instructions is to provide additional guidance for the most effective use of RP, GP and XP Series Fans. These instructions should be considered supplemental to EPA/radon industry standard practices, state and local building codes and regulations. In the event of a conflict, those codes, practices and regulations take precedence over these instructions.

### 1.2 FAN SEALING

The RP, GP and XP Pro Series Fans are factory sealed; no additional caulk or other materials are required to inhibit air leakage.

### 1.3 ENVIRONMENTALS

The RP, GP and XP Pro 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.

### 1.4 ACOUSTICS

The RP, GP and XP Pro Series Fans, when installed properly, operate 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.

(To ensure quiet operation of inline and remote fans, each fan shall be installed using sound attenuation techniques appropriate for the installation. For bathroom and general ventilation applications, at least 8 feet of insulated flexible duct shall be installed between the exhaust or supply grille(s) and the fan(s). RP, GP and XP Pro Series Fans are not suitable for kitchen range hood remote ventilation applications.)

### 1.5 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes, thus blocking air flow to the RP, GP and XP Pro 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. Should this condition arise, it is recommended that the fan be turned off until the water recedes, allowing for return to normal operation.

### 1.6 SLAB COVERAGE

The RP, GP and XP Pro Series Fans can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the RP, GP and XP Pro Series Fan best suited for the sub-slab material can improve the slab coverage. The RP, GP and XP Pro Series have a wide range of models to choose from to cover a wide range of sub-slab materials. The RP140 and 145 are best suited for general purpose use. The RP 260 can be used where additional airflow is required, and the RP265 and RP 380 are best suited for large slab, high airflow applications. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

### 1.7 CONDENSATION & DRAINAGE

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

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

Pipe Diameter	Minimum Rise per Ft of Run*		
	@25 CFM	@50 CFM	@100 CFM
4"	1/8"	1/4"	3/8"
3"	1/4"	3/8"	1 1/2"



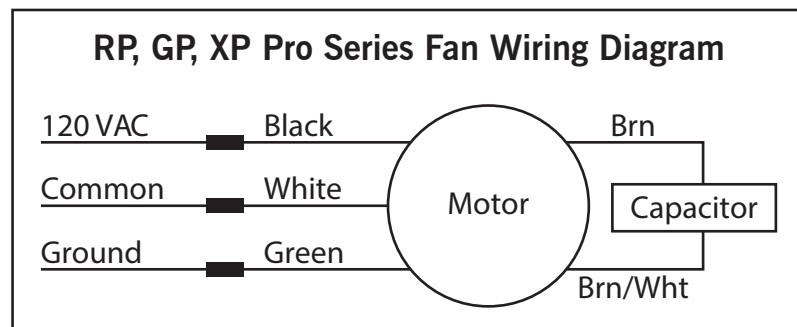
See p. 7 for detailed specifications.

### 1.8 SYSTEM MONITOR & LABEL

A System Monitor, such as a manometer (P/N 50017) or audible alarm (P/N 28001-2, 28001-4 or 28421), is required to notify the occupants of a fan system malfunction. A System Label (provided with Manometer P/N 50017) with instructions for contacting the installing contractor for service and identifying the necessity for regular radon tests to be conducted by the building occupants must be conspicuously placed in a location where the occupants frequent and can see the label.

### 1.9 ELECTRICAL WIRING

The RP, GP and XP Pro Series Fans operate on standard 120V, 60Hz AC. All wiring must be performed in accordance with National Fire Protection (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 UL Listed watertight conduit. Ensure that all exterior electrical boxes are outdoor rated and properly sealed to prevent water penetration into the box. A means, such as a weep hole, is recommended to drain the box.



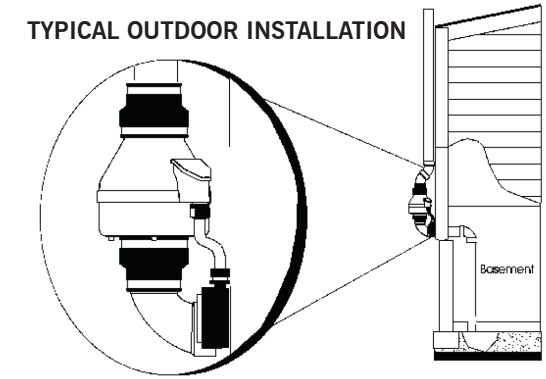
### 1.10 SPEED CONTROLS

The RP, GP and XP Pro Series Fans are rated for use with electronic speed controls; however, speed controls are generally not recommended. If used, the recommended speed control is Pass & Seymour Solid State Speed Control (Cat. No. 94601-1).

## 2.0 INSTALLATION

The RP, GP and XP Pro Series Fans can be mounted indoors or outdoors. (It is suggested that EPA and radon mitigation standards recommendations be followed in choosing the fan location.) The GP fans have an integrated mounting bracket; RP and XP Pro Series Fans may be mounted directly on the system piping or fastened to a supporting structure by means of an optional mounting bracket.

The ducting from the fan to the outside of the building has a strong effect on noise and fan energy use. 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 airflow.



### 2.1 MOUNTING

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

### 2.2 MOUNTING BRACKET (optional)

The RP and XP Pro Series Fans may be optionally secured with the RadonAway P/N 25007 mounting bracket. Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

### 2.3 SYSTEM PIPING

Complete piping run, using flexible couplings as a means of disconnect for servicing the unit and for vibration isolation. As the fan is typically outside of the building thermal boundary and is venting to the outside, installation of insulation around the fan is not required.

### 2.4 ELECTRICAL CONNECTION

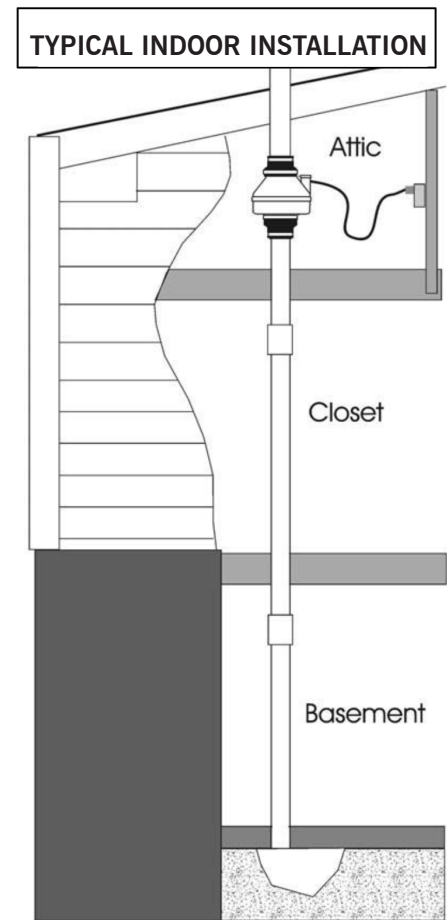
Connect wiring with wire nuts provided, observing proper connections (See Section 1.9). Note that the fan is not intended for connection to rigid metal conduit.

### 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 & ANNUAL SYSTEM MAINTENANCE

- \_\_\_\_\_ Verify all connections are tight and **leak-free**.
- \_\_\_\_\_ Ensure the RP, GP and XP Pro Series Fan and all ducting are **secure and vibration-free**.
- \_\_\_\_\_ Verify system vacuum pressure with manometer. **Insure** vacuum pressure is within normal operating range and **less than** the 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 and applicable testing standards.





THE FOLLOWING CHARTS SHOW THE PERFORMANCE OF THE RP, GP and XP PRO SERIES FANS

**RP Pro Series Product Specifications**

Typical CFM Vs. Static Pressure "WC									
Model	0"	.25"	.5"	.75"	1.0"	1.25"	1.5"	1.75"	2.0"
RP140	135	103	70	14	-	-	-	-	
RP145	166	146	126	104	82	61	41	21	3
RP260	251	209	157	117	70	26	-	-	-
RP265	375	330	282	238	204	170	140	108	70
RP380	531	490	415	340	268	200	139	84	41

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
RP140	15 - 21 watts	0.7" WC
RP145	41 - 72 watts	1.7" WC
RP260	47-65 watts	1.3" WC
RP265	95 - 139 watts	2.3" WC
RP380	96 - 138 watts	2.0" WC

\*Reduce by 10% for High Temperature Operation \*\*Reduce by 4% per 1000 ft. of altitude.

Model	Size	Weight	Inlet/Outlet	L.2
RP140	8.5"H x 9.7" Dia.	5.5 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)	25
RP145	8.5"H x 9.7" Dia.	5.5 lbs	4.5" OD	15
RP260	8.6"H x 11.75" Dia.	5.5 lbs	6.0" OD	48
RP265	8.6"H x 11.75" Dia.	6.5 lbs	6.0" OD	30
RP380	10.53"H x 13.41" Dia.	11.5 lbs	8.0" OD	57

L.2 = Estimated Equivalent Length of Rigid Metal Ducting resulting in .2" WC pressure loss for Duct Size listed. Longer Equivalent Lengths can be accommodated at Flows Lower than that at .2" WC pressure loss (see CFM Vs Static Pressure "WC Table).

**XP Pro Series Product Specifications**

Typical CFM Vs. Static Pressure "WC						
	0"	.5"	1.0"	1.5"	1.75"	2.0"
XP151	167	127	77	-	-	-
XP201	126	98	66	26	-	-

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
XP151	53-70 watts	1.4" WC
XP201	38-74 watts	1.6" WC

\*Reduce by 10% for High Temperature Operation \*\*Reduce by 4% per 1000 ft. of altitude.

Model	Size	Weight	Inlet/Outlet
XP151	9.5"H x 8.5" Dia.	6 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)
XP201	9.5"H x 8.5" Dia.	6 lbs	4.5" OD

**GP Pro Series Product Specifications**

Typical CFM Vs. Static Pressure "WC							
	1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
GP201	54	42	11	-	-	-	-
GP301	64	54	41	4	-	-	-
GP401	-	61	52	44	22	-	-
GP501	-	-	66	58	50	27	4

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
GP201	31-65 watts	1.8" WC
GP301	56-100 watts	2.3" WC
GP401	62-128 watts	3.0" WC
GP501	68 - 146 watts	3.8" WC

\*Reduce by 10% for High Temperature Operation \*\*Reduce by 4% per 1000 ft. of altitude.

Model	Size	Weight	Inlet/Outlet
GP201	13"H x 12.5" Dia.	12 lbs	3.5"OD (3.0" PVC Sched 40 size compatible)
GP301	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP401	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP501	13"H x 12.5" Dia.	12 lbs	3.5" OD

**RP, XP and GP Pro Series Additional Specifications**

Model	Recommended Duct	PVC Pipe Mounting	Thermal Cutout	Insulation Class
RP140	3" or 4" Schedule 20/40 PVC	Mount on the duct pipe or with optional mounting bracket. For Ventilation: 4", 6" or 8" Rigid or Flexible Ducting.	130°C/266°F	Class B Insulation
RP145			130°C/266°F	
RP260			150°C/302°F	Class F Insulation
RP265			150°C/302°F	
RP380	6" Schedule 20/40 PVC Pipe		150°C/302°F	
XP151	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
XP201				
GP201	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
GP301				
GP401				
GP501				

**Continuous Duty  
3000 RPM  
Thermally Protected  
RP, GP Residential and Commercial  
XP Residential Only  
Rated for Indoor or Outdoor Use**



LISTED Electric Fan



Conforms to UL STD. 507  
Certified to CAN/CSA STD. C22.2 No.113

## IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the RadonAway® RP, GP and XP Pro 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 the housing.** Return unit to factory. (See Warranty below).

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

**Provide a copy of this instruction or comparable radon system and testing information to the building occupants after completing system installation.**

### Warranty

RadonAway® warrants that the RP, GP (excluding GP500) and XP Pro Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of 12 months from the date of purchase or 18 months from the date of manufacture, whichever is sooner (the "Warranty Term").

RadonAway® will replace any fan which fails due to defects in materials or workmanship during the Warranty Term. 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®.

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.

#### 5-YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

RadonAway® will extend the Warranty Term of the fan to 60 months (5 years) from date of purchase or 66 months from date of manufacture, whichever is sooner, provided that the fan is installed by a professional radon mitigation contractor. Proof of purchase and/or proof of professional installation may be required for service under this warranty. No extended warranty is offered outside the Continental United States and Canada beyond the standard 12 months from the date of purchase or 18 months from the date of manufacture, whichever is sooner.

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

#### LIMITATION OF WARRANTY

**EXCEPT AS STATED ABOVE, THE RP, GP (excluding GP500) and XP PRO 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 costs, including insurance, to and from factory.

RadonAway® 3 Saber Way  
Ward Hill, MA 01835 USA TEL (978) 521-3703  
FAX (978) 521-3964  
Email to: Returns@RadonAway.com

Record the following information for your records:

Serial Number: \_\_\_\_\_

Purchase Date: \_\_\_\_\_



Zoom



# Checkpoint IIA Mitigation System Alarm

SKU: 28001-2

Be the first to review this product

Audible alarm; green and red LED lights; factory preset to activate at .25" WC vacuum pressure; low voltage



NOTICE

## Log In to Purchase

RadonAway is a B2B business only. You must be an approved RadonAway customer to purchase products through this website. If you are an existing RadonAway customer and need a website login, [click here](#). If you are a professional and would like to become a RadonAway customer, [click here](#).

 [Add to Wishlist](#)

 [Add to Compare](#)  [Share](#)

[Details](#)

[Additional Info](#)

[Reviews](#)

[Conditions of Sale](#)

## Product Categories

[Radon Fans](#) +

[HRVs / ERVs](#) +

[Radon System Components](#) +

[Mitigation Tools & Diagnostic Aids](#) +

[Sealing Products](#) +

[Crawlspace, Moisture and Radon Control](#) +

[Sump Pumps & Accessories](#) +

[Pipe Accessories](#) +

[Radon System Accessories](#) +

[Radon in Water Removal Systems](#) +

[Radon Testing](#) +

[Spruce Inline Ventilation](#) +

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[New Products](#) New

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1-2 day shipping in most of US [Read more...](#)



Five year manufacturer's warranty on RadonAway fans

## Additional Checkpoint Alarm Information:



**INSTALLATION & OPERATING INSTRUCTIONS**  
**Instruction P/N IN015 Rev E**  
**FOR CHECKPOINT Iia™ P/N 28001-2 & 28001-3**  
**RADON SYSTEM ALARM**

**INSTALLATION INSTRUCTIONS**  
(WALL MOUNTING)

Select a suitable wall location near a vertical section of the suction pipe. The unit should be mounted about four or five feet above the floor and as close to the suction pipe as possible. Keep in mind that with the plug-in transformer provided, the unit must also be within six feet of a 120V receptacle. **NOTE: The Checkpoint Iia is calibrated for vertical mounting, horizontal mounting will affect switchpoint calibration.**

Drill two 1/4" holes 4" apart horizontally where the unit is to be mounted.

Install the two 1/4" wall anchors provided.

Hang the CHECKPOINT Iia from the two mounting holes located on the mounting bracket. Tighten the mounting screws so the unit fits snugly and securely against the wall.

Drill a 5/16" hole into the side of the vent pipe about 6" higher than the top of the unit.

Insert the vinyl tubing provided about 1" inside the suction pipe.

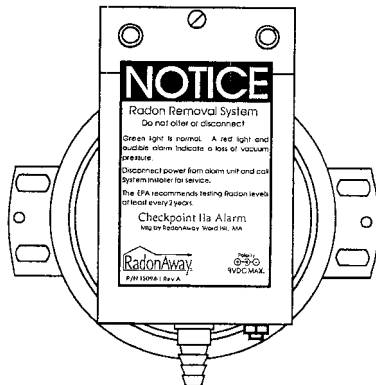
Cut a suitable length of vinyl tubing and attach it to the pressure switch connector on the CHECKPOINT Iia.

**CALIBRATION AND OPERATION.**

The CHECKPOINT Iia units are calibrated and sealed at the factory to alarm when the vacuum pressure falls below the factory setting and should not normally require field calibration. Factory Settings are:

**28001-2 - .25" WC Vacuum**

**28001-3 - .10" WC Vacuum**



**To Verify Operation:**

With the exhaust fan off or the pressure tubing disconnected and the CHECKPOINT Iia plugged in, both the red indicator light and the audible alarm should be on.

Turn the fan system on or connect the pressure tubing to the fan piping. The red light and the audible alarm should go off. The green light should come on.

Now turn the fan off. The red light and audible alarm should come on in about two or three seconds and the green light should go out.

**WARRANTY INFORMATION**

Subject to applicable consumer protection legislation, RadonAway warrants that the CHECKPOINT Iia will be free from defective material and workmanship for a period of (1) year from the date of purchase. Warranty is contingent on installation in accordance with the instructions provided. This warranty does not apply where repairs or alterations have been made or attempted by others; or the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway. All other warranties, expressed or written, are not valid. To make a claim under these limited warranties, you must return the defective item to RadonAway with a copy of the purchase receipt. RadonAway is not responsible for installation or removal cost associated with this warranty. In no case is RadonAway liable beyond the repair or replacement of the defective product FOB RadonAway.

**THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO WARRANTY OF MERCHANTABILITY. ALL OTHER WARRANTIES, EXPRESSED OR WRITTEN, ARE NOT VALID.**

For service under these warranties, 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 costs to and from factory.

Manufactured by:  
RadonAway  
Ward Hill, MA  
(978)-521-3703





## SERIES 2-5000 | MINIHELIC® II DIFFERENTIAL PRESSURE GAGE



### FEATURES/BENEFITS

- Removable lens and rear-housing provides easy, cost-effective servicing
- Accuracy and value provides an excellent solution for OEM and user applications
- Durable housing materials make it well-suited for rough environments and total high pressure

### APPLICATIONS

- Room positive pressure sensing
- Cabinet air-purging
- Medical respiratory equipment
- Air samplers
- Electronic air cooling systems
- Laminar flow hoods
- Local indication on filter status
- Face velocity on fume hood
- Duct pressures

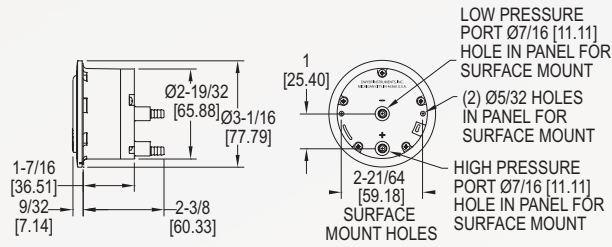
### DESCRIPTION

Combining clean design, small size and low cost with enough accuracy for all but the most demanding applications our **Series 2-5000 Minihelic® II Gage** offers the latest in design features for a dial type differential pressure gage. It is our most compact gage but is easy to read and can safely operate at total pressures up to 30 psig.

### SPECIFICATIONS

<b>Service</b>	Air and compatible gases.
<b>Wetted Materials</b>	Consult factory.
<b>Housing</b>	Glass filled nylon; polycarbonate lens.
<b>Accuracy</b>	±5% of FS at 70°F (21.1°C).
<b>Pressure Limits</b>	30 psig (2.067 bar) continuous to either pressure connection.
<b>Temperature Limits</b>	20 to 120°F (-6.67 to 48.9°C).
<b>Mounting Orientation</b>	Diaphragm in vertical position. Consult factory for other position orientations.
<b>Process Connections</b>	Barbed, for 3/16" ID tubing (standard); 1/8" male NPT (optional).
<b>Weight</b>	6 oz (170.1g).
<b>Agency Approvals</b>	Meets the technical requirements of EU Directive 2011/65/EU (RoHS II)
<b>Caution: FOR USE ONLY WITH AIR OR COMPATIBLE NON-CORROSIVE GASES</b>	

## DIMENSIONS



## HOW TO ORDER

Use the **bold** characters from the chart below to construct a product code.

**2-5001**    **-AT**

### SERIES/RANGE

- 2-5000-0:** 0 to 0.5 in w.c
- 2-5001:** 0 to 1 in w.c
- 2-5002:** 0 to 2 in w.c
- 2-5003:** 0 to 3 in w.c
- 2-5005:** 0 to 5 in w.c
- 2-5205:** 0 to 5 psid
- 2-5210:** 0 to 10 psid
- 2-5000-125PA:** 0 to 125 Pa
- 2-5000-250PA:** 0 to 250 Pa
- 2-5000-500PA:** 0 to 500 Pa
- 2-5000-750PA:** 0 to 750 Pa

### OPTIONS

- AT:** Aluminum tag
- BB:** Bottom barb connection
- FC:** Factory calibration
- NIST:** NIST traceable calibration certificate
- NPT:** NPT connection

## ACCESSORIES

Model	Description
<b>A-434</b>	Portable kit for Series 2-5000 Minihelic® II gage
<b>A-609</b>	Air filter kit for Series 2-5000 Minihelic® II gage
<b>A-497</b>	Mounting bracket for the Series 2-5000 Minihelic® II differential pressure gage
<b>A-489</b>	4" 303 SS straight static pressure tip with flange
<b>A-362</b>	Stand-hang bracket, aluminum, for Minihelic® II gage

**ORDER ONLINE TODAY!**

[dwyer-inst.com/Product/Series2-5000](http://dwyer-inst.com/Product/Series2-5000)

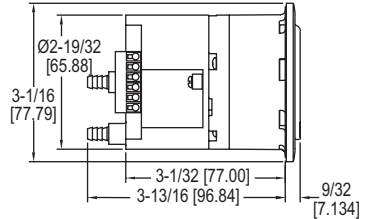
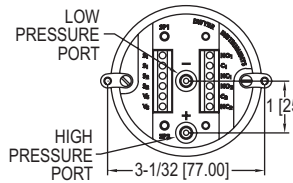


**DWYER INSTRUMENTS, INC.**



## Series 2-5000 Minihelic® II Differential Pressure Gage

### Specifications - Installation and Operating Instructions



**Series 2-5000 Minihelic® II Differential Pressure Gage** has a clean design, small size, low cost and sufficient accuracy for all but the most demanding applications. With housing molded from mineral- and glass-filled nylon and a lens molded from polycarbonate, this gage will withstand rough use and exposure, as well as high total pressure up to 30 psig (2.067 bar). Over-pressure is accommodated by a blow-out membrane molded in conjunction with the diaphragm.

#### INSTALLATION

1. Select a location free from excessive vibration and where ambient temperature will be between 20°F to 120°F (-6.7°C to 49°C). Sensing lines may be any length necessary without affecting accuracy. However, long runs of tubing will dampen readings slightly and cause a minor increase in response time. If pulsing pressure or vibration cause excessive pointer oscillation, please contact factory for ways to provide additional damping.
2. This gage is calibrated and zeroed in the vertical position at the factory. If the gage is used in any other position, it must be re-zeroed each time the position is changed. Gages with ranges under 5 inches w.c. (1.24 kPa), or the equivalent, should be used only in the vertical position unless special calibration was specified when ordering.

#### SPECIFICATIONS

**Dimensions:** 2-29/32" (73.82 mm) x 2- 7/16" (61.93 mm).

**Weight:** 6 oz. (170 g).

**Rated Total Pressure:** 50 psig (3.445 bar) surge; 30 psig (2.067 bar) continuous to either pressure connection.

**Ambient Temperature Range:** 20°F to 120°F (-6.67°C to 48.9°C).

**Accuracy:** ± 5% of full scale at 70°F (21.1°C).

**Connections:** Standard, barbed for 3/16" I.D. tubing; optional, 1/8" NPT(M).

**Housing:** Glass-filled nylon, polycarbonate lens.

**Finish:** Black.

**Standard Accessories:** (2) 4-40 x 1-5/8" mounting studs, (2) 4-40 hex nuts, (1) .050" hex allen wrench, (1) panel mounting bracket.

**Mounting Orientation:** Diaphragm in vertical position. Consult factory for other position orientations.

**Agency Approvals:** Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

#### CAUTION

Use only with air or compatible non-corrosive gases.



3. To surface-mount the gage, drill two 5/32" (3.97 mm) holes on a horizontal line, 2-1/3" (59.26 mm) apart for mounting screws. Next, drill two 7/16" (11.11 mm) holes 1-1/32" (26.19 mm) apart on a vertical line for pressure connections. Install mounting studs in back of the gage, insert through holes in the panel, and secure with hex nuts provided. Be careful not to block the slotted hole near the right-hand mounting hole. This provides a path for pressure relief in the event of over-pressurization.
4. To panel-mount gage, cut a 2-5/8" diameter hole. Install the mounting studs in the back of gage, position gage in the panel, and place bracket over the studs. Thread hex nuts over studs and tighten.
5. After installation, the gage may need to be zeroed before placing in operation. If re-zeroing is required, firmly hold the case of gage with one hand and unscrew the front cover with the palm of the other hand in a counterclockwise direction. If difficult to loosen, place a small sheet of rubber between the cover and the palm of the hand. Zero-adjust screw is located behind the scale at the pair marked "zero." Use the hex allen wrench supplied and adjust until pointer is on zero. This must be done with both pressure connections vented to atmosphere and the gage oriented in the final mounting position. Replace cover.

6. To measure positive pressure, connect tubing to port marked "HI" and vent "LO" port to atmosphere. For negative pressure (vacuum), connect to port marked "LO" and vent "HI" port to atmosphere. For differential pressure, connect higher pressure to port marked "HI" and lower to "LO" port. If gage is supplied with 1/8" NPT connections, be careful not to over-tighten fittings to avoid damage to the gage.

#### **CALIBRATION CHECK**

Select a second gage or manometer of known accuracy and in an appropriate range. Use short lengths of rubber or vinyl tubing to connect the high-pressure side of the Minihelic® II gage and the test gage to two legs of a tee. Very slowly, apply pressure through the third leg. Allow enough time for pressure to equalize throughout the system and for fluid to drain, if a manometer is being used. Compare readings. If the gage being tested exceeds rated accuracy, it should be returned to the factory for recalibration.

#### **MAINTENANCE**





No lubrication or periodic servicing is required. Keep case exterior and cover clean. Occasionally, disconnect pressure lines to vent both sides of the gage to atmosphere and re-zero per paragraph 5.

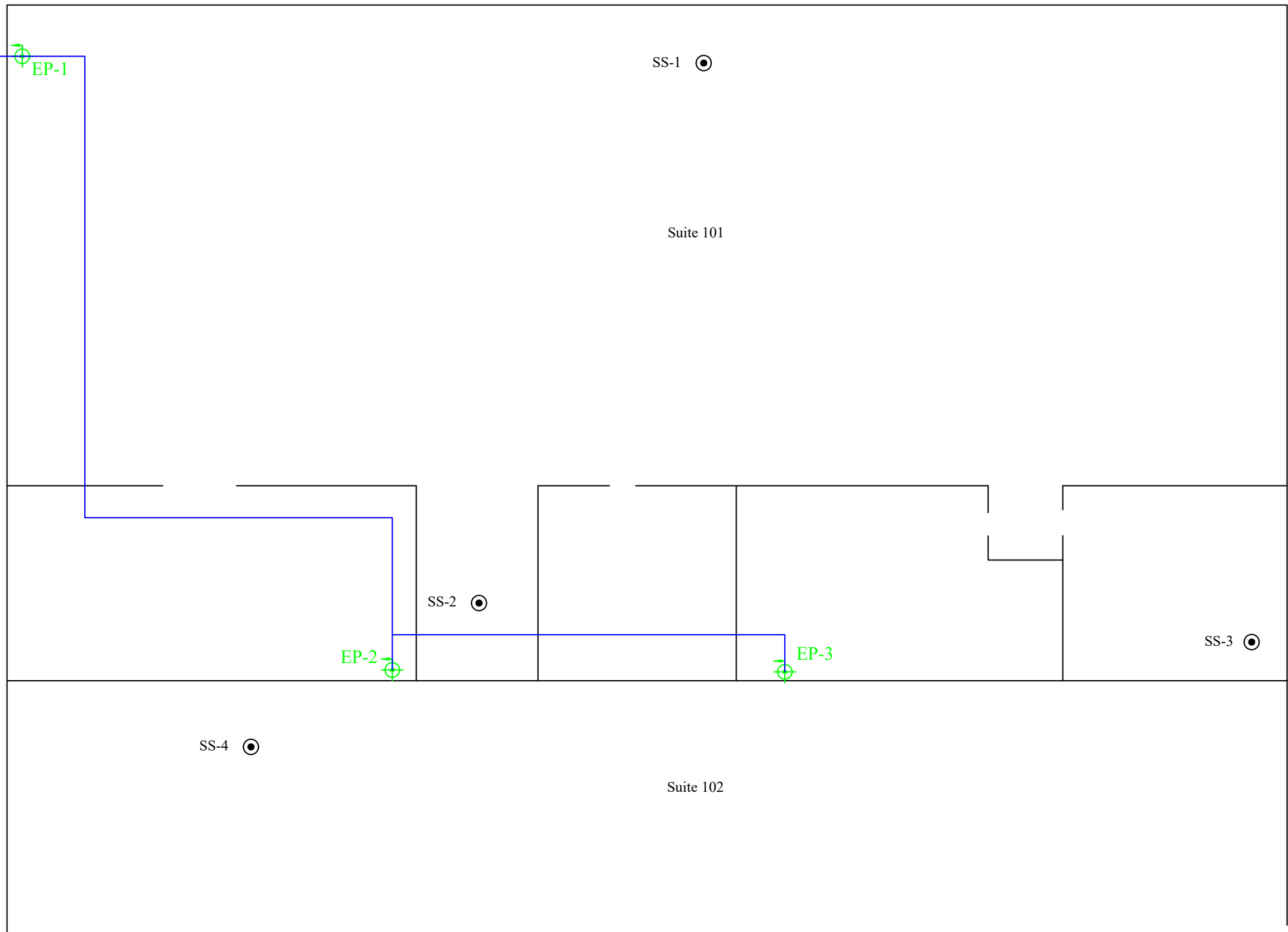


## Attachment C

### PFE Verification Testing Information

### Legend

- EP-1  Extraction point
-  Mitigation Fan
- SS-1  Sub-slab sample
-  4" schedule 40 PVC pipe



NOT TO SCALE

### SUB-SLAB DEPRESSURIZATION LAYOUT

Former Donaldson's Cleaners - Appleton  
 1835 Edgewood Drive  
 Appleton, Wisconsin

Date:	3/2/21
Designed:	EB
Drawn:	EB
Checked:	RF
DWG file:	200019-0098



825 North Capital Avenue • Indianapolis, IN 46204  
 EnviroForensics.com

Figure	1
Project	200019

## Vapor Mitigation System Vacuum Readings Log

Date:	01/21/2021	02/18/2021	03/02/2021		
<b>EP-1</b>					
Readings 1 & 2	-0.5 "wc	-0.687 "wc	-0.555 "wc		
Acceptable Operating Range:					
<b>EP-2</b>					
Readings 1 & 2	-0.4 "wc	-0.659 "wc	-0.542 "wc		
Acceptable Operating Range:					
<b>EP-3</b>					
Readings 1 & 2	-0.2 "wc	Not Measured	-0.537 "wc		
Acceptable Operating Range:					
<b>SS-1</b>					
Readings 1 & 2	-0.333 "wc	-0.465 "wc	-0.431 "wc		
<b>SS-2</b>					
Readings 1 & 2	-0.029 "wc	-0.089 "wc	-0.077 "wc		
<b>SS-3</b>					
Readings 1 & 2	-0.01 "wc	-0.021 "wc	-0.014 "wc		
<b>SS-4</b>					
Readings 1 & 2	-0.24 "wc	-0.021 "wc	-0.021 "wc		



Attachment D

Template O&M Logs





### Vapor Mitigation System Vacuum Readings Log

<b>Date:</b>					
<b>EP-</b>					
Readings 1 & 2	/				
Acceptable Operating Range:					
<b>EP-</b>					
Readings 1 & 2	/				
Acceptable Operating Range:					
<b>EP-</b>					
Readings 1 & 2	/				
Acceptable Operating Range:					
<b>SS-</b>					
Readings 1 & 2	/				
<b>SS-</b>					
Readings 1 & 2	/				
<b>SS-</b>					
Readings 1 & 2	/				
<b>SS-</b>					
Readings 1 & 2	/				

## Vapor Mitigation System Repair Log

	Date:	Date:	Date:
Sub System ID	Fan ___ EP-___	Fan ___ EP-___	Fan ___ EP-___
Component (ie fan, gauge, etc.)			
Description of the Deficiency or Problem			
Description of the Modification or Repair			

	Date:	Date:	Date:
Sub System ID	Fan ___ EP-___	Fan ___ EP-___	Fan ___ EP-___
Component (ie fan, gauge, etc.)			
Description of the Deficiency or Problem			
Description of the Modification or Repair			



## Attachment E

### Laboratory Analytical Reports



**EnvisionAir**  
1441 Sadlier Circle West Drive  
Indianapolis, IN 46239  
Ph: 317-351-0885  
Fax: 317-351-0882  
[www.envision-air.com](http://www.envision-air.com)

Mr. Rob Hoverman  
Enviroforensics  
N16 W. 23390 Stone Ridge Dr  
Suite G  
Waukesha, WI 53188

February 24, 2021

EnvisionAir Project Number: 2021-93  
Client Project Name: 200019

Dear Mr. Hoverman,

Please find the attached analytical report for the samples received February 22, 2021. All test methods performed were fully compliant with local, state, and federal EPA methods unless otherwise noted. The project was analyzed as requested on the enclosed chain of custody record. Please review the comments section for additional information about your results or Quality Control data.

Feel free to contact me if you have any questions or comments regarding your analytical report or service.

Thank you for your business. EnvisionAir looks forward to working with you on your next project.

Yours Sincerely,

A handwritten signature in black ink that reads "Stanley A. Hunnicutt".

Stanley A Hunnicutt

Project Manager  
EnvisionAir, LLC



**EnvisionAir**  
 1441 Sadlier Circle West Drive  
 Indianapolis, IN 46239  
 Ph: 317-351-0885  
 Fax: 317-351-0882  
 www.envision-air.com

**Client Name:** ENVIROFORENSICS  
**Project ID:** 200019 DONALDSONS APPLETON  
**Client Project Manager:** ROB HOVERMAN  
**EnvisionAir Project Number:** 2021-93

**Sample Summary**

*Canister Pressure / Vacuum*

<u>Laboratory Sample Number:</u>	<u>Sample Description:</u>	<u>START</u>	<u>START</u>	<u>End Date</u>	<u>End Time</u>	<u>Date</u>	<u>Time</u>	<u>Initial Field</u>	<u>Final Field</u>	<u>Lab</u>	
		<u>Date</u>	<u>Time</u>								<u>Collected:</u>
21-500	200019-1835-101-IA	A	2/18/21	9:03	2/18/21	17:00	2/22/21	14:30	-30	-9	-9



**EnvisionAir**  
 1441 Sadler Circle West Drive  
 Indianapolis, IN 46239  
 Ph: 317-351-0885  
 Fax: 317-351-0882  
 www.envision-air.com

**Client Name:** ENVIROFORENSICS  
**Project ID:** 200019 DONALDSONS APPLETON  
**Client Project Manager:** ROB HOVERMAN  
**EnvisionAir Project Number:** 2021-93

**Analytical Method:** TO-15  
**Analytical Batch:** 022321AIR

**Client Sample ID:** 200019-1835-101-IA  
**EnvisionAir Sample Number:** 21-500  
**Sample Matrix:** AIR

**Sample Collection START Date/Time:** 2/18/21 9:03  
**Sample Collection END Date/Time:** 2/18/21 17:00  
**Sample Received Date/Time:** 2/22/21 14:30

<u>Compounds</u>	<u>Sample Results ug/m<sup>3</sup></u>	<u>Reporting Limit ug/m<sup>3</sup></u>	<u>Flag</u>
4-Ethyltoluene	< 492	492	
4-Methyl-2-pentanone (MIBK)	< 2050	2050	
1,1,1-Trichloroethane	< 546	546	
1,1,2,2-Tetrachloroethane	< 0.34	0.34	1
1,1,2-Trichloroethane	< 0.21	0.21	1
1,1-Dichloroethane	< 4.05	4.05	
1,1-Dichloroethene	< 198	198	
1,2,4-Trichlorobenzene	< 0.74	0.74	
1,2,4-Trimethylbenzene	< 4.92	4.92	
1,2-Dibromoethane (EDB)	< 0.03	0.03	1
1,2-Dichlorobenzene	< 60.1	60.1	
1,2-Dichloroethane	< 0.40	0.40	
1,2-Dichloropropane	< 0.46	0.46	
1,3,5-Trimethylbenzene	< 4.92	4.92	
1,3-Butadiene	< 0.22	0.22	
1,3-Dichlorobenzene	< 60.1	60.1	
1,4-Dichlorobenzene	< 0.60	0.60	
1,4-Dioxane	< 1.80	1.80	
2-Butanone (MEK)	< 2950	2950	
2-Hexanone	< 20.5	20.5	
Acetone	< 2380	2380	
Benzene	< 1.60	1.60	
Benzyl Chloride	< 0.41	0.41	1
Bromodichloromethane	< 0.54	0.54	1
Bromoform	< 10.3	10.3	
Bromomethane	< 3.88	3.88	
Carbon Disulfide	< 311	311	
Carbon Tetrachloride	< 0.63	0.63	
Chlorobenzene	< 23.0	23.0	
Chloroethane	< 13.2	13.2	



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<u>Compounds</u>	<u>Sample Results ug/m<sup>3</sup></u>	<u>Reporting Limit ug/m<sup>3</sup></u>	<u>Flag</u>
Chloroform	< 0.83	0.83	
Chloromethane	< 20.6	20.6	
cis-1,2-Dichloroethene	< 19.8	19.8	
cis-1,3-Dichloropropene	< 4.54	4.54	
Cyclohexane	< 5510	5510	
Dibromochloromethane	< 0.85	0.85	
Dichlorodifluoromethane	< 49.5	49.5	
Ethyl Acetate	< 54.1	54.1	
Ethylbenzene	< 8.68	8.68	
Hexachloro-1,3-butadiene	< 1.07	1.07	
Isooctane	< 467	467	
m,p-Xylene	< 43.4	43.4	
Methylene Chloride	< 41.7	41.7	
Methyl-tert-butyl ether	< 36.1	36.1	
N-Heptane	< 410	410	
N-Hexane	< 176	176	
o-Xylene	< 43.4	43.4	
Propylene	< 172	172	
Styrene	< 426	426	
Tetrachloroethene	< 3.19	3.19	
Tetrahydrofuran	< 295	295	
Toluene	< 3770	3770	
trans-1,2-Dichloroethene	< 39.6	39.6	
trans-1,3-Dichloropropene	< 4.54	4.54	
Trichloroethene	< 1.07	1.07	
Trichlorofluoromethane	< 562	562	
Vinyl Acetate	< 176	176	
Vinyl Bromide	< 0.44	0.44	
Vinyl Chloride	< 1.28	1.28	
4-bromofluorobenzene (surrogate)	95%		
Analysis Date/Time:	2-23-21/14:28		
Analyst Initials	tjg		



**TO-15 Quality Control Data**

**EnvisionAir Batch Number:** 022321AIR

<b>Method Blank (MB):</b>	<b>MB Results (ppbv)</b>	<b>Reporting Limit (ppbv)</b>	<b>Flags</b>
4-Ethyltoluene	< 100	100	
4-Methyl-2-pentanone (MIBK)	< 500	500	
1,1,1-Trichloroethane	< 100	100	
1,1,1,2-Tetrachloroethane	< 0.049	0.049	1
1,1,2-Trichloroethane	< 0.038	0.038	1
1,1-Dichloroethane	< 1	1	
1,1-Dichloroethene	< 50	50	
1,2,4-Trichlorobenzene	< 0.1	0.1	
1,2,4-Trimethylbenzene	< 1	1	
1,2-dibromoethane (EDB)	< 0.0041	0.0041	1
1,2-Dichlorobenzene	< 10	10	
1,2-Dichloroethane	< 0.1	0.1	
1,2-Dichloropropane	< 0.1	0.1	
1,3,5-Trimethylbenzene	< 1	1	
1,3-Butadiene	< 0.1	0.1	
1,3-Dichlorobenzene	< 10	10	
1,4-Dichlorobenzene	< 0.1	0.1	
1,4-Dioxane	< 0.5	0.5	
2-Butanone (MEK)	< 1000	1000	
2-Hexanone	< 5	5	
Acetone	< 1000	1000	
Benzene	< 0.5	0.5	
Benzyl Chloride	< 0.08	0.08	1
Bromodichloromethane	< 0.08	0.08	1
Bromoform	< 1	1	
Bromomethane	< 1	1	
Carbon Disulfide	< 100	100	
Carbon Tetrachloride	< 0.1	0.1	
Chlorobenzene	< 5	5	
Chloroethane	< 5	5	
Chloroform	< 0.17	0.17	
Chloromethane	< 10	10	
cis-1,2-Dichloroethene	< 5	5	
cis-1,3-Dichloropropene	< 1	1	
Cyclohexane	< 1600	1600	
Dibromochloromethane	< 0.1	0.1	
Dichlorodifluoromethane	< 10	10	
Ethyl Acetate	< 15	15	
Ethylbenzene	< 2	2	
Hexachloro-1,3-butadiene	< 0.1	0.1	
Isooctane	< 100	100	
m,p-Xylene	< 10	10	
Methylene Chloride	< 12	12	
Methyl-tert-butyl ether	< 10	10	
N-Heptane	< 100	100	
N-Hexane	< 50	50	
Naphthalene	< 0.1	0.1	
o-Xylene	< 10	10	
Propylene	< 100	100	
Styrene	< 100	100	
Tetrachloroethene	< 0.47	0.47	
Tetrahydrofuran	< 100	100	

Analytical Report

<u>Method Blank (MB):</u>	<u>MB Results (ppbv)</u>	<u>Reporting Limit (ppbv)</u>	<u>Flags</u>
Toluene	< 1000	1000	
trans-1,2-Dichloroethene	< 10	10	
trans-1,3-Dichloropropene	< 1	1	
Trichloroethene	< 0.2	0.2	
Trichlorofluoromethane	< 100	100	
Vinyl Acetate	< 50	50	
Vinyl Bromide	< 0.1	0.1	
Vinyl Chloride	< 0.5	0.5	
4-bromofluorobenzene (surrogate)	92%		
Analysis Date/Time:	2-23-21/12:21		
Analyst Initials	tjg		

<u>LCS/LCSD</u>	<u>LCS Results (ppbv)</u>	<u>LCSD Results (ppbv)</u>	<u>LCS/D</u>	<u>LCS</u>	<u>LCSD</u>	<u>RPD</u>	<u>Flag</u>
			<u>Conc(ppbv)</u>	<u>Rec.</u>	<u>Rec.</u>		
Propylene	9.62	9.34	10	96%	93%	3.0%	
Dichlorodifluoromethane	10.8	10.5	10	108%	105%	2.8%	
Chloromethane	10.3	10.9	10	103%	109%	5.7%	
Vinyl Chloride	10.2	10.5	10	102%	105%	2.9%	
1,3-Butadiene	10.4	10.6	10	104%	106%	1.9%	
Bromomethane	9.83	9.48	10	98%	95%	3.6%	
Chloroethane	10.8	10.6	10	108%	106%	1.9%	
Vinyl Bromide	10.4	10.1	10	104%	101%	2.9%	
Trichlorofluoromethane	9.89	9.36	10	99%	94%	5.5%	
Acetone	11.2	11.2	10	112%	112%	0.0%	
1,1-Dichloroethene	11.1	10.9	10	111%	109%	1.8%	
Methylene Chloride	9.91	9.24	10	99%	92%	7.0%	
Carbon Disulfide	10.1	10.1	10	101%	101%	0.0%	
trans-1,2-Dichloroethene	10.4	10.4	10	104%	104%	0.0%	
Methyl-tert-butyl ether	10.5	10.2	10	105%	102%	2.9%	
1,1-Dichloroethane	9.45	9.82	10	95%	98%	3.8%	
Vinyl Acetate	9.22	9.23	10	92%	92%	0.1%	
N-Hexane	10.4	10.6	10	104%	106%	1.9%	
2-Butanone (MEK)	10.5	10.2	10	105%	102%	2.9%	
cis-1,2-Dichloroethene	10.6	10.1	10	106%	101%	4.8%	
Ethyl Acetate	11	10.9	10	110%	109%	0.9%	
Chloroform	10.9	10.9	10	109%	109%	0.0%	
Tetrahydrofuran	10.8	11	10	108%	110%	1.8%	
1,2-Dichloroethane	9.96	10.3	10	100%	103%	3.4%	
1,1,1-Trichloroethane	9.08	9.15	10	91%	92%	0.8%	
Carbon Tetrachloride	9.82	9.61	10	98%	96%	2.2%	
Benzene	10.1	10.5	10	101%	105%	3.9%	
Cyclohexane	8.9	8.98	10	89%	90%	0.9%	
1,2-Dichloropropane	9.23	9.63	10	92%	96%	4.2%	
Trichloroethene	9.03	8.96	10	90%	90%	0.8%	
Bromodichloromethane	10.1	10.2	10	101%	102%	1.0%	
1,4-Dioxane	10.4	9.92	10	104%	99%	4.7%	
Isooctane	9.98	10.5	10	100%	105%	5.1%	
N-Heptane	10.1	10.3	10	101%	103%	2.0%	
cis-1,3-Dichloropropene	9.54	9.71	10	95%	97%	1.8%	
4-Methyl-2-pentanone (MIBK)	11.1	10.5	10	111%	105%	5.6%	
trans-1,3-Dichloropropene	10.1	9.9	10	101%	99%	2.0%	
1,1,2-Trichloroethane	8.83	9.01	10	88%	90%	2.0%	
Toluene	8.79	8.84	10	88%	88%	0.6%	
2-Hexanone	11.1	11.3	10	111%	113%	1.8%	
Dibromochloromethane	9.31	9.24	10	93%	92%	0.8%	
1,2-dibromoethane (EDB)	10.1	10.2	10	101%	102%	1.0%	
Tetrachloroethene	10.2	10.2	10	102%	102%	0.0%	
Chlorobenzene	9.53	9.66	10	95%	97%	1.4%	
Ethylbenzene	9.64	9.72	10	96%	97%	0.8%	
m,p-Xylene	20.7	20.5	20	104%	103%	1.0%	
Bromoform	8.93	9.02	10	89%	90%	1.0%	

Analytical Report

<u>LCS/LCSD</u>	<u>LCS Results (ppbv)</u>	<u>LCSD Results (ppbv)</u>	<u>LCS/D</u> <u>Conc(ppbv)</u>	<u>LCS</u> <u>Rec.</u>	<u>LCSD</u> <u>Rec.</u>	<u>RPD</u>	<u>Flag</u>
Styrene	8.58	8.66	10	86%	87%	0.9%	
1,1,2,2-Tetrachloroethane	10	10.2	10	100%	102%	2.0%	
o-Xylene	9.61	9.03	10	96%	90%	6.2%	
4-Ethyltoluene	10.1	9.88	10	101%	99%	2.2%	
1,3,5-Trimethylbenzene	9.27	9.8	10	93%	98%	5.6%	
1,2,4-Trimethylbenzene	10	9.78	10	100%	98%	2.2%	
1,3-Dichlorobenzene	9.51	9.35	10	95%	94%	1.7%	
Benzyl Chloride	9.95	9.39	10	100%	94%	5.8%	
1,4-Dichlorobenzene	10	9.55	10	100%	96%	4.6%	
1,2-Dichlorobenzene	9.05	9.28	10	91%	93%	2.5%	
1,2,4-Trichlorobenzene	9.95	9.82	10	100%	98%	1.3%	
Hexachloro-1,3-butadiene	9.15	9.1	10	92%	91%	0.5%	
Naphthalene	9.61	9.66	10	96%	97%	0.5%	
4-bromofluorobenzene (surrogate)	103%	92%					
Analysis Date/Time:	2-23-21/11:01	2-23-21/11:46					
Analyst Initials	tjg	tjg					



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<u>Flag Number</u>	<u>Comments</u>
1	Reporting limit is supported by MDL. TJG





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Mr. Rob Hoverman  
Enviroforensics  
N16 W. 23390 Stone Ridge Dr  
Suite G  
Waukesha, WI 53188

February 24, 2021

EnvisionAir Project Number: 2021-92  
Client Project Name: 200019

Dear Mr. Hoverman,

Please find the attached analytical report for the samples received February 22, 2021. All test methods performed were fully compliant with local, state, and federal EPA methods unless otherwise noted. The project was analyzed as requested on the enclosed chain of custody record. Please review the comments section for additional information about your results or Quality Control data.

Feel free to contact me if you have any questions or comments regarding your analytical report or service.

Thank you for your business. EnvisionAir looks forward to working with you on your next project.

Yours Sincerely,

A handwritten signature in black ink that reads "Stanley A. Hunnicutt".

Stanley A Hunnicutt

Project Manager  
EnvisionAir, LLC



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**Client Name:** ENVIROFORENSICS  
**Project ID:** 200019 DONALDSONS APPLETON  
**Client Project Manager:** ROB HOVERMAN  
**EnvisionAir Project Number:** 2021-92

**Sample Summary**

*Canister Pressure / Vacuum*

<u>Laboratory Sample Number:</u>	<u>Sample Description:</u>	<u>Matrix:</u>	<u>START</u>	<u>START</u>	<u>End Date</u>	<u>End Time</u>	<u>Date</u>	<u>Time</u>	<u>Initial Field</u>	<u>Final Field</u>	<u>Lab</u>
			<u>Date</u>	<u>Time</u>							
21-499	200019-1835-102-IA	A	2/18/21	8:31	2/18/21	16:26	2/22/21	14:30	-30	-9	-9



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**Client Name:** ENVIROFORENSICS  
**Project ID:** 200019 DONALDSONS APPLETON  
**Client Project Manager:** ROB HOVERMAN  
**EnvisionAir Project Number:** 2021-92

**Analytical Method:** TO-15  
**Analytical Batch:** 022321AIR

**Client Sample ID:** 200019-1835-102-IA  
**EnvisionAir Sample Number:** 21-499  
**Sample Matrix:** AIR

**Sample Collection START Date/Time:** 2/18/21 8:31  
**Sample Collection END Date/Time:** 2/18/21 16:26  
**Sample Received Date/Time:** 2/22/21 14:30

<u>Compounds</u>	<u>Sample Results ug/m<sup>3</sup></u>	<u>Reporting Limit ug/m<sup>3</sup></u>	<u>Flag</u>
4-Ethyltoluene	< 492	492	
4-Methyl-2-pentanone (MIBK)	< 2050	2050	
1,1,1-Trichloroethane	< 546	546	
1,1,2,2-Tetrachloroethane	< 0.34	0.34	1
1,1,2-Trichloroethane	< 0.21	0.21	1
1,1-Dichloroethane	< 4.05	4.05	
1,1-Dichloroethene	< 198	198	
1,2,4-Trichlorobenzene	< 0.74	0.74	
1,2,4-Trimethylbenzene	< 4.92	4.92	
1,2-Dibromoethane (EDB)	< 0.03	0.03	1
1,2-Dichlorobenzene	< 60.1	60.1	
1,2-Dichloroethane	< 0.40	0.40	
1,2-Dichloropropane	< 0.46	0.46	
1,3,5-Trimethylbenzene	< 4.92	4.92	
1,3-Butadiene	< 0.22	0.22	
1,3-Dichlorobenzene	< 60.1	60.1	
1,4-Dichlorobenzene	< 0.60	0.60	
1,4-Dioxane	< 1.80	1.80	
2-Butanone (MEK)	< 2950	2950	
2-Hexanone	< 20.5	20.5	
Acetone	< 2380	2380	
Benzene	< 1.60	1.60	
Benzyl Chloride	< 0.41	0.41	1
Bromodichloromethane	< 0.54	0.54	1
Bromoform	< 10.3	10.3	
Bromomethane	< 3.88	3.88	
Carbon Disulfide	< 311	311	
Carbon Tetrachloride	< 0.63	0.63	
Chlorobenzene	< 23.0	23.0	
Chloroethane	< 13.2	13.2	





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<u>Compounds</u>	<u>Sample Results ug/m<sup>3</sup></u>	<u>Reporting Limit ug/m<sup>3</sup></u>	<u>Flag</u>
Chloroform	< 0.83	0.83	
Chloromethane	< 20.6	20.6	
cis-1,2-Dichloroethene	< 19.8	19.8	
cis-1,3-Dichloropropene	< 4.54	4.54	
Cyclohexane	< 5510	5510	
Dibromochloromethane	< 0.85	0.85	
Dichlorodifluoromethane	< 49.5	49.5	
Ethyl Acetate	< 54.1	54.1	
Ethylbenzene	< 8.68	8.68	
Hexachloro-1,3-butadiene	< 1.07	1.07	
Isooctane	< 467	467	
m,p-Xylene	< 43.4	43.4	
Methylene Chloride	< 41.7	41.7	
Methyl-tert-butyl ether	< 36.1	36.1	
N-Heptane	< 410	410	
N-Hexane	< 176	176	
o-Xylene	< 43.4	43.4	
Propylene	< 172	172	
Styrene	< 426	426	
Tetrachloroethene	< 3.19	3.19	
Tetrahydrofuran	< 295	295	
Toluene	< 3770	3770	
trans-1,2-Dichloroethene	< 39.6	39.6	
trans-1,3-Dichloropropene	< 4.54	4.54	
Trichloroethene	< 1.07	1.07	
Trichlorofluoromethane	< 562	562	
Vinyl Acetate	< 176	176	
Vinyl Bromide	< 0.44	0.44	
Vinyl Chloride	< 1.28	1.28	
4-bromofluorobenzene (surrogate)	97%		
Analysis Date/Time:	2-23-21/13:44		
Analyst Initials	tjg		

**TO-15 Quality Control Data**

**EnvisionAir Batch Number:** 022321AIR

<b>Method Blank (MB):</b>	<b>MB Results (ppbv)</b>	<b>Reporting Limit (ppbv)</b>	<b>Flags</b>
4-Ethyltoluene	< 100	100	
4-Methyl-2-pentanone (MIBK)	< 500	500	
1,1,1-Trichloroethane	< 100	100	
1,1,1,2-Tetrachloroethane	< 0.049	0.049	1
1,1,2-Trichloroethane	< 0.038	0.038	1
1,1-Dichloroethane	< 1	1	
1,1-Dichloroethene	< 50	50	
1,2,4-Trichlorobenzene	< 0.1	0.1	
1,2,4-Trimethylbenzene	< 1	1	
1,2-dibromoethane (EDB)	< 0.0041	0.0041	1
1,2-Dichlorobenzene	< 10	10	
1,2-Dichloroethane	< 0.1	0.1	
1,2-Dichloropropane	< 0.1	0.1	
1,3,5-Trimethylbenzene	< 1	1	
1,3-Butadiene	< 0.1	0.1	
1,3-Dichlorobenzene	< 10	10	
1,4-Dichlorobenzene	< 0.1	0.1	
1,4-Dioxane	< 0.5	0.5	
2-Butanone (MEK)	< 1000	1000	
2-Hexanone	< 5	5	
Acetone	< 1000	1000	
Benzene	< 0.5	0.5	
Benzyl Chloride	< 0.08	0.08	1
Bromodichloromethane	< 0.08	0.08	1
Bromoform	< 1	1	
Bromomethane	< 1	1	
Carbon Disulfide	< 100	100	
Carbon Tetrachloride	< 0.1	0.1	
Chlorobenzene	< 5	5	
Chloroethane	< 5	5	
Chloroform	< 0.17	0.17	
Chloromethane	< 10	10	
cis-1,2-Dichloroethene	< 5	5	
cis-1,3-Dichloropropene	< 1	1	
Cyclohexane	< 1600	1600	
Dibromochloromethane	< 0.1	0.1	
Dichlorodifluoromethane	< 10	10	
Ethyl Acetate	< 15	15	
Ethylbenzene	< 2	2	
Hexachloro-1,3-butadiene	< 0.1	0.1	
Isooctane	< 100	100	
m,p-Xylene	< 10	10	
Methylene Chloride	< 12	12	
Methyl-tert-butyl ether	< 10	10	
N-Heptane	< 100	100	
N-Hexane	< 50	50	
Naphthalene	< 0.1	0.1	
o-Xylene	< 10	10	
Propylene	< 100	100	
Styrene	< 100	100	
Tetrachloroethene	< 0.47	0.47	
Tetrahydrofuran	< 100	100	

Analytical Report

<u>Method Blank (MB):</u>	<u>MB Results (ppbv)</u>	<u>Reporting Limit (ppbv)</u>	<u>Flags</u>
Toluene	< 1000	1000	
trans-1,2-Dichloroethene	< 10	10	
trans-1,3-Dichloropropene	< 1	1	
Trichloroethene	< 0.2	0.2	
Trichlorofluoromethane	< 100	100	
Vinyl Acetate	< 50	50	
Vinyl Bromide	< 0.1	0.1	
Vinyl Chloride	< 0.5	0.5	
4-bromofluorobenzene (surrogate)	92%		
Analysis Date/Time:	2-23-21/12:21		
Analyst Initials	tjg		

<u>LCS/LCSD</u>	<u>LCS Results (ppbv)</u>	<u>LCSD Results (ppbv)</u>	<u>LCS/D</u>	<u>LCS</u>	<u>LCSD</u>	<u>RPD</u>	<u>Flag</u>
			<u>Conc(ppbv)</u>	<u>Rec.</u>	<u>Rec.</u>		
Propylene	9.62	9.34	10	96%	93%	3.0%	
Dichlorodifluoromethane	10.8	10.5	10	108%	105%	2.8%	
Chloromethane	10.3	10.9	10	103%	109%	5.7%	
Vinyl Chloride	10.2	10.5	10	102%	105%	2.9%	
1,3-Butadiene	10.4	10.6	10	104%	106%	1.9%	
Bromomethane	9.83	9.48	10	98%	95%	3.6%	
Chloroethane	10.8	10.6	10	108%	106%	1.9%	
Vinyl Bromide	10.4	10.1	10	104%	101%	2.9%	
Trichlorofluoromethane	9.89	9.36	10	99%	94%	5.5%	
Acetone	11.2	11.2	10	112%	112%	0.0%	
1,1-Dichloroethene	11.1	10.9	10	111%	109%	1.8%	
Methylene Chloride	9.91	9.24	10	99%	92%	7.0%	
Carbon Disulfide	10.1	10.1	10	101%	101%	0.0%	
trans-1,2-Dichloroethene	10.4	10.4	10	104%	104%	0.0%	
Methyl-tert-butyl ether	10.5	10.2	10	105%	102%	2.9%	
1,1-Dichloroethane	9.45	9.82	10	95%	98%	3.8%	
Vinyl Acetate	9.22	9.23	10	92%	92%	0.1%	
N-Hexane	10.4	10.6	10	104%	106%	1.9%	
2-Butanone (MEK)	10.5	10.2	10	105%	102%	2.9%	
cis-1,2-Dichloroethene	10.6	10.1	10	106%	101%	4.8%	
Ethyl Acetate	11	10.9	10	110%	109%	0.9%	
Chloroform	10.9	10.9	10	109%	109%	0.0%	
Tetrahydrofuran	10.8	11	10	108%	110%	1.8%	
1,2-Dichloroethane	9.96	10.3	10	100%	103%	3.4%	
1,1,1-Trichloroethane	9.08	9.15	10	91%	92%	0.8%	
Carbon Tetrachloride	9.82	9.61	10	98%	96%	2.2%	
Benzene	10.1	10.5	10	101%	105%	3.9%	
Cyclohexane	8.9	8.98	10	89%	90%	0.9%	
1,2-Dichloropropane	9.23	9.63	10	92%	96%	4.2%	
Trichloroethene	9.03	8.96	10	90%	90%	0.8%	
Bromodichloromethane	10.1	10.2	10	101%	102%	1.0%	
1,4-Dioxane	10.4	9.92	10	104%	99%	4.7%	
Isooctane	9.98	10.5	10	100%	105%	5.1%	
N-Heptane	10.1	10.3	10	101%	103%	2.0%	
cis-1,3-Dichloropropene	9.54	9.71	10	95%	97%	1.8%	
4-Methyl-2-pentanone (MIBK)	11.1	10.5	10	111%	105%	5.6%	
trans-1,3-Dichloropropene	10.1	9.9	10	101%	99%	2.0%	
1,1,2-Trichloroethane	8.83	9.01	10	88%	90%	2.0%	
Toluene	8.79	8.84	10	88%	88%	0.6%	
2-Hexanone	11.1	11.3	10	111%	113%	1.8%	
Dibromochloromethane	9.31	9.24	10	93%	92%	0.8%	
1,2-dibromoethane (EDB)	10.1	10.2	10	101%	102%	1.0%	
Tetrachloroethene	10.2	10.2	10	102%	102%	0.0%	
Chlorobenzene	9.53	9.66	10	95%	97%	1.4%	
Ethylbenzene	9.64	9.72	10	96%	97%	0.8%	
m,p-Xylene	20.7	20.5	20	104%	103%	1.0%	
Bromoform	8.93	9.02	10	89%	90%	1.0%	

Analytical Report

<u>LCS/LCSD</u>	<u>LCS Results (ppbv)</u>	<u>LCSD Results (ppbv)</u>	<u>LCS/D</u> <u>Conc(ppbv)</u>	<u>LCS</u> <u>Rec.</u>	<u>LCSD</u> <u>Rec.</u>	<u>RPD</u>	<u>Flag</u>
Styrene	8.58	8.66	10	86%	87%	0.9%	
1,1,2,2-Tetrachloroethane	10	10.2	10	100%	102%	2.0%	
o-Xylene	9.61	9.03	10	96%	90%	6.2%	
4-Ethyltoluene	10.1	9.88	10	101%	99%	2.2%	
1,3,5-Trimethylbenzene	9.27	9.8	10	93%	98%	5.6%	
1,2,4-Trimethylbenzene	10	9.78	10	100%	98%	2.2%	
1,3-Dichlorobenzene	9.51	9.35	10	95%	94%	1.7%	
Benzyl Chloride	9.95	9.39	10	100%	94%	5.8%	
1,4-Dichlorobenzene	10	9.55	10	100%	96%	4.6%	
1,2-Dichlorobenzene	9.05	9.28	10	91%	93%	2.5%	
1,2,4-Trichlorobenzene	9.95	9.82	10	100%	98%	1.3%	
Hexachloro-1,3-butadiene	9.15	9.1	10	92%	91%	0.5%	
Naphthalene	9.61	9.66	10	96%	97%	0.5%	
4-bromofluorobenzene (surrogate)	103%	92%					
Analysis Date/Time:	2-23-21/11:01	2-23-21/11:46					
Analyst Initials	tjg	tjg					



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**Flag Number**

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**Comments**

Reporting limit is supported by MDL. TJG

