Interim Remedial Measure (IRM) Work Plan

Morton Village Plaza Shopping Center
1022 Old Country Road
Plainview, New York
(130201)

September 12, 2019

Prepared for:

Morton Village Realty Co., Inc.
c/o John Curran
Sive Paget and Riesel P.C.
560 Lexington Avenue
New York, New York 10022

Prepared by:

Roux Environmental Engineering and Geology, D.P.C.
209 Shafter Street
Islandia, New York 11749

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1. Introduction

Roux Environmental Engineering and Geology, D.P.C. (Roux), has prepared this Interim Remedial Measure (IRM) Work Plan on behalf of Morton Village Realty Co., Inc. (Morton Village) to detail the scope of work for the installation of an active sub-slab depressurization system (SSDS) beneath portions of the existing building located at the Morton Village Plaza shopping center (Shopping Center), 998-1064 Old Country Road, Plainview, New York (Site). The Site location map is provided as Figure 1.

The Site is currently listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 130201 with a Classification "2" pursuant to Environmental Conservation Law (ECL) 27-1305. The SSDS is being installed to address soil vapor intrusion of chlorinated volatile organic compounds (CVOCs) documented to be present in soil vapor beneath portions of the Site and indoor air in the basements of several tenant spaces. The soil vapor and indoor air impacts do not extend across the entire Shopping Center. The extent of impacts exceeding applicable criteria (discussed in Section 2.0), is shown on Plate 1. The observed impacts are likely due to undocumented releases of dry-cleaning chemicals from the Morton Village Cleaners, a/k/a Classic French Cleaners, (former Cleaners) tenant space (1022 Old Country Road – currently occupied by a Subway restaurant).

This IRM Work Plan has been prepared in accordance with New York State Department of Environmental Conservation (NYSDEC) procedures set forth in the document titled DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and complies with all applicable Federal, State and local laws, regulations and requirements.

1.1 Objectives and Scope of the IRM Work Plan

The proposed IRM will retrofit portions of the existing Shopping Center building, shown on Figure 2, with an SSDS capable of creating a negative pressure under the building and collecting potentially contaminated vapor for subsequent discharge to the atmosphere above the roof of the Site building. This IRM is a component of the overall investigation and remediation of the Site. It will address soil vapor intrusion issues. Additional remedial measures may be required based upon the results of a Remedial Investigation/Feasibility Study (RI/FS) currently being conducted for the Site, which will be submitted separately.

The remainder of this IRM Work Plan is organized as follows:

- Section 2: Site Background
- Section 3: Scope of Work
- Section 4: Soils/Materials Management Plan
- Section 5: Reporting
- Section 6: IRM Work Plan Implementation Schedule

1.2 Certification

I, Noelle Clarke, certify that I am currently a New York State registered professional engineer as defined in 6 NYCRR Part 375 and that this Interim Remedial Measure Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER-10.

Noelle Clarke	9/12/2019	
NYS Professional Engineer # 072491	Date	Signature

2. Site Background

This section provides relevant Site background information.

2.1 Site Description and History

Property Name:	Morton Village Plaza
Property Description:	The property is occupied by Morton Village Plaza Shopping Center, which consists of four buildings situated on four adjacent lots (Lots 10, 86, 88 and 89). The on-Site buildings are currently occupied by various professional businesses, retail stores, and restaurants. The property is bordered by Knowles Street to the north, Old Country Road to the south, Lester Place to the east and Rex Place to the west.
Property Address:	998-1064 Old Country Road
Property Town, County, State:	Plainview, Nassau County, New York
Property Tax Identification:	Block 555 Lots 10, 86, 88 and 89
Property Topographic Quadrangle:	USGS Huntington Quadrangle, New York (1979)
Nearest Intersection:	Rex Place and Old Country Road
Area Description:	The area surrounding the Site is used mainly for residential purposes. Surrounding properties to the north, east and west are all residential properties. To the south of the Site, there are both residential properties as well as the Plainview-Old Bethpage Public Library.
Current Site Zoning:	Commercial-Use, 452.14 - Area/Neighborhood Shopping Center

Property Acreage:	9.936 acres (total)
Property Shape:	Rectangular
Property Use:	The property is currently occupied by various professional businesses, retail stores, and restaurants.
Number of Buildings:	Four
Number of Stories:	One two-story and three one-story buildings
Date of Construction:	c. 1956
Basement/ Slab-on-Grade:	Basement and Slab-on-grade
Number of Units:	27
Ceiling Finishes:	Acoustic ceiling tiles and exposed structural elements
Floor Finishes:	Carpet, tile and bare concrete
Wall Finishes:	Painted drywall and exposed structural elements

HVAC:	Natural Gas
Renovation Date:	Unknown
Renovation Description:	An extension was added to the northern side of the building A, bringing it to present day configuration
Vehicular Access:	Via Old Country Road, Rex Place, Knowles Street or Lester Place
Other Improvements:	Paved Parking Areas
Property Coverage:	Footprint of the buildings, sidewalks and associated parking areas

2.1.1 Site Operations

The Site is currently occupied by various professional businesses, retail stores, and restaurants. The former Cleaners tenant space is currently occupied by a Subway restaurant.

2.1.2 Topography/Hydrogeology

The property location is shown on the 1979 USGS Topographic Map of Huntington, New York. The surface elevation of the property is approximately 145 feet above mean sea level. Topography of the property slopes slightly to the south.

Groundwater was encountered at approximately 80 feet below ground surface (ft-bgs) during previous environmental investigations conducted by Roux. Based on the previous environmental investigations, groundwater beneath the Site flows to the south.

2.2 Summary of Environmental Conditions

Previous investigations (soil, groundwater, and soil vapor sampling) performed at the Site from 2006 to 2011 identified petroleum-related compounds and CVOCs in the soil, soil vapor and groundwater, predominately tetrachloroethene (PCE) and trichloroethene (TCE), at the Site. The petroleum-related compounds were attributed to a former underground storage tank (UST) that was located in and removed from the rear of the former Cleaners during Site characterization work in 2008 conducted by Leggette, Brashears & Graham, Inc (LBG). The NYSDEC was notified and spill number 0800596 was assigned to the Site. Based upon a review of closure documentation, the spill number was subsequently closed by the NYSDEC on January 28, 2009. During excavation activities, a total of 250.31 tons of soil was removed from the Site for off-Site disposal. According to previous investigators, operations at the former Cleaners resulted in contamination of the soil around a sump located at the northern edge of the Site building within the basement of the former Cleaners, as well as the groundwater and soil vapor in the vicinity of the former Cleaners. Based on Remedial Investigations (RI) completed by Roux in 2015 through 2018, groundwater, soil vapor and indoor air (in the basements of some retail spaces) at the Site have been impacted by CVOCs, predominately PCE and TCE, above applicable regulatory guidance values. Prior to the 1970's, there were cesspools and leaching fields installed in the rear parking lot areas of Site. The Site's sanitary system was not connected to the Municipal sanitary sewer line until the 1970's. Soil samples collected in the vicinity of what is believed to be the former cesspools and around the former sump area below the basement of the Former Cleaners has not identified a source for the PCE and TCE detected in soil vapor and indoor air.

2.2.1 Inactive Hazardous Waste Disposal Site Number 130201

The Site is currently listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 130201 with a Classification "2" pursuant to Environmental Conservation Law (ECL) 27-1305. A Class 2 site is a site where hazardous waste presents a threat to public health or the environment, and a remediation action is required.

The NYSDEC and Morton Village entered into an Order on Consent in November 2014 to develop and implement an investigation and remedial program at the Site to define the nature and extent of any contamination resulting from previous activities of the former Cleaners.

2.2.2 Previous Environmental Sampling

The following is a brief summary of environmental sampling conducted at the Site, focusing on soil vapor and indoor air results. A complete description of previous environmental sampling conducted at the Site will be included in the RI/FS. A description of previous environmental sampling conducted at the Site by others between 2006 and 2011 is included in the NYSDEC-approved Remedial Investigation Work Plan (RIWP) prepared by Roux, dated September 2015 based on a review of the following reports:

- Subsurface Investigation Letter Report - Dry Cleaning Operation - Morton Village Plaza prepared by Galdun Frankel Environmental dated October 2006 on behalf of Morton Village Realty Co., Inc.;
- Environmental Site Assessment - Phase II Report prepared by LBG dated September 2007 on behalf of Morton Village Realty Co., Inc.;
- UST Closure and Remedial Summary Report - Former Classic French Cleaners - Morton Village Shopping Center prepared by LBG dated September 2008 on behalf of Morton Village Realty Co., Inc.;
- Phase I Environmental Assessment - Morton Village Plaza prepared by LBG dated February 2009 on behalf of Morton Village Realty Co., Inc.; and
- Site Characterization Report - Former Morton Village Cleaners prepared by HRP Associates, Inc. dated August 2011 on behalf of the NYSDEC.

During Remedial Investigation (RI) activities conducted by Roux between 2015 and 2017, a total of 17 sub-slab soil vapor, 16 indoor air and eight soil vapor samples were collected at the Site. All sample locations are shown on Figure 2. Below is a summary of PCE and TCE concentrations only (Tables 1 and 2) detected in sub-slab soil vapor and corresponding indoor air, and soil vapor samples collected at the Site. Additionally, Table 1 below includes the New York State Department of Health (NYSDOH) Matrices Stage, included in the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006 and revised in May 2017 (NYSDOH Guidance; Appendix A), for each sample:

Table 1. Sub-Slab Soil Vapor/Indoor Air PCE and TCE Concentrations

Card Store*	11/20/2017	145 (OSV-11) 3.72 (OSV-12)	0.658 (IA-CS-1) 0.80 (IA-CS-2)	4.12 (OSV-11) ND (OSV-12)	0.231 (IA-CS-1) 0.199 (IA-CS-2)	No Further Action
Liquor Store**	11/20/2017	26 (OSV-10)	1.66 (IA-LQ-1)	9.4 (OSV-10)	0.161 (IA-LQ-1)	No Further Action
Dance Studio**	11/20/2017	1.51 (OSV-9)	0.834 (IA-DS-1)	ND (OSV-9)	0.302 (IA-DS-1)	No Further Action
CVS*	3/21/2017	12,900 (OSV-3) 12,700 (OSV-4)	160 (IA-CVS-1) 66.8 (IA-CVS-2)	1,210 (OSV-3) 1,300 (OSV-4)	6.56 (IA-CVS-1) 3.12 (IA-CVS-2)	Mitigate
	11/20/2017	2,470 (OSV-8)	113 (IA-CVS-4)	178 (OSV-8)	4.22 (IA-CVS-4)	
CVS**	3/21/2017	60.80 (OSV-5)	3.47 (IA-CVS-3)	6.18 (OSV-5)	0.167 (IA-CVS-3)	No Further Action
Former Cleaners*	3/22/2016	18,800 (SV-1) 14,200 (SV-2) 1,500 (SV-3 DUP) 1,170 (SV-4)	24.8 (IA-1_Basement)	1,280 (SV-1) 763 (SV-2) 66.6 (SV-3 DUP) 67.7 (SV-4)	0.79 (IA-1_Basement)	Mitigate
Buffalo Grille*	3/21/2017	9,760 (OSV-2)	26.4 (IA-BG)	519 (OSV-2)	1.3 (IA-BG)	Mitigate
Nail and Spa 2000*	11/20/2017	104 (OSV-6) 115 (OSV-7)	13.4 (IA-NS-1) 18.9 (IA-NS-2)	4.77 (OSV-6) 9.3 (OSV-7)	0.564 (IA-NS-1) 0.785 (IA-NS-2)	Mitigate
VisionWorks*	3/21/2017	21.6 (OSV-1)	7.53 (IA-VW)	ND (OSV-1)	0.355 (IA-VW)	No Further Action

* - Basement

** - Slab-on-grade

µg/m^3 - Micrograms per cubic meter

NYSDOH – New York State Department of Health

ND - Not Detected

DUP - Duplicate sample

Table 2. Soil Vapor PCE and TCE Concentrations

SV-5	11/2/2016	4.23	12.5
SV-6	11/2/2016	314	114
SV-7	11/4/2016	30,700	2,600

SV-8	11/2/2016	649	5.7
SV-9	11/2/2016	342	11.2
SV-10	3/21/2017	ND	ND
SV-11	3/21/2017	11.7	ND

µg/m3 - Micrograms per cubic meter

Based on a comparison PCE and TCE concentrations detected in sub-slab soil vapor and indoor air samples to the NYSDOH Soil Vapor/Indoor Air Matrices, PCE and TCE concentrations detected in sub-slab and indoor air samples collected within the spaces currently occupied by CVS, former Cleaners, Buffalo Grille, and Nail and Spa 2000 require mitigation. Therefore, all tenant spaces between Vision Works on the western side of the Shopping Center and CVS in the central portion of the shopping center will be addressed by the proposed SSDS.

3. Scope of Work

The scope of work for the IRM consists of the following tasks:

- Site mobilization and Site preparation;
- Installation of the SSDS components;
- Waste disposal (assumed to be minimal); and
- Documentation.

Implementation of the IRM will be in accordance with the Soils/Materials Management Plan (SoMP) included in Section 4 of this IRM Work Plan.

3.1 Mobilization and Site Preparation

A project kick-off meeting will be conducted with NYSDEC, Morton Village, Roux and the selected Contractor prior to the commencement of any intrusive activities, if requested by NYSDEC. The Contractor will supply any labor (HAZWOPER Certified in accordance with OSHA 1910.120) and materials required for the implementation of the IRM scope of work. In addition, necessary permits, insurance, bonds, and licenses required to complete the work will be obtained and fees necessary to obtain these permits will be paid. Mobilization and Site preparation activities include:

1. Mobilization of equipment to the work area;
2. Installation of work area delineation zones;
3. Installation of sub-slab suction points and laterals;
4. Installation of header piping and roof leaders;
5. Installation of blowers on roof; and
6. Demobilization of equipment.

3.2 SSDS Installation

Sub-slab soil vapor samples collected during the RI detected elevated concentrations of PCE and TCE on-Site; therefore, an active SSDS is proposed to be installed beneath the portions of the Site building shown on Plate 1 to address potential exposure pathways. The proposed active SSDS will include vertical polyvinyl chloride (PVC) suction points and horizontal perforated PVC suction laterals to be retrofitted into the existing building foundation while maintaining the structural integrity of the foundation. The testing of the SSDS will be completed following installation.

The active SSDS for the Site, when complete, will consist of a network of vertical suction points and horizontal suction laterals creating a vacuum influence beneath the portion of the building basement slab shown on Drawing 1 (Appendix B), and two vacuum blowers (one for the east side of the building and one for the west side). The SSDS will be designated SSDS-East and SSDS-West. The SSDS floor plan design and piping details are provided in Appendix B. A description of the proposed active SSDS is provided below.

- All existing interior utility and slab penetrations will be sealed with silicone caulking, to the extent feasible.
- Five vertical suction points and two horizontal suction laterals will be installed to create the required vacuum influence below the basement slab of portions of the Site building. All suction points and laterals will consist of 4-inch PVC piping.

- Suction laterals will be pitched away from the extraction points, to the extent practical.
- Each suction point and lateral will have a shut off valve and vacuum gauge.
- The piping from the suction points and laterals will be brought to the roof along the interior of the building and be manifolded to two separate headers. Each header will be connected to a vacuum blower on the roof of the building. A 5.0 horsepower (Hp) explosion proof vacuum blower (East Blower) will be provided for the suction points located on the east side of the building and a second 5.0 Hp explosion proof vacuum blower (West Blower) will be provided for the suction points located on the west side of the building. The drawing in Appendix B shows suction points/laterals and piping associated with Blower B (West) in red and suction points/laterals associated with Blower A (East) in blue. Blowers and piping headers will be located on the roof, as not to interfere with the existing Site use.
- Any interior piping will be routed around existing heating, ventilation, and air conditioning (HVAC) ducts and utility pipes and supported, as needed. Exterior piping will be supported appropriately.
- Extracted vapor evaluation:
    - A Division of Air Resources (DAR 1) screening analysis was performed for selected compounds identified in the sub-slab soil vapor samples to determine if the estimated emissions from the operation of the active SSDS would exceed the permissible limits. Appendix C presents the DAR 1 screening level worksheet for the evaluation of PCE, TCE and 1,2-Dichloroethane (DCE), which were identified as the constituents of concern (COCs) for the evaluation based on the relatively high concentrations observed in the sub-slab soil vapor samples and the low guidance concentrations (i.e., allowable discharge limits). The DAR 1 evaluation was employed using the contaminant emission rate (pounds per hour) based on the vapor samples collected in March 2016 and March 2017. The emission impacts were compared to the annual guidance concentration (AGC) values and the short-term guidance concentration (SGC) values from the July 14, 2016 DAR 1 AGC/SGC Tables. Based on the DAR 1 analysis, the estimated contaminant emission rates are below the AGC and SGC values for PCE, TCE and DCE and therefore vapor treatment is not required prior to discharge. This will be confirmed during SSDS start-up testing, as described in Section 3.3.
- Each vacuum blower will be installed on the roof on timber supports. The discharge stacks will extend a minimum of 10 feet above the roof line and will be supported as necessary. The discharge points will be located a minimum of 10 feet from any HVAC air inlets and the building edge.
- Eleven sub-slab soil vapor monitoring points will be used to monitor the performance of the SSDS. Four new monitoring points (MP-1 through MP-4) will be installed approximately where shown on Drawing 1 in Appendix B and seven existing sub-slab sampling points (SV-2, OSV-1, OSV-2, OSV-4, OSV-6, OSV-7 and OSV-8) will be used.
- The blowers were designed with excess capacity so additional suction points can be added if adequate depressurization of the sub-slab is not achieved. Capped PVC tees were included in the piping design to facilitate future connection of additional suction points, if necessary.

3.3 SSDS Startup and Testing

Performance monitoring will be performed on SSDS-East and SSDS-West as part of the SSDS start-up to verify that the systems are operating properly and will consist of the following for each system:

- Confirm operation of the local alarm warning light and remote alarm;
- Confirm acceptable air flow rate (90 to 180 cubic feet per minute [cfm]) from the SSDS blower by a visual inspection of gauges affixed to each blower;
- Confirm acceptable negative pressure readings (-20 to -50 inches of water column) from the SSDS and suction points by a visual inspection of gauges to each blower and suction point or lateral;

- Confirm acceptable negative differential pressure (a minimum of -0.004 inches of water column) beneath the building from monitoring points by using an appropriate micromanometer;
- Collect photoionization detector (PID) readings; and
- Collect confirmation effluent air samples.

Negative differential pressure measurements will be collected from the soil vapor monitoring points shown on SSDS Drawing 1 included in Appendix B. The negative pressure measurements will be collected using a micromanometer capable of monitoring differential pressure at a minimum of 0.001 inches of water column. If adequate depressurization (e.g., negative differential pressure of at least -0.004 inches of water column) is not occurring, the cause for the lack of depressurization will be investigated and repaired, and measurements will be collected again.

Following the initial start-up, performance monitoring of the SSDS will also include monitoring the system effluent VOC concentrations using a PID. In addition, during start-up of the SSDS, an effluent air sample will be collected from the discharge of each blower using a Summa canister and analysed using USEPA Method TO-15 to verify that vapor treatment is not needed. The effluent air sample results will be compared to the DAR-1 Air Guide guidance values. If the sample results indicate that treatment is required, appropriate treatment options will be evaluated and installed.

Additionally, 30-days following initial start-up, indoor air samples will be collected from the basements of the former Cleaners and CVS using Summa canisters and analysed using USEPA Method TO-15 to verify that the SSDS is effectively reducing COC vapor intrusion into the building.

The system testing described above (excluding effluent air sampling) will be conducted if, in the course of the SSDS lifetime, significant changes are made to the SSDS, or if the system is shut down for an extended period for any reason, and the system must be restarted.

3.4 SSDS Operation, Maintenance and Monitoring (O, M &M)

O, M & M procedures for the SSDS will be included in the Site Management Plan (SMP) for the Site, but are outlined herein for the period prior to the SMP being in place.

3.4.1 System Operation: Routine Operation Procedures

Routine operation procedures will consist of monitoring the vacuum at the blower inlet and recording dilution valve setting (i.e., 50% open).

3.4.2 System Operation: Routine Equipment Maintenance

The routine maintenance activities include visual inspections, operating data collection and general maintenance. Visual inspection is the routine part of the SSDS operator's activities. The system operator will note any conditions that present a potential hazard or could cause future system shutdown. In the field, special attention will be paid to the condition of the blower and appurtenances, and the above slab discharge piping and supports. Special attention will also be given to any unusual or excessive noise or vibrations from the piping and blower. The piping and valves will be inspected for leaks.

All equipment maintenance and inspections will be performed in accordance with manufacturer's instructions (See Appendix D for specifications). Specific routine maintenance tasks are outlined below:

- Inspect control panel and warning lights/alarms and remote alarm;
- Inspect blower piping to confirm operation of appropriate valves (i.e., dilution valve);
- Inspect vacuum/pressure gauges for proper operation;
- Check and clean air filter on moisture knockout tank; and
- Check for the presence of and remove water in knockout tank.

In the event that a condition warranting system component maintenance is identified, the appropriate reporting and maintenance should be conducted immediately. Manufacturer's recommendations for system component maintenance are included in the competent manuals in Appendix D. Any maintenance completed for the SSDS should be documented in the Maintenance Log included in Appendix E.

3.4.3 System Operation: Non-Routine Equipment Maintenance

Non-routine equipment maintenance consists of maintenance activities that will be performed with less frequency than the routine maintenance (i.e., semi-annually) on several system components. Specific non-routine maintenance tasks are outlined below:

- Inspect and test local and remote alarms;
- Check float switch in each knockout tank for proper operation;
- Replacement of vacuum/pressure gauges; and
- Change bearings on blowers after 15,000 hours of operation.

Most damage or problems associated with SSDS components will trigger one of the alarms. Damage to any SSDS components will be noted during the routine and detailed system inspections and remedied upon identification.

Accumulated condensate will be containerized in a 55-gallon drum for future off-Site disposal, if necessary based upon sample results from the first batch of drummed condensate and pending NYSDEC Contained-In Determination approval. Manufacturer's recommendations for SSDS component maintenance are included in the component manuals in Appendix D. Any maintenance completed for the SSDS should be documented in the SSDS Log included in Appendix E.

In the event that low SSDS air flow rates or vacuum are observed anywhere in the SSDS, further SSDS balancing may be necessary following moisture removal, to ensure that the combined air flow rates and vacuum in a given area of the Site achieve the minimum design requirements.

3.5 Waste Disposal

All wastes generated during the installation of the SSDS will be handled, transported and disposed of in a manner consistent with Federal, State and local laws and regulations. A limited amount of soil is anticipated to be generated during SSDS installation since the majority of the SSDS piping will be installed above the basement concrete slab/floor. However, based on results of soil samples collected during RI activities, soil containing elevated concentration of CVOCs is not anticipated to be encountered during SSDS installation and is expected to be declassified as non-hazardous waste under the NYSDEC Contained-In Determination Policy and disposed of as non-hazardous waste, pending NYSDEC approval.

3.6 Documentation

Detailed information regarding the IRM (e.g., as-built drawings, waste disposal documentation, backfill documentation, photographs, etc.) will be included in the Construction Completion Report (CCR) described in Section 5.

4. Soil/Materials Management Plan

Although the amount of earthwork is expected to be very limited, the following sections provide the SoMP to be implemented during the IRM, as necessary.

4.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed during SSDS installation activities under the supervision of Roux personnel.

4.2 Containerization of Waste

All soil generated during SSDS installation will be containerized in labeled, New York State Department of Transportation (NYSDOT) rated 55-gallon drums or roll-off containers, which will be fitted with tight fitting covers. If waste is determined to be hazardous, it will be disposed of within 90 days of generation at an approved hazardous waste disposal facility.

4.3 Characterization of Excavated Materials

Soil/fill or other excavated media that will be transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations.

4.4 Materials Excavation and Load Out

Roux will oversee all invasive work and the excavation and load-out of all excavated material. The quantity of waste is expected to be very limited and it will be containerized in drums for disposal. Loadout and trucking of bulk waste is not expected.

Morton Village and its contractors are solely responsible for safe execution of all invasive and other work performed under this SoMP. Support of excavation, though unlikely due to the nature of the work, will be provided, if necessary, based upon Site conditions and local regulations.

4.5 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

The proposed inbound truck route to the Site is:

- Take I-278 to I-495 (Long Island Expressway) east in New York. Take exit 44 S, NY-135 S toward Seaford. Take exit 10 from NY-135 S and make a left onto Old Country Road (east bound). Entrance to the Site will be on the left.

The proposed outbound truck route from the Site is:

- Take Old Country Road (west bound) to NY-135 N toward Syosset. Take exit 13W (I-495 W) to exit 17 (I-278).

These are the most appropriate routes and take into account: (a) limiting transport through residential areas and past sensitive sites; (b) prohibiting off-Site queuing of trucks entering the facility; (c) limiting total distance

to major highways; (d) promoting safety in access to highways; and (e) overall safety in transport. To the extent possible, trucks will travel to/from the Site using these approved truck routes.

Trucks will avoid stopping and idling in the neighborhood outside the project Site, to the extent practicable. Queuing of trucks will be performed on-Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during the IRM implementation.

4.6 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from the Site will be disposed of in accordance with regulatory requirements based on the levels of contamination found to be present in waste characterization samples collected.

The following documentation will be obtained and reported for each disposal location used in this project to demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter or facility-specific waste profile/application from Roux or Morton Village to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter/profile/application will state that material to be disposed is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of Roux or Morton Village. The letter will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the CCR; and (3) a Contained-In Determination approval from the NYSDEC declassifying the waste as non-hazardous, unless waste characterization sampling indicates the waste is characteristically hazardous.

The CCR will include an accounting of the destination of all material removed from the Site during this IRM. This information will also be presented in a tabular form in the CCR.

A Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the CCR.

Hazardous and non-hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable local, State, and Federal regulations.

Appropriately licensed haulers will be used for material removed from this Site and will be in compliance with all applicable local, State and Federal regulations.

Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

4.7 Materials Reuse On-Site

Soil reuse is not anticipated as part of the IRM.

4.8 Fluids Management

Liquids (if any) to be removed from the Site will be handled, transported and disposed in accordance with applicable laws and regulations. Liquid waste manifests will be reported to NYSDEC in the CCR.

Characterization of fluids for off-Site disposal will be performed in a manner suitable to the receiving facility and in conformance with applicable permits.

4.9 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by Roux and will be in compliance with provisions in this IRM prior to receipt at the Site.

Material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites will not be imported to the Site. Solid waste will not be imported onto the Site.

All imported soils will meet NYSDEC approved backfill or cover soil quality objectives for this Site. These NYSDEC approved backfill or cover soil quality objectives are the lower of the protection of groundwater or the protection of public health soil cleanup objectives for Commercial or higher use as set forth in Table 375-6.8(b) of 6 NYCRR Part 375. Non-compliant soils will not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved IRM Work Plan or its approval by NYSDEC should be construed as an approval for this purpose.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in this IRM Work Plan should be construed as an approval for this purpose.

In accordance with DER-10, the following material may be imported, without chemical testing, to be used as backfill beneath pavement, buildings or as part of the final Site cover, provided that it contains less than 10% by weight material which would pass through a size 80 sieve and consists of:

- Gravel, rock or stone, consisting of virgin material from a NYSDEC permitted mine or quarry; or
- Recycled concrete or brick from a NYSDEC registered construction and demolition debris processing facility if the material conforms to the requirements of Section 304 of the New York State Department of Transportation *Standard Specifications Construction and Materials Volume 1* (2002).

Trucks entering the Site with imported soils will be securely covered with tight fitting covers.

4.10 Stormwater Pollution Prevention

Although disturbance of soil outside the building footprint is not expected to be part of the scope, if changes to the scope require soil disturbance outside the building footprint, applicable laws and regulations pertaining to stormwater pollution prevention will be addressed. If necessary, erosion and sediment control measures (silt fences and/or barriers, and/or hay bale checks) will be installed, as appropriate, around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs to erosion and sediment controls shall be made immediately. Accumulated sediments will be

removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

4.11 Contingency Plan

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during implementation of the IRM. Due to the nature of the proposed work, discovery of previously unknown USTs is extremely unlikely.

If previously unidentified contaminant sources are found during implementation of the IRM, sampling will be performed on potentially contaminated source material and surrounding soils and reported to NYSDEC. Chemical analytical work will be for full suite of parameters (target compound list [TCL] VOCs, TCL semivolatile organic compounds [SVOCs], target analyte list [TAL] metals, TCL polychlorinated biphenyls [PCBs], pesticides and herbicides).

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will also be included in weekly and periodic electronic reports.

4.12 Community Air Monitoring Plan (CAMP)

CAMP will be implemented, in accordance with the Generic CAMP procedures included in Appendix G of the Health and Safety Plan (HASP; Appendix F), during all invasive activities to minimize the potential for tenant exposure from potentially contaminated soil and soil vapor. Roux will provide ambient air quality monitoring for VOCs and particulates during all invasive Site activities. CAMP monitoring data will be included in daily reports (see Section 5.1). Action level exceedances will be reported to Morton Village project manager and appropriate communication and action taken. If an action limit is report is generated due to VOC exceedances, the NYSDEC and NYSDOH will be notified within 24 hours of the exceedance. Health and safety monitoring for workers will be performed in accordance with the HASP.

4.13 Odor, Dust and Nuisance Control Plan

The CCR will include the following certification by the certifying professional engineer: "I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the IRM Work Plan."

4.13.1 Odor Control Plan

In addition to the health and safety monitoring described in the HASP (Appendix F), Roux will closely monitor the presence of odors emanating from the work area within the building. This odor control plan is capable of controlling emissions of nuisance odors on-Site. Due to the nature of the project, with all intrusive work occurring in the basement of the existing building, nuisance odor will not be generated at the sidewalk level surrounding the Site. The HASP will contain specific measures to address potential worker exposure to airborne contaminants during the IRM implementation. Specific odor control methods to be used on a routine basis will include limiting open excavation areas, keeping excavations covered, and covering excavated soil (i.e., in covered drums). If nuisance odors are identified, work will be halted, and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of

all odor controls, including the halt of work, will be the responsibility of Roux, who is responsible for certifying the CCR and its subcontractors.

Odor controls will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of odor suppressants to cover exposed odorous soils.

4.13.2 Dust Control Plan

Due to the nature of the project, with excavation occurring in the basement of the existing building, generation of nuisance dust at the sidewalk level surrounding the Site will not occur. The HASP will contain specific measures to address potential worker exposure to airborne particulates during the IRM implementation. A dust suppression plan that addresses dust management during invasive on-Site work, will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of water for wetting excavation areas. Water will be available on-Site at suitable supply and pressure for use in dust control.

4.13.3 Other Nuisances

Noise control will be exercised during the remedial program.

5. Reporting

5.1 Daily Reporting During Site Activities

Daily reports to NYSDEC and NYSDOH will be submitted during the days when IRM activities take place. Daily reports will include an update of progress made during the reporting period; locations of work and quantities of material imported and exported from the Site; a summary of any and all complaints with relevant details (names, phone numbers); a summary of CAMP readings, and an explanation of notable Site conditions, etc. If any issues arise (i.e., issues with the CAMP), NYSDOH and NYSDEC will be notified within 24 hours.

5.2 Construction Completion Report (CCR)

Detailed information regarding the IRM (e.g., general description of the construction activities, as-built of the SSDS, waste disposal documentation, backfill documentation, photographs, etc.) will be included in the CCR. The CCR will be submitted within 60 days after the data usability summary report (DUSR) is complete for any vapor samples collected during the SSDS start-up.

6. IRM Implementation Schedule

This IRM Work Plan is anticipated to begin in the third quarter of 2018 and will require approximately four to six weeks to complete. It is anticipated that the actual on-Site duration of major remedial construction tasks will be completed as follows (time frames are not necessarily consecutive):

- Site Mobilization and Preparation ..... one day
- SSDS Installation ..... four to five weeks
- SSDS Startup and Testing ..... two days
- Transportation and Off-Site Disposal ..... one day
- Site Restoration and Demobilization ..... one day
- Submittal of CCR After Startup and Testing Completed ..... 60 days

TABLE

1. Summary of Volatile Organic Compounds in Air and Soil Vapor

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		AA-1	AA-1	IA-1_BASEMENT	IA-1_BASEMENT	IA-2_MAIN FLOOR	IA-BG
Sample Date:		03/21/2017	11/20/2017	03/22/2016	03/22/2016	03/22/2016	03/21/2017
Normal Sample or Field Duplicate:		N	N	N	FD	N	N
Parameter	Unit						
1,1,1-Trichloroethane (TCA)	UG/M3	0.109 U	0.109 U	0.109 U	0.109 U	0.109 U	0.109 U
1,1,2,2-Tetrachloroethane	UG/M3	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/M3	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U
1,1,2-Trichloroethane	UG/M3	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U
1,1-Dichloroethane	UG/M3	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U
1,1-Dichloroethene	UG/M3	0.079 U	0.079 U	0.079 U	0.079 U	0.079 U	0.079 U
1,2,4-Trichlorobenzene	UG/M3	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U
1,2,4-Trimethylbenzene	UG/M3	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U
1,2-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	UG/M3	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U
1,2-Dichloropropane	UG/M3	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U
1,2-Dichlorotetrafluoroethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U
1,3-Butadiene	UG/M3	0.442 U	0.442 U	0.442 U	0.442 U	0.442 U	0.442 U
1,3-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dioxane (P-Dioxane)	UG/M3	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U
2,2,4-Trimethylpentane	UG/M3	0.934 U	0.934 U	0.934 U	0.934 U	0.934 U	0.934 U
2-Hexanone	UG/M3	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U
4-Ethyltoluene	UG/M3	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U
Acetone	UG/M3	**9.93**	**4.99**	**28**	**29.7**	**21.3**	**38.7**
Allyl Chloride (3-Chloropropene)	UG/M3	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U
Benzene	UG/M3	**0.799**	0.639 U	0.639 U	0.639 U	0.639 U	**0.712**
Benzyl Chloride	UG/M3	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
Bromodichloromethane	UG/M3	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U
Bromoform	UG/M3	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U
Bromomethane	UG/M3	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U
Carbon Disulfide	UG/M3	0.623 U	0.623 U	0.623 U	0.623 U	0.623 U	0.623 U
Carbon Tetrachloride	UG/M3	**0.409**	**0.484**	**0.459**	**0.459**	**0.434**	**0.428**
Chlorobenzene	UG/M3	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U
Chloroethane	UG/M3	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U
Chloroform	UG/M3	0.977 U	0.977 U	0.977 U	0.977 U	0.977 U	0.977 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		AA-1	AA-1	IA-1_BASEMENT	IA-1_BASEMENT	IA-2_MAIN FLOOR	IA-BG
Sample Date:		03/21/2017	11/20/2017	03/22/2016	03/22/2016	03/22/2016	03/21/2017
Normal Sample or Field Duplicate:		N	N	N	FD	N	N
Parameter	Unit						
Chloromethane	UG/M3	**0.987**	**1.1**	**1.22**	**1.18**	**1.29**	**1.03**
Cis-1,2-Dichloroethylene	UG/M3	0.079 U	0.079 U	**0.329**	**0.317**	0.079 U	**0.706**
Cis-1,3-Dichloropropene	UG/M3	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U
Cyclohexane	UG/M3	0.688 U	0.688 U	0.688 U	0.688 U	0.688 U	0.688 U
Dibromochloromethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	UG/M3	**1.58**	**2.47**	**2.56**	**1.97**	**2.4**	**1.74**
Ethanol	UG/M3	**18.6**	9.42 U	**5600**	**5350**	**17800**	**1260**
Ethyl Acetate	UG/M3	1.8 U	1.8 U	**6.56**	**6.63**	**14.5**	**3.93**
Ethylbenzene	UG/M3	0.869 U	0.869 U	0.869 U	0.869 U	0.869 U	0.869 U
Hexachlorobutadiene	UG/M3	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U
Isopropanol	UG/M3	**1.39**	1.23 U	**7.99**	**7.57**	**5.53**	**10.5**
m,p-Xylene	UG/M3	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	**1.52**	1.47 U	1.47 U	1.47 U	**2.42**	1.47 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UG/M3	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U
Methylene Chloride	UG/M3	**5.32**	1.74 U	**1.9**	**14**	**3.82**	1.74 U
N-Heptane	UG/M3	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U
N-Hexane	UG/M3	0.705 U	0.705 U	0.705 U	0.705 U	0.705 U	0.705 U
O-Xylene (1,2-Dimethylbenzene)	UG/M3	0.869 U	0.869 U	0.869 U	0.869 U	0.869 U	0.869 U
Styrene	UG/M3	0.852 U	0.852 U	0.852 U	0.852 U	0.852 U	0.852 U
Tert-Butyl Alcohol	UG/M3	1.52 U	1.52 U	1.52 U	1.52 U	1.52 U	**4.55**
Tert-Butyl Methyl Ether	UG/M3	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U
Tetrachloroethylene (PCE)	UG/M3	**0.258**	0.136 U	**24.8**	**23.3**	**0.719**	**26.4**
Tetrahydrofuran	UG/M3	1.47 U	1.47 U	1.47 U	1.47 U	1.47 U	1.47 U
Toluene	UG/M3	**4.07**	0.754 U	**2.14**	**3.1**	**1.61**	**1.86**
Trans-1,2-Dichloroethene	UG/M3	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U
Trans-1,3-Dichloropropene	UG/M3	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U
Trichloroethylene (TCE)	UG/M3	0.107 U	**0.177**	**0.79**	**0.763**	0.107 U	**1.3**
Trichlorofluoromethane	UG/M3	1.12 U	1.12 U	**1.29**	**1.39**	**1.25**	**1.55**
Vinyl Bromide	UG/M3	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U
Vinyl Chloride	UG/M3	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		IA-CS-1	IA-CS-2	IA-CVS-1	IA-CVS-2	IA-CVS-3	IA-CVS-4	IA-DS-1	IA-LQ-1
Sample Date:		11/20/2017	11/20/2017	03/21/2017	03/21/2017	03/21/2017	11/20/2017	11/20/2017	11/20/2017
Normal Sample or Field Duplicate:		N	N	N	N	N	N	N	N
Parameter	Unit								
1,1,1-Trichloroethane (TCA)	UG/M3	0.109 U	0.109 U	0.109 U	0.109 U	0.109 U	0.109 U	0.149 UJV	0.109 U
1,1,2,2-Tetrachloroethane	UG/M3	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U	1.88 UJV	1.37 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/M3	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U	2.1 UJV	1.53 U
1,1,2-Trichloroethane	UG/M3	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.49 UJV	1.09 U
1,1-Dichloroethane	UG/M3	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	1.11 UJV	0.809 U
1,1-Dichloroethene	UG/M3	0.079 U	0.079 U	0.079 U	0.079 U	0.079 U	0.079 U	0.109 UJV	0.079 U
1,2,4-Trichlorobenzene	UG/M3	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U	2.03 UJV	1.48 U
1,2,4-Trimethylbenzene	UG/M3	**1.03**	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	1.35 UJV	0.983 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U	2.11 UJV	1.54 U
1,2-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.65 UJV	1.2 U
1,2-Dichloroethane	UG/M3	**0.89**	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	1.11 UJV	0.809 U
1,2-Dichloropropane	UG/M3	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U	1.27 UJV	0.924 U
1,2-Dichlorotetrafluoroethane	UG/M3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.92 UJV	1.4 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	1.35 UJV	0.983 U
1,3-Butadiene	UG/M3	0.442 U	0.442 U	0.442 U	0.442 U	0.442 U	0.442 U	0.606 UJV	0.442 U
1,3-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.65 UJV	1.2 U
1,4-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.65 UJV	1.2 U
1,4-Dioxane (P-Dioxane)	UG/M3	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.987 UJV	0.721 U
2,2,4-Trimethylpentane	UG/M3	0.934 U	0.934 U	0.934 U	0.934 U	0.934 U	0.934 U	1.28 UJV	0.934 U
2-Hexanone	UG/M3	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	1.12 UJV	0.82 U
4-Ethyltoluene	UG/M3	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	1.35 UJV	0.983 U
Acetone	UG/M3	**17.2**	**14.8**	**61.5**	**35.9**	**43.7**	**35.6**	**17 JV**	**9.69**
Allyl Chloride (3-Chloropropene)	UG/M3	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U	0.858 UJV	0.626 U
Benzene	UG/M3	0.639 U	0.639 U	**0.754**	**0.786**	**0.661**	0.639 U	0.875 UJV	0.639 U
Benzyl Chloride	UG/M3	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.42 UJV	1.04 U
Bromodichloromethane	UG/M3	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U	1.84 UJV	1.34 U
Bromoform	UG/M3	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U	2.83 UJV	2.07 U
Bromomethane	UG/M3	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U	1.06 UJV	0.777 U
Carbon Disulfide	UG/M3	0.623 U	0.623 U	0.623 U	0.623 U	0.623 U	0.623 U	0.853 UJV	0.623 U
Carbon Tetrachloride	UG/M3	**0.535**	**0.51**	**0.459**	**0.447**	**0.428**	**1.06**	**0.612 JV**	**0.547**
Chlorobenzene	UG/M3	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U	1.26 UJV	0.921 U
Chloroethane	UG/M3	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U	0.723 UJV	0.528 U
Chloroform	UG/M3	0.977 U	0.977 U	**1.03**	0.977 U	0.977 U	0.977 U	1.34 UJV	0.977 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		IA-CS-1	IA-CS-2	IA-CVS-1	IA-CVS-2	IA-CVS-3	IA-CVS-4	IA-DS-1	IA-LQ-1
Sample Date:		11/20/2017	11/20/2017	03/21/2017	03/21/2017	03/21/2017	11/20/2017	11/20/2017	11/20/2017
Normal Sample or Field Duplicate:		N	N	N	N	N	N	N	N
Parameter	Unit								
Chloromethane	UG/M3	**1.04**	**1.09**	**1.63**	**1.15**	**1.15**	**1.31**	**1.15 JV**	**1.08**
Cis-1,2-Dichloroethylene	UG/M3	0.079 U	0.079 U	**3.45**	**2.01**	0.079 U	**2.35**	0.109 UJV	0.079 U
Cis-1,3-Dichloropropene	UG/M3	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	1.24 UJV	0.908 U
Cyclohexane	UG/M3	0.688 U	0.688 U	0.688 U	0.688 U	0.688 U	0.688 U	0.943 UJV	0.688 U
Dibromochloromethane	UG/M3	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	2.33 UJV	1.7 U
Dichlorodifluoromethane	UG/M3	**2.48**	**2.46**	**1.25**	**1.5**	**1.57**	**2.56**	**2.48 JV**	**2.53**
Ethanol	UG/M3	**16.6**	**12.9**	**390**	**496**	**181**	**388**	**167 JV**	**458**
Ethyl Acetate	UG/M3	1.8 U	1.8 U	**22.5**	**6.05**	**2.28**	**8.83**	2.47 UJV	**2.28**
Ethylbenzene	UG/M3	0.869 U	0.869 U	0.869 U	0.869 U	0.869 U	0.869 U	1.19 UJV	0.869 U
Hexachlorobutadiene	UG/M3	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U	2.92 UJV	2.13 U
Isopropanol	UG/M3	**1.71**	**1.36**	**20.3**	**16.4**	**11.6**	**77.2**	**5.9 JV**	**3.29**
m,p-Xylene	UG/M3	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	2.38 UJV	1.74 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	**1.93**	**1.58**	1.47 U	1.47 U	1.47 U	**1.74**	2.02 UJV	1.47 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UG/M3	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U	2.81 UJV	2.05 U
Methylene Chloride	UG/M3	1.74 U	1.74 U	**2.29**	1.74 U	1.74 U	**1.84**	2.38 UJV	1.74 U
N-Heptane	UG/M3	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	1.12 UJV	0.82 U
N-Hexane	UG/M3	0.705 U	0.705 U	0.705 U	0.705 U	0.705 U	0.705 U	0.966 UJV	0.705 U
O-Xylene (1,2-Dimethylbenzene)	UG/M3	0.869 U	0.869 U	0.869 U	0.869 U	0.869 U	0.869 U	1.19 UJV	0.869 U
Styrene	UG/M3	0.852 U	0.852 U	0.852 U	0.852 U	0.852 U	**1.22**	1.17 UJV	0.852 U
Tert-Butyl Alcohol	UG/M3	1.52 U	1.52 U	**10.8**	**10.1**	**15**	1.52 U	2.08 UJV	1.52 U
Tert-Butyl Methyl Ether	UG/M3	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.988 UJV	0.721 U
Tetrachloroethylene (PCE)	UG/M3	**0.658**	**0.8**	**160**	**66.8**	**3.47**	**113**	**0.834 JV**	**1.66**
Tetrahydrofuran	UG/M3	1.47 U	1.47 U	1.47 U	1.47 U	1.47 U	1.47 U	2.02 UJV	1.47 U
Toluene	UG/M3	**5.77**	**4.26**	**2.76**	**6.67**	**1.53**	**3.3**	1.03 UJV	0.754 U
Trans-1,2-Dichloroethene	UG/M3	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	1.09 UJV	0.793 U
Trans-1,3-Dichloropropene	UG/M3	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	1.24 UJV	0.908 U
Trichloroethylene (TCE)	UG/M3	**0.231**	**0.199**	**6.56**	**3.12**	**0.167**	**4.22**	**0.302 JV**	**0.161**
Trichlorofluoromethane	UG/M3	1.12 U	1.12 U	**3.02**	**1.98**	**3.59**	**3**	**3.57 JV**	**1.92**
Vinyl Bromide	UG/M3	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U	1.2 UJV	0.874 U
Vinyl Chloride	UG/M3	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.051 U	0.07 UJV	0.051 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		IA-NS-1	IA-NS-2	IA-VW	IA-VW	OSV-1	OSV-2	OSV-3	OSV-4
Sample Date:		11/20/2017	11/20/2017	03/21/2017	03/21/2017	03/21/2017	03/21/2017	03/21/2017	03/21/2017
Normal Sample or Field Duplicate:		N	N	N	FD	N	N	N	N
Parameter	Unit								
1,1,1-Trichloroethane (TCA)	UG/M3	0.109 U	0.109 U	0.109 U	0.182 U	1.09 U	10.9 U	10.9 U	10.9 U
1,1,2,2-Tetrachloroethane	UG/M3	1.37 U	1.37 U	1.37 U	2.29 U	1.37 U	13.7 U	13.7 U	13.7 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/M3	1.53 U	1.53 U	1.53 U	2.55 U	1.53 U	15.3 U	15.3 U	15.3 U
1,1,2-Trichloroethane	UG/M3	1.09 U	1.09 U	1.09 U	1.82 U	1.09 U	10.9 U	10.9 U	10.9 U
1,1-Dichloroethane	UG/M3	0.809 U	0.809 U	0.809 U	1.35 U	0.809 U	8.09 U	8.09 U	8.09 U
1,1-Dichloroethene	UG/M3	0.079 U	0.079 U	0.079 U	0.132 U	0.793 U	7.93 U	7.93 U	7.93 U
1,2,4-Trichlorobenzene	UG/M3	1.48 U	1.48 U	1.48 U	2.47 U	1.48 U	14.8 U	14.8 U	14.8 U
1,2,4-Trimethylbenzene	UG/M3	0.983 U	0.983 U	0.983 U	1.64 U	0.983 U	9.83 U	9.83 U	9.83 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	1.54 U	1.54 U	1.54 U	2.56 U	1.54 U	15.4 U	15.4 U	15.4 U
1,2-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	2 U	1.2 U	12 U	12 U	12 U
1,2-Dichloroethane	UG/M3	0.809 U	0.809 U	0.809 U	1.35 U	0.809 U	8.09 U	8.09 U	8.09 U
1,2-Dichloropropane	UG/M3	0.924 U	0.924 U	0.924 U	1.54 U	0.924 U	9.24 U	9.24 U	9.24 U
1,2-Dichlorotetrafluoroethane	UG/M3	1.4 U	1.4 U	1.4 U	2.33 U	1.4 U	14 U	14 U	14 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	0.983 U	0.983 U	0.983 U	1.64 U	0.983 U	9.83 U	9.83 U	9.83 U
1,3-Butadiene	UG/M3	0.442 U	0.442 U	0.442 U	0.737 U	0.442 U	4.42 U	4.42 U	4.42 U
1,3-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	2 U	1.2 U	12 U	12 U	12 U
1,4-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	2 U	1.2 U	12 U	12 U	12 U
1,4-Dioxane (P-Dioxane)	UG/M3	0.721 U	0.721 U	0.721 U	1.2 U	0.721 U	7.21 U	7.21 U	7.21 U
2,2,4-Trimethylpentane	UG/M3	0.934 U	0.934 U	0.934 U	1.56 U	0.934 U	9.34 U	9.34 U	9.34 U
2-Hexanone	UG/M3	0.82 U	0.82 U	0.82 U	1.36 U	0.82 U	8.2 U	8.2 U	8.2 U
4-Ethyltoluene	UG/M3	0.983 U	0.983 U	0.983 U	1.64 U	0.983 U	9.83 U	9.83 U	9.83 U
Acetone	UG/M3	**218**	**356**	**786**	**784**	**14.3**	23.8 U	23.8 U	23.8 U
Allyl Chloride (3-Chloropropene)	UG/M3	0.626 U	0.626 U	0.626 U	1.04 U	0.626 U	6.26 U	6.26 U	6.26 U
Benzene	UG/M3	0.639 U	0.639 U	**0.706 JV**	1.06 UJV	0.639 U	6.39 U	6.39 U	6.39 U
Benzyl Chloride	UG/M3	1.04 U	1.04 U	1.04 U	1.72 U	1.04 U	10.4 U	10.4 U	10.4 U
Bromodichloromethane	UG/M3	1.34 U	1.34 U	1.34 U	2.23 U	1.34 U	13.4 U	13.4 U	13.4 U
Bromoform	UG/M3	2.07 U	2.07 U	2.07 U	3.44 U	2.07 U	20.7 U	20.7 U	20.7 U
Bromomethane	UG/M3	0.777 U	0.777 U	0.777 U	1.29 U	0.777 U	7.77 U	7.77 U	7.77 U
Carbon Disulfide	UG/M3	0.623 U	0.623 U	0.623 U	1.04 U	0.623 U	6.23 U	6.23 U	6.23 U
Carbon Tetrachloride	UG/M3	**0.516**	**0.572**	**0.396 JV**	**0.66 JV**	1.26 U	12.6 U	12.6 U	12.6 U
Chlorobenzene	UG/M3	0.921 U	0.921 U	0.921 U	1.53 U	0.921 U	9.21 U	9.21 U	9.21 U
Chloroethane	UG/M3	0.528 U	0.528 U	0.528 U	0.879 U	0.528 U	5.28 U	5.28 U	5.28 U
Chloroform	UG/M3	0.977 U	0.977 U	0.977 U	1.63 U	0.977 U	**10.2**	9.77 U	9.77 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		IA-NS-1	IA-NS-2	IA-VW	IA-VW	OSV-1	OSV-2	OSV-3	OSV-4
Sample Date:		11/20/2017	11/20/2017	03/21/2017	03/21/2017	03/21/2017	03/21/2017	03/21/2017	03/21/2017
Normal Sample or Field Duplicate:		N	N	N	FD	N	N	N	N
Parameter	Unit								
Chloromethane	UG/M3	**1.11**	**1.14**	**1.21**	**1.12**	0.413 U	4.13 U	4.13 U	4.13 U
Cis-1,2-Dichloroethylene	UG/M3	**0.25**	**0.349**	**0.159**	**0.198**	0.793 U	**301**	**674**	**1590**
Cis-1,3-Dichloropropene	UG/M3	0.908 U	0.908 U	0.908 U	1.51 U	0.908 U	9.08 U	9.08 U	9.08 U
Cyclohexane	UG/M3	0.688 U	0.688 U	0.688 U	1.15 U	0.688 U	6.88 U	6.88 U	6.88 U
Dibromochloromethane	UG/M3	1.7 U	1.7 U	1.7 U	2.84 U	1.7 U	17 U	17 U	17 U
Dichlorodifluoromethane	UG/M3	**2.52**	**2.53**	**1.4**	**1.8**	**1.26**	9.89 U	9.89 U	9.89 U
Ethanol	UG/M3	**292**	**335**	**563**	**650**	**9.69**	94.2 U	94.2 U	94.2 U
Ethyl Acetate	UG/M3	**5.87**	**7.64**	**92.3**	**115**	1.8 U	18 U	18 U	18 U
Ethylbenzene	UG/M3	0.869 U	0.869 U	0.869 U	1.45 U	0.869 U	8.69 U	8.69 U	8.69 U
Hexachlorobutadiene	UG/M3	2.13 U	2.13 U	2.13 U	3.55 U	2.13 U	21.3 U	21.3 U	21.3 U
Isopropanol	UG/M3	**66.4**	**79.6**	**242**	**246**	**1.49**	12.3 U	12.3 U	12.3 U
m,p-Xylene	UG/M3	1.74 U	1.74 U	1.74 U	2.9 U	1.74 U	17.4 U	17.4 U	17.4 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	1.47 U	1.47 U	1.47 U	2.46 U	1.47 U	14.7 U	14.7 U	14.7 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UG/M3	2.05 U	2.05 U	**11.3**	**16.2**	2.05 U	20.5 U	20.5 U	20.5 U
Methylene Chloride	UG/M3	1.74 U	1.74 U	1.74 U	2.9 U	1.74 U	17.4 U	17.4 U	17.4 U
N-Heptane	UG/M3	0.82 U	0.82 U	0.82 U	1.36 U	0.82 U	8.2 U	8.2 U	8.2 U
N-Hexane	UG/M3	0.705 U	0.705 U	0.705 U	1.17 U	0.705 U	7.05 U	7.05 U	7.05 U
O-Xylene (1,2-Dimethylbenzene)	UG/M3	0.869 U	0.869 U	0.869 U	1.45 U	0.869 U	8.69 U	8.69 U	8.69 U
Styrene	UG/M3	0.852 U	0.852 U	0.852 U	1.42 U	0.852 U	8.52 U	8.52 U	8.52 U
Tert-Butyl Alcohol	UG/M3	1.52 U	1.52 U	1.52 U	2.53 U	1.52 U	15.2 U	15.2 U	15.2 U
Tert-Butyl Methyl Ether	UG/M3	0.721 U	0.721 U	0.721 U	1.2 U	0.721 U	7.21 U	7.21 U	7.21 U
Tetrachloroethylene (PCE)	UG/M3	**13.4**	**18.9**	**7.53**	**9.49**	**21.6**	**9760**	**12900**	**12700**
Tetrahydrofuran	UG/M3	1.47 U	1.47 U	1.47 U	2.46 U	1.47 U	14.7 U	14.7 U	14.7 U
Toluene	UG/M3	**1.7**	**1.99**	**7.27**	**7.65**	**1.47**	7.54 U	7.54 U	7.54 U
Trans-1,2-Dichloroethene	UG/M3	0.793 U	0.793 U	0.793 U	1.32 U	0.793 U	**30.4**	**11**	**19.7**
Trans-1,3-Dichloropropene	UG/M3	0.908 U	0.908 U	0.908 U	1.51 U	0.908 U	9.08 U	9.08 U	9.08 U
Trichloroethylene (TCE)	UG/M3	**0.564**	**0.785**	**0.355**	**0.484**	1.07 U	**519**	**1210**	**1300**
Trichlorofluoromethane	UG/M3	**1.82**	**2.17**	**1.51 JV**	1.87 UJV	**1.21**	11.2 U	11.2 U	11.2 U
Vinyl Bromide	UG/M3	0.874 U	0.874 U	0.874 U	1.46 U	0.874 U	8.74 U	8.74 U	8.74 U
Vinyl Chloride	UG/M3	0.051 U	0.051 U	0.051 U	0.085 U	0.511 U	5.11 U	5.11 U	5.11 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		OSV-5	OSV-6	OSV-7	OSV-8	OSV-9	OSV-10	OSV-11	OSV-12
Sample Date:		03/21/2017	11/20/2017	11/20/2017	11/20/2017	11/20/2017	11/20/2017	11/20/2017	11/20/2017
Normal Sample or Field Duplicate:		N	N	N	N	N	N	N	N
Parameter	Unit								
1,1,1-Trichloroethane (TCA)	UG/M3	1.92 U	1.09 U	1.09 U	**8.84 JV**	1.09 U	**7.58**	**2.32**	1.09 U
1,1,2,2-Tetrachloroethane	UG/M3	2.41 U	1.37 U	1.37 U	6.87 UJV	1.37 U	1.37 U	1.37 U	1.37 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/M3	2.69 U	1.53 U	1.53 U	7.66 UJV	1.53 U	1.53 U	1.53 U	1.53 U
1,1,2-Trichloroethane	UG/M3	1.92 U	1.09 U	1.09 U	5.46 UJV	1.09 U	1.09 U	1.09 U	1.09 U
1,1-Dichloroethane	UG/M3	1.42 U	0.809 U	0.809 U	4.05 UJV	0.809 U	0.809 U	0.809 U	0.809 U
1,1-Dichloroethene	UG/M3	1.39 U	0.793 U	0.793 U	3.96 UJV	0.793 U	0.793 U	0.793 U	0.793 U
1,2,4-Trichlorobenzene	UG/M3	2.61 U	1.48 U	1.48 U	7.42 UJV	1.48 U	1.48 U	1.48 U	1.48 U
1,2,4-Trimethylbenzene	UG/M3	1.73 U	0.983 U	0.983 U	4.92 UJV	0.983 U	0.983 U	0.983 U	0.983 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	2.7 U	1.54 U	1.54 U	7.69 UJV	1.54 U	1.54 U	1.54 U	1.54 U
1,2-Dichlorobenzene	UG/M3	2.11 U	1.2 U	1.2 U	6.01 UJV	1.2 U	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	UG/M3	1.42 U	0.809 U	0.809 U	4.05 UJV	0.809 U	0.809 U	0.809 U	0.809 U
1,2-Dichloropropane	UG/M3	1.62 U	0.924 U	0.924 U	4.62 UJV	0.924 U	0.924 U	0.924 U	0.924 U
1,2-Dichlorotetrafluoroethane	UG/M3	2.45 U	1.4 U	1.4 U	6.99 UJV	1.4 U	1.4 U	1.4 U	1.4 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	1.73 U	0.983 U	0.983 U	4.92 UJV	0.983 U	0.983 U	0.983 U	0.983 U
1,3-Butadiene	UG/M3	0.777 U	0.442 U	0.442 U	2.21 UJV	0.442 U	0.442 U	0.442 U	0.442 U
1,3-Dichlorobenzene	UG/M3	2.11 U	1.2 U	1.2 U	6.01 UJV	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	UG/M3	2.11 U	**5.77**	1.2 U	6.01 UJV	**2.14**	**2.4**	**1.23**	1.2 U
1,4-Dioxane (P-Dioxane)	UG/M3	1.26 U	0.721 U	0.721 U	3.6 UJV	0.721 U	0.721 U	0.721 U	0.721 U
2,2,4-Trimethylpentane	UG/M3	1.64 U	0.934 U	0.934 U	4.67 UJV	0.934 U	0.934 U	0.934 U	0.934 U
2-Hexanone	UG/M3	1.44 U	0.82 U	0.82 U	4.1 UJV	0.82 U	0.82 U	0.82 U	0.82 U
4-Ethyltoluene	UG/M3	1.73 U	0.983 U	0.983 U	4.92 UJV	0.983 U	0.983 U	0.983 U	0.983 U
Acetone	UG/M3	**12.7**	**6.75**	**10.3 J+V**	11.9 UJV	**166**	**7.96**	**4.49**	**15.6**
Allyl Chloride (3-Chloropropene)	UG/M3	1.1 U	0.626 U	0.626 U	3.13 UJV	0.626 U	0.626 U	0.626 U	0.626 U
Benzene	UG/M3	1.12 U	0.639 U	0.639 U	3.19 UJV	0.639 U	0.639 U	0.639 U	0.639 U
Benzyl Chloride	UG/M3	1.82 U	1.04 U	1.04 U	5.18 UJV	1.04 U	1.04 U	1.04 U	1.04 U
Bromodichloromethane	UG/M3	2.35 U	1.34 U	1.34 U	6.7 UJV	1.34 U	1.34 U	1.34 U	1.34 U
Bromoform	UG/M3	3.63 U	2.07 U	2.07 U	10.3 UJV	2.07 U	2.07 U	2.07 U	2.07 U
Bromomethane	UG/M3	1.36 U	0.777 U	0.777 U	3.88 UJV	0.777 U	0.777 U	0.777 U	0.777 U
Carbon Disulfide	UG/M3	1.09 U	0.623 U	0.623 U	3.11 UJV	0.623 U	0.623 U	0.623 U	0.623 U
Carbon Tetrachloride	UG/M3	2.21 U	1.26 U	1.26 U	6.29 UJV	1.26 U	1.26 U	1.26 U	1.26 U
Chlorobenzene	UG/M3	1.62 U	0.921 U	0.921 U	4.61 UJV	0.921 U	0.921 U	0.921 U	0.921 U
Chloroethane	UG/M3	0.926 U	0.528 U	0.528 U	2.64 UJV	0.528 U	0.528 U	0.528 U	0.528 U
Chloroform	UG/M3	1.71 U	**4.84**	**1.78**	**6.54 JV**	0.977 U	0.977 U	0.977 U	0.977 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		OSV-5	OSV-6	OSV-7	OSV-8	OSV-9	OSV-10	OSV-11	OSV-12
Sample Date:		03/21/2017	11/20/2017	11/20/2017	11/20/2017	11/20/2017	11/20/2017	11/20/2017	11/20/2017
Normal Sample or Field Duplicate:		N	N	N	N	N	N	N	N
Parameter	Unit								
Chloromethane	UG/M3	0.725 U	0.413 U	**1.04**	2.07 UJV	**0.576**	**0.555**	0.413 U	**1.03**
Cis-1,2-Dichloroethylene	UG/M3	**6.03**	0.793 U	0.793 U	**26.2 JV**	0.793 U	0.793 U	0.793 U	0.793 U
Cis-1,3-Dichloropropene	UG/M3	1.59 U	0.908 U	0.908 U	4.54 UJV	0.908 U	0.908 U	0.908 U	0.908 U
Cyclohexane	UG/M3	1.21 U	0.688 U	0.688 U	3.44 UJV	**1.22**	0.688 U	0.688 U	0.688 U
Dibromochloromethane	UG/M3	2.99 U	1.7 U	1.7 U	8.52 UJV	1.7 U	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	UG/M3	1.74 U	**1.84**	**2.25**	4.94 UJV	**2.33**	**2.25**	**2.29**	**2.52**
Ethanol	UG/M3	**45.4**	9.42 U	9.42 U	47.1 UJV	**228**	**181**	9.42 U	**14.6**
Ethyl Acetate	UG/M3	3.16 U	1.8 U	1.8 U	9.01 UJV	1.8 U	1.8 U	1.8 U	1.8 U
Ethylbenzene	UG/M3	1.52 U	0.869 U	0.869 U	4.34 UJV	0.869 U	0.869 U	0.869 U	0.869 U
Hexachlorobutadiene	UG/M3	3.74 U	2.13 U	2.13 U	10.7 UJV	2.13 U	2.13 U	2.13 U	2.13 U
Isopropanol	UG/M3	**2.73**	1.23 U	**2.93**	6.15 UJV	**39.1**	**1.73**	1.23 U	**1.32**
m,p-Xylene	UG/M3	**3.85**	**2.14**	1.74 U	8.69 UJV	1.74 U	1.74 U	1.74 U	1.74 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	2.59 U	**1.65**	**1.99**	7.37 UJV	**5.4**	1.47 U	1.47 U	1.47 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UG/M3	3.59 U	2.05 U	2.05 U	10.2 UJV	2.05 U	2.05 U	2.05 U	2.05 U
Methylene Chloride	UG/M3	3.05 U	1.74 U	**1.78**	8.69 UJV	1.74 U	1.74 U	1.74 U	1.74 U
N-Heptane	UG/M3	1.44 U	0.82 U	0.82 U	4.1 UJV	0.82 U	0.82 U	0.82 U	0.82 U
N-Hexane	UG/M3	1.24 U	**1.98**	**0.874**	3.52 UJV	**1.4**	**1.21**	**1.33**	**1.27**
O-Xylene (1,2-Dimethylbenzene)	UG/M3	**2.01**	0.869 U	0.869 U	4.34 UJV	0.869 U	0.869 U	0.869 U	0.869 U
Styrene	UG/M3	1.49 U	0.852 U	0.852 U	4.26 UJV	0.852 U	0.852 U	0.852 U	0.852 U
Tert-Butyl Alcohol	UG/M3	2.66 U	1.52 U	**18**	7.58 UJV	**8.58**	1.52 U	1.52 U	1.52 U
Tert-Butyl Methyl Ether	UG/M3	1.27 U	0.721 U	0.721 U	3.61 UJV	0.721 U	0.721 U	0.721 U	0.721 U
Tetrachloroethylene (PCE)	UG/M3	**60.8**	**104**	**115**	**2470 JV**	**1.51**	**26**	**145**	**3.72**
Tetrahydrofuran	UG/M3	2.59 U	**3.92**	**6.43**	7.37 UJV	**2.98**	1.47 U	1.47 U	1.47 U
Toluene	UG/M3	**10.1**	**1.37**	**1.24**	3.77 UJV	**1.42**	**0.935**	**1.12**	**5.28**
Trans-1,2-Dichloroethene	UG/M3	1.39 U	0.793 U	0.793 U	3.96 UJV	0.793 U	0.793 U	0.793 U	0.793 U
Trans-1,3-Dichloropropene	UG/M3	1.59 U	0.908 U	0.908 U	4.54 UJV	0.908 U	0.908 U	0.908 U	0.908 U
Trichloroethylene (TCE)	UG/M3	**6.18**	**4.77**	**9.3**	**178 JV**	1.07 U	**9.4**	**4.12**	1.07 U
Trichlorofluoromethane	UG/M3	**8.99**	**1.65**	**1.4**	**6.01 JV**	**3.39**	**2.93**	**37.1**	1.12 U
Vinyl Bromide	UG/M3	1.53 U	0.874 U	0.874 U	4.37 UJV	0.874 U	0.874 U	0.874 U	0.874 U
Vinyl Chloride	UG/M3	0.897 U	0.511 U	0.511 U	2.56 UJV	0.511 U	0.511 U	0.511 U	0.511 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		SV-1	SV-2	SV-3	SV-3	SV-4	SV-5	SV-6	SV-7
Sample Date:		03/22/2016	03/22/2016	03/22/2016	03/22/2016	03/22/2016	11/02/2016	11/02/2016	11/04/2016
Normal Sample or Field Duplicate:		N	N	N	FD	N	N	N	N
Parameter	Unit								
1,1,1-Trichloroethane (TCA)	UG/M3	48.1 U	33.4 U	2.73 U	3.64 U	2.73 U	1.09 U	1.09 U	96 U
1,1,2,2-Tetrachloroethane	UG/M3	60.5 U	42 U	3.43 U	4.58 U	3.43 U	1.37 U	1.37 U	121 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/M3	67.5 U	46.9 U	3.83 U	5.11 U	3.83 U	1.53 U	1.53 U	135 U
1,1,2-Trichloroethane	UG/M3	48.1 U	33.4 U	2.73 U	3.64 U	2.73 U	1.09 U	1.09 U	96 U
1,1-Dichloroethane	UG/M3	35.7 U	24.8 U	2.02 U	2.7 U	2.02 U	0.809 U	0.809 U	71.2 U
1,1-Dichloroethene	UG/M3	34.9 U	24.3 U	1.98 U	2.64 U	1.98 U	0.793 U	0.793 U	69.8 U
1,2,4-Trichlorobenzene	UG/M3	65.4 U	45.4 U	3.71 U	4.95 U	3.71 U	1.48 U	1.48 U	131 U
1,2,4-Trimethylbenzene	UG/M3	43.3 U	30.1 U	2.46 U	3.28 U	2.46 U	**36.8**	**20.2**	86.5 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	67.7 U	47 U	3.84 U	5.13 U	3.84 U	1.54 U	1.54 U	135 U
1,2-Dichlorobenzene	UG/M3	53 U	36.8 U	3.01 U	4.01 U	3.01 U	1.2 U	1.2 U	106 U
1,2-Dichloroethane	UG/M3	35.7 U	24.8 U	2.02 U	2.7 U	2.02 U	0.809 U	0.809 U	71.2 U
1,2-Dichloropropane	UG/M3	40.7 U	28.3 U	2.31 U	3.08 U	2.31 U	0.924 U	0.924 U	81.3 U
1,2-Dichlorotetrafluoroethane	UG/M3	61.6 U	42.8 U	3.49 U	4.66 U	3.49 U	1.4 U	1.4 U	123 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	43.3 U	30.1 U	2.46 U	3.28 U	2.46 U	**9.09**	**4.87**	86.5 U
1,3-Butadiene	UG/M3	19.5 U	13.5 U	1.11 U	1.48 U	1.11 U	0.442 U	0.442 U	38.9 U
1,3-Dichlorobenzene	UG/M3	53 U	36.8 U	3.01 U	4.01 U	3.01 U	1.2 U	1.2 U	106 U
1,4-Dichlorobenzene	UG/M3	53 U	36.8 U	3.01 U	4.01 U	3.01 U	**2.04**	**1.39**	106 U
1,4-Dioxane (P-Dioxane)	UG/M3	31.7 U	22.1 U	1.8 U	2.4 U	1.8 U	0.721 U	0.721 U	63.4 U
2,2,4-Trimethylpentane	UG/M3	41.1 U	28.6 U	2.34 U	3.12 U	2.34 U	**3.36**	**1.49**	82.2 U
2-Hexanone	UG/M3	36.1 U	25.1 U	2.05 U	2.73 U	2.05 U	0.82 U	0.82 U	72.1 U
4-Ethyltoluene	UG/M3	43.3 U	30.1 U	2.46 U	3.28 U	2.46 U	**6.54**	**3.46**	86.5 U
Acetone	UG/M3	105 U	72.7 U	**22.8**	**16**	**7.89**	**53.9**	**30.4**	209 U
Allyl Chloride (3-Chloropropene)	UG/M3	27.6 U	19.2 U	1.57 U	2.09 U	1.57 U	0.626 U	0.626 U	55.1 U
Benzene	UG/M3	28.1 U	19.6 U	1.6 U	2.13 U	1.6 U	**1.91**	**1.48**	56.2 U
Benzyl Chloride	UG/M3	45.6 U	31.7 U	2.59 U	3.45 U	2.59 U	1.04 U	1.04 U	91.1 U
Bromodichloromethane	UG/M3	59 U	41 U	3.35 U	4.47 U	3.35 U	1.34 U	1.34 U	118 U
Bromoform	UG/M3	91.1 U	63.3 U	5.17 U	6.9 U	5.17 U	2.07 U	2.07 U	182 U
Bromomethane	UG/M3	34.2 U	23.8 U	1.94 U	2.59 U	1.94 U	0.777 U	0.777 U	68.3 U
Carbon Disulfide	UG/M3	27.4 U	19.1 U	1.56 U	2.08 U	1.56 U	**8.1**	0.623 U	54.8 U
Carbon Tetrachloride	UG/M3	55.4 U	38.5 U	3.15 U	4.2 U	3.15 U	1.26 U	1.26 U	111 U
Chlorobenzene	UG/M3	40.6 U	28.2 U	2.3 U	3.07 U	2.3 U	0.921 U	0.921 U	81.1 U
Chloroethane	UG/M3	23.2 U	16.1 U	1.32 U	1.76 U	1.32 U	0.528 U	0.528 U	46.4 U
Chloroform	UG/M3	43 U	29.9 U	**2.68 JV**	3.26 UJV	**3.57**	**3.59**	**1.41**	85.9 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		SV-1	SV-2	SV-3	SV-3	SV-4	SV-5	SV-6	SV-7
Sample Date:		03/22/2016	03/22/2016	03/22/2016	03/22/2016	03/22/2016	11/02/2016	11/02/2016	11/04/2016
Normal Sample or Field Duplicate:		N	N	N	FD	N	N	N	N
Parameter	Unit								
Chloromethane	UG/M3	18.2 U	12.6 U	1.03 U	1.38 U	1.03 U	0.413 U	0.413 U	36.3 U
Cis-1,2-Dichloroethylene	UG/M3	**603**	**338**	**11.4**	**11.9**	**16.2**	**2.94**	**78.5**	**1130**
Cis-1,3-Dichloropropene	UG/M3	40 U	27.8 U	2.27 U	3.03 U	2.27 U	0.908 U	0.908 U	79.9 U
Cyclohexane	UG/M3	30.3 U	21.1 U	1.72 UJV	**4.44 JV**	1.72 U	**0.73**	0.688 U	**60.9**
Dibromochloromethane	UG/M3	75.1 U	52.1 U	4.26 U	5.68 U	4.26 U	1.7 U	1.7 U	150 U
Dichlorodifluoromethane	UG/M3	43.6 U	30.3 U	2.47 U	3.3 U	2.47 U	**1.62**	**1.77**	87 U
Ethanol	UG/M3	**577**	288 U	**153**	**125**	**74.1**	**12.7**	9.42 U	829 U
Ethyl Acetate	UG/M3	79.3 U	55.1 U	4.5 U	6.02 U	4.5 U	**1.99**	1.8 U	159 U
Ethylbenzene	UG/M3	38.3 U	26.6 U	2.17 U	2.9 U	2.17 U	**6.21**	**3.61**	76.4 U
Hexachlorobutadiene	UG/M3	94 U	65.3 U	5.33 U	7.11 U	5.33 U	2.13 U	2.13 U	188 U
Isopropanol	UG/M3	54.1 U	37.6 U	**5.75 JV**	4.1 UJV	3.07 U	**4.92**	**4.99**	108 U
m,p-Xylene	UG/M3	76.4 U	53 U	**4.95 JV**	5.78 UJV	**5.78**	**29.3**	**16.4**	153 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	64.9 U	45.1 U	3.69 U	4.93 U	3.69 U	**4.39**	**2.63**	130 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UG/M3	90.2 U	62.7 U	5.12 U	6.84 U	5.12 U	2.05 U	2.05 U	180 U
Methylene Chloride	UG/M3	76.4 U	53.2 U	4.34 U	5.8 U	4.34 U	1.74 U	1.74 U	153 U
N-Heptane	UG/M3	36.1 U	25.1 U	2.05 U	2.73 U	2.05 U	**2.66**	**1.33**	72.1 U
N-Hexane	UG/M3	31 U	21.6 U	1.76 U	2.35 U	1.76 U	**4.86**	0.705 U	62 U
O-Xylene (1,2-Dimethylbenzene)	UG/M3	38.3 U	26.6 U	2.17 U	2.9 U	2.17 U	**16.9**	**9.51**	76.4 U
Styrene	UG/M3	37.5 U	26.1 U	2.13 U	2.84 U	2.13 U	0.852 U	0.852 U	74.9 U
Tert-Butyl Alcohol	UG/M3	66.7 U	46.4 U	3.79 U	5.06 U	3.79 U	**13.6**	**8.79**	133 U
Tert-Butyl Methyl Ether	UG/M3	31.8 U	22.1 U	1.8 U	2.4 U	1.8 U	0.721 U	0.721 U	63.5 U
Tetrachloroethylene (PCE)	UG/M3	**18800**	**14200**	**1080**	**1500**	**1170**	**4.23**	**314**	**30700**
Tetrahydrofuran	UG/M3	64.9 U	45.1 U	3.69 U	4.93 U	3.69 U	1.47 U	1.47 U	130 U
Toluene	UG/M3	33.2 U	23.1 U	**3.25 JV**	2.51 UJV	**3.84**	**10.4**	**6.48**	66.3 U
Trans-1,2-Dichloroethene	UG/M3	34.9 U	24.3 U	1.98 U	2.64 U	1.98 U	0.793 U	**0.987**	69.8 U
Trans-1,3-Dichloropropene	UG/M3	40 U	27.8 U	2.27 U	3.03 U	2.27 U	0.908 U	0.908 U	79.9 U
Trichloroethylene (TCE)	UG/M3	**1280**	**763**	**59.1**	**66.6**	**67.7**	**12.5**	**114**	**2600**
Trichlorofluoromethane	UG/M3	49.5 U	34.4 U	2.81 U	3.75 U	2.81 U	**1.47**	**1.28**	98.9 U
Vinyl Bromide	UG/M3	38.5 U	26.8 U	2.19 U	2.92 U	2.19 U	0.874 U	0.874 U	77 U
Vinyl Chloride	UG/M3	22.5 U	15.6 U	1.28 U	1.71 U	1.28 U	0.511 U	0.511 U	45 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

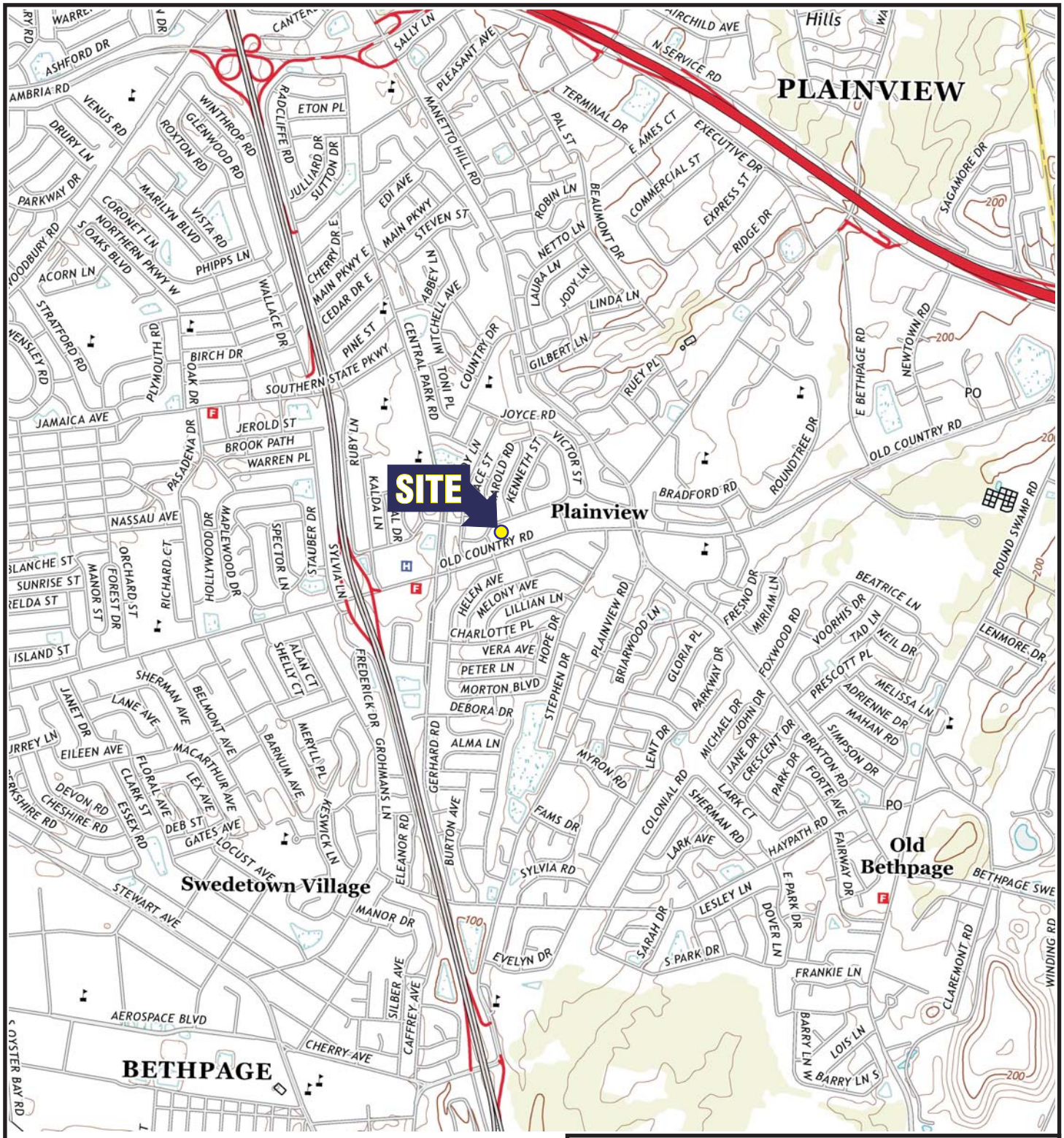
Sample Designation:		SV-8	SV-8	SV-9	SV-10	SV-11
Sample Date:		11/02/2016	11/02/2016	11/02/2016	03/21/2017	03/21/2017
Normal Sample or Field Duplicate:		N	FD	N	N	N
Parameter	Unit					
1,1,1-Trichloroethane (TCA)	UG/M3	2.18 U	2.73 U	1.09 U	1.09 U	1.09 U
1,1,2,2-Tetrachloroethane	UG/M3	2.75 U	3.43 U	1.37 U	1.37 U	1.37 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/M3	3.07 U	3.83 U	1.53 U	1.53 U	1.53 U
1,1,2-Trichloroethane	UG/M3	2.18 U	2.73 U	1.09 U	1.09 U	1.09 U
1,1-Dichloroethane	UG/M3	1.62 U	2.02 U	0.809 U	0.809 U	0.809 U
1,1-Dichloroethene	UG/M3	1.59 U	1.98 U	0.793 U	0.793 U	0.793 U
1,2,4-Trichlorobenzene	UG/M3	2.97 U	3.71 U	1.48 U	1.48 U	1.48 U
1,2,4-Trimethylbenzene	UG/M3	**42.8**	**42.9**	**82.6**	0.983 U	0.983 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	3.07 U	3.84 U	1.54 U	1.54 U	1.54 U
1,2-Dichlorobenzene	UG/M3	2.4 U	3.01 U	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	UG/M3	1.62 U	2.02 U	0.809 U	0.809 U	0.809 U
1,2-Dichloropropane	UG/M3	1.85 U	2.31 U	0.924 U	0.924 U	0.924 U
1,2-Dichlorotetrafluoroethane	UG/M3	2.8 U	3.49 U	1.4 U	1.4 U	1.4 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	**11.1**	**10.7**	**22.7**	0.983 U	0.983 U
1,3-Butadiene	UG/M3	0.885 U	1.11 U	0.442 U	**0.471**	0.442 U
1,3-Dichlorobenzene	UG/M3	2.4 U	3.01 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	UG/M3	**2.86**	**3.31**	**3.1**	1.2 U	1.2 U
1,4-Dioxane (P-Dioxane)	UG/M3	1.44 U	1.8 U	0.721 U	0.721 U	0.721 U
2,2,4-Trimethylpentane	UG/M3	**4.14 JV**	2.34 UJV	**20.6**	**5.79**	0.934 U
2-Hexanone	UG/M3	1.64 U	2.05 U	0.82 U	**1.25**	0.82 U
4-Ethyltoluene	UG/M3	**7.67**	**6.78**	**12.5**	0.983 U	0.983 U
Acetone	UG/M3	**32.3**	**22**	**33.3**	**26.6**	**29.5**
Allyl Chloride (3-Chloropropene)	UG/M3	1.25 U	1.57 U	0.626 U	0.626 U	0.626 U
Benzene	UG/M3	**1.8**	1.6 U	**1.9**	**1.12**	0.639 U
Benzyl Chloride	UG/M3	2.07 U	2.59 U	1.04 U	1.04 U	1.04 U
Bromodichloromethane	UG/M3	2.68 U	3.35 U	1.34 U	1.34 U	1.34 U
Bromoform	UG/M3	4.14 U	5.17 U	2.07 U	2.07 U	2.07 U
Bromomethane	UG/M3	1.55 U	1.94 U	0.777 U	0.777 U	0.777 U
Carbon Disulfide	UG/M3	**4.76**	**4.48**	**3.61**	**0.906**	0.623 U
Carbon Tetrachloride	UG/M3	2.52 U	3.15 U	1.26 U	1.26 U	1.26 U
Chlorobenzene	UG/M3	1.84 U	2.3 U	0.921 U	0.921 U	0.921 U
Chloroethane	UG/M3	1.06 U	1.32 U	0.528 U	0.528 U	0.528 U
Chloroform	UG/M3	1.95 U	2.44 U	**0.982**	**1.51**	0.977 U

Table 1. Summary of Volatile Organic Compounds in Air and Soil Vapor, Morton Village Plaza, Plainview, New York

Sample Designation:		SV-8	SV-8	SV-9	SV-10	SV-11
Sample Date:		11/02/2016	11/02/2016	11/02/2016	03/21/2017	03/21/2017
Normal Sample or Field Duplicate:		N	FD	N	N	N
Parameter	Unit					
Chloromethane	UG/M3	0.826 U	1.03 U	0.413 U	0.413 U	0.413 U
Cis-1,2-Dichloroethylene	UG/M3	1.59 U	1.98 U	0.793 U	0.793 U	0.793 U
Cis-1,3-Dichloropropene	UG/M3	1.82 U	2.27 U	0.908 U	0.908 U	0.908 U
Cyclohexane	UG/M3	1.38 U	1.72 U	**1.81**	**0.888**	0.688 U
Dibromochloromethane	UG/M3	3.41 U	4.26 U	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	UG/M3	**2.23**	2.47 U	**2.03**	**1.51**	**1.28**
Ethanol	UG/M3	18.8 U	23.6 U	**13.4**	**16.6**	9.42 U
Ethyl Acetate	UG/M3	3.6 U	4.5 U	**2.11**	1.8 U	1.8 U
Ethylbenzene	UG/M3	**8.12**	**5.52**	**13.1**	**1.26**	0.869 U
Hexachlorobutadiene	UG/M3	4.27 U	5.33 U	2.13 U	2.13 U	2.13 U
Isopropanol	UG/M3	**7.55 JV**	**3.07 JV**	**9**	**8.75**	1.23 U
m,p-Xylene	UG/M3	**35.6**	**26.1**	**58.6**	**3.64**	**2.47**
Methyl Ethyl Ketone (2-Butanone)	UG/M3	**4.01 JV**	3.69 UJV	**4.1**	**4.95**	**4.48**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UG/M3	4.1 U	5.12 U	2.05 U	2.05 U	2.05 U
Methylene Chloride	UG/M3	3.47 U	4.34 U	1.74 U	1.74 U	1.74 U
N-Heptane	UG/M3	**5.12 JV**	2.05 UJV	**4.26**	**3.93**	0.82 U
N-Hexane	UG/M3	1.41 U	1.76 U	**2.01**	**2.48**	0.705 U
O-Xylene (1,2-Dimethylbenzene)	UG/M3	**21.6**	**15.2**	**42.8**	**1.24**	**1.28**
Styrene	UG/M3	1.7 U	2.13 U	**0.903**	0.852 U	0.852 U
Tert-Butyl Alcohol	UG/M3	**10.8**	**6.94**	**9.19**	**5.27**	**5.7**
Tert-Butyl Methyl Ether	UG/M3	1.44 U	1.8 U	0.721 U	0.721 U	0.721 U
Tetrachloroethylene (PCE)	UG/M3	**649 JV**	**1150 JV**	**342**	1.36 U	**11.7**
Tetrahydrofuran	UG/M3	2.95 U	3.69 U	1.47 U	1.47 U	1.47 U
Toluene	UG/M3	**13.9**	**10.4**	**17.8**	**4.52**	**3.18**
Trans-1,2-Dichloroethene	UG/M3	1.59 U	1.98 U	0.793 U	0.793 U	0.793 U
Trans-1,3-Dichloropropene	UG/M3	1.82 U	2.27 U	0.908 U	0.908 U	0.908 U
Trichloroethylene (TCE)	UG/M3	**5.75**	**6.99**	**11.2**	1.07 U	1.07 U
Trichlorofluoromethane	UG/M3	2.25 U	2.81 U	**1.47**	**1.19**	**1.32**
Vinyl Bromide	UG/M3	1.75 U	2.19 U	0.874 U	0.874 U	0.874 U
Vinyl Chloride	UG/M3	1.02 U	1.28 U	0.511 U	0.511 U	0.511 U

FIGURES

1. Site Location Map
2. Sample Locations



QUADRANGLE LOCATION

SOURCE:
USGS; 2013, HUNTINGTON, NY
7.5 Minute Topographic Quadrangle

N

0 2000'

Title:

SITE LOCATION MAP

1022 OLD COUNTRY ROAD
PLAINVIEW, NEW YORK

Prepared for:

MORTON VILLAGE REALTY CO., INC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.W.	Date: 05JAN14
Prepared by: J.A.D.	Scale: AS SHOWN
Project Mgr.: J.W.	Project No.: 2517.0001Y000
File: 2517.0001Y101.01.CDR	

FIGURE 1

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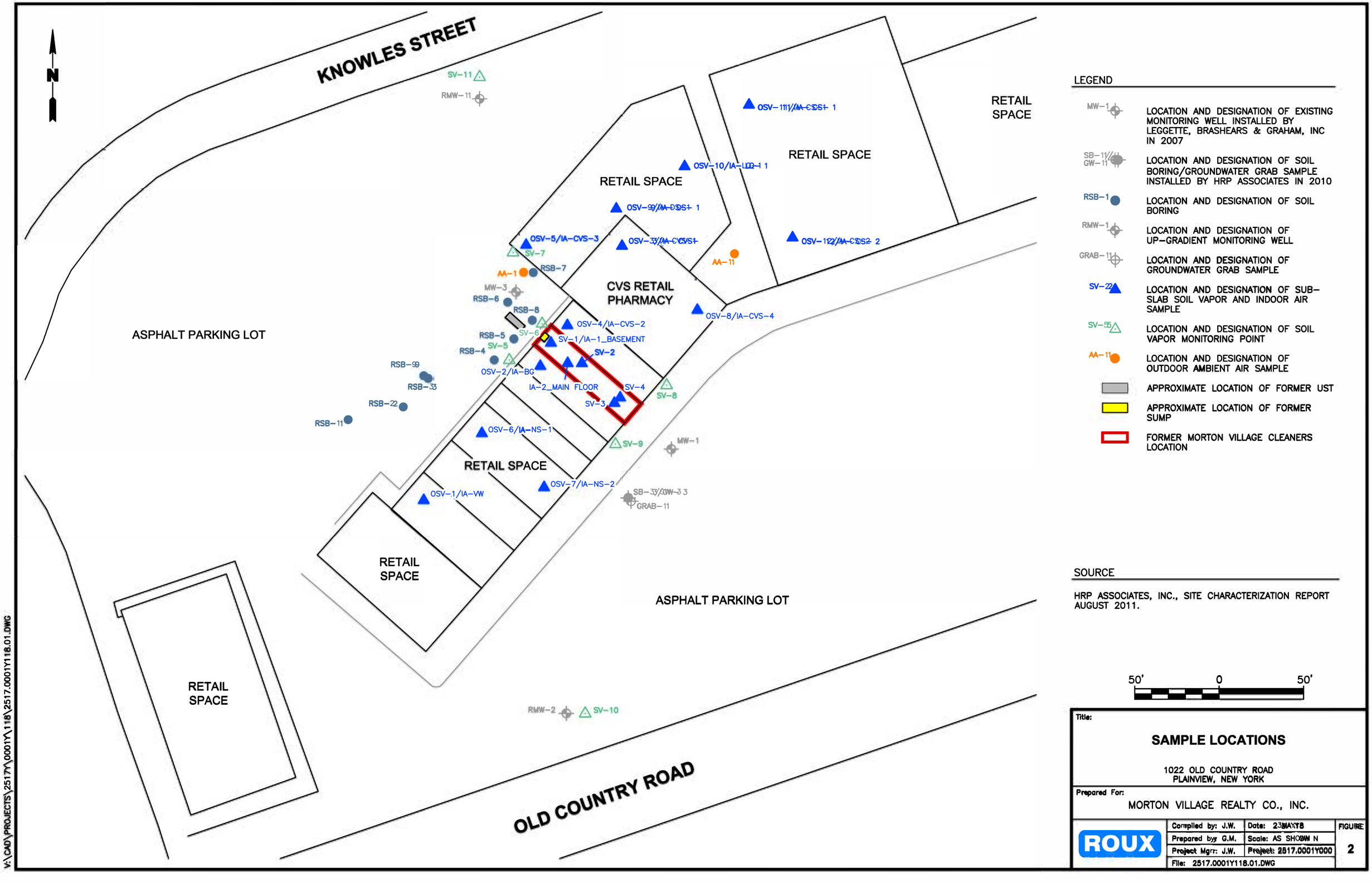
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KNOWLES STREET
SV-11
RMW-11
RETAIL SPACE
OSV-11/IA-CVS-1
RETAIL SPACE
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RETAIL SPACE
OSV-9/IA-DSS-1
OSV-5/IA-CVS-3
OSV-3/IA-CVS-1
OSV-12/IA-CVS-2
SV-7
AA-1
RSB-7
AA-1
MW-3
RSB-6
CVS RETAIL PHARMACY
OSV-8/IA-CVS-4
RSB-8
OSV-4/IA-CVS-2
SV-6
RSB-5
SV-1/IA-1_BASEMENT
SV-5
RSB-4
SV-2
OSV-2/IA-BG
RSB-99
RSB-33
IA-2_MAIN FLOOR
SV-4
SV-8
RSB-22
SV-3
RSB-11
OSV-6/IA-NS-1
SV-9
MW-1
RETAIL SPACE
OSV-7/IA-NS-2
OSV-1/IA-VW
SB-3/MW-3
GRAB-11
RETAIL SPACE
ASPHALT PARKING LOT
RETAIL SPACE
RMW-2
SV-10
OLD COUNTRY ROAD
LEGEND
MW-1
LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY LEGGETTE, BRASHEARS & GRAHAM, INC IN 2007
SB-1/GW-1
LOCATION AND DESIGNATION OF SOIL BORING/GROUNDWATER GRAB SAMPLE INSTALLED BY HRP ASSOCIATES IN 2010
RSB-1
LOCATION AND DESIGNATION OF SOIL BORING
RMW-1
LOCATION AND DESIGNATION OF UP-GRADIENT MONITORING WELL
GRAB-11
LOCATION AND DESIGNATION OF GROUNDWATER GRAB SAMPLE
SV-22
LOCATION AND DESIGNATION OF SUB-SLAB SOIL VAPOR AND INDOOR AIR SAMPLE
SV-55
LOCATION AND DESIGNATION OF SOIL VAPOR MONITORING POINT
AA-11
LOCATION AND DESIGNATION OF OUTDOOR AMBIENT AIR SAMPLE
APPROXIMATE LOCATION OF FORMER UST
APPROXIMATE LOCATION OF FORMER SUMP
FORMER MORTON VILLAGE CLEANERS LOCATION
SOURCE
HRP ASSOCIATES, INC., SITE CHARACTERIZATION REPORT AUGUST 2011.
50' 0 50'
Title:
SAMPLE LOCATIONS
1022 OLD COUNTRY ROAD
PLAINVIEW, NEW YORK
Prepared For:
MORTON VILLAGE REALTY CO., INC.
ROUX
Compiled by: J.W.
Date: 23MAY18
Prepared by: G.M.
Scale: AS SHOWN
Project Mgr: J.W.
Project: 2517.0001Y000
File: 2517.0001Y118.01.DWG
FIGURE
2
V:\CAD\PROJECTS\2517Y\0001Y\118\2517.0001Y118.01.DWG

APPENDICES

A. New York State Department of Health Soil Vapor/Indoor Air Matrices
B. Sub-Slab Depressurization System Design Drawings
C. Division of Air Resources (DAR 1) Screening Analysis
D. Sub-Slab Depressurization System Component Specifications
E. Sub-Slab Depressurization System Operations and Maintenance Log
F. Health and Safety Plan

APPENDIX A

New York State Department of Health Soil Vapor/Indoor Air Matrices

Soil Vapor/Indoor Air Matrix A

May 2017

Analytes Assigned:
Trichloroethene (TCE), *cis*-1,2-Dichloroethene (*c*12-DCE), 1,1-Dichloroethene (11-DCE), Carbon Tetrachloride

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)		
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 0.2	0.2 to < 1	1 and above
< 6	1. No further action	2. No Further Action	3. IDENTIFY SOURCE(S) and RESAMPLE or MITIGATE
6 to < 60	4. No further action	5. MONITOR	6. MITIGATE
60 and above	7. MITIGATE	8. MITIGATE	9. MITIGATE

No further action: No additional actions are recommended to address human exposures.

Identify Source(s) and Resample or Mitigate: We recommend that reasonable and practical actions be taken to identify the source(s) affecting the indoor air quality and that actions be implemented to reduce indoor air concentrations to within background ranges. For example, if an indoor or outdoor air source is identified, we recommend the appropriate party implement actions to reduce the levels. In the event that indoor or outdoor sources are not readily identified or confirmed, resampling (which might include additional sub-slab vapor and indoor air sampling locations) is recommended to demonstrate that SVI mitigation actions are not needed. Based on the information available, mitigation might also be recommended when soil vapor intrusion cannot be ruled out.

Monitor: We recommend monitoring (sampling on a recurring basis), including but not necessarily limited to sub-slab vapor, basement air and outdoor air sampling, to determine whether concentrations in the indoor air or sub-slab vapor have changed and/or to evaluate temporal influences. Monitoring might also be recommended to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined based on site-, building- and analyte-specific information, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

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

These general recommendations are made with consideration being given to the additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX A

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

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate analyte-specific, building-specific conditions (e.g., dirt floor in basement, crawl spaces, thick slabs, current occupancy, etc.), and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, collection of additional samples may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Mitigation might be recommended when the results of multiple contaminants indicate monitoring is recommended. Proactive actions may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action might be undertaken for reasons other than public health (e.g., seeking community acceptance, reducing costs, etc.). However, actions implemented *in lieu* of sampling will typically be expected to be captured in the final engineering report and site management plan, and might not rule out the need for post-implementation sampling (e.g., to document effectiveness or to support terminating the action).

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

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 0.20 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples and dirt floor soil vapor samples, a minimum reporting limit of 1 microgram per cubic meter is recommended.

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

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

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including but not limited to the following: the identified source of the volatile chemicals, the environmental remediation program, and analyte-specific, site-specific and building-specific factors.

Soil Vapor/Indoor Air Matrix B

May 2017

Analytes Assigned:
Tetrachloroethene (PCE), 1,1,1-Trichloroethane (111-TCA), Methylene Chloride

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)		
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 3	3 to < 10	10 and above
< 100	1. No further action	2. No Further Action	3. IDENTIFY SOURCE(S) and RESAMPLE or MITIGATE
100 to < 1,000	4. No further action	5. MONITOR	6. MITIGATE
1,000 and above	7. MITIGATE	8. MITIGATE	9. MITIGATE

No further action: No additional actions are recommended to address human exposures.

Identify Source(s) and Resample or Mitigate: We recommend that reasonable and practical actions be taken to identify the source(s) affecting the indoor air quality and that actions be implemented to reduce indoor air concentrations to within background ranges. For example, if an indoor or outdoor air source is identified, we recommend the appropriate party implement actions to reduce the levels. In the event that indoor or outdoor sources are not readily identified or confirmed, resampling (which might include additional sub-slab vapor and indoor air sampling locations) is recommended to demonstrate that SVI mitigation actions are not needed. Based on the information available, mitigation might also be recommended when soil vapor intrusion cannot be ruled out.

Monitor: We recommend monitoring (sampling on a recurring basis), including but not necessarily limited to sub-slab vapor, basement air and outdoor air sampling, to determine whether concentrations in the indoor air or sub-slab vapor have changed and/or to evaluate temporal influences. Monitoring might also be recommended to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined based on site-, building- and analyte-specific information, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

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

These general recommendations are made with consideration being given to the additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX B

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

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate analyte-specific, building-specific conditions (e.g., dirt floor in basement, crawl spaces, thick slabs, current occupancy, etc.), and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, collection of additional samples may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Mitigation might be recommended when the results of multiple contaminants indicate monitoring is recommended. Proactive actions may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action might be undertaken for reasons other than public health (e.g., seeking community acceptance, reducing costs, etc.). However, actions implemented *in lieu* of sampling will typically be expected to be captured in the final engineering report and site management plan, and might not rule out the need for post-implementation sampling (e.g., to document effectiveness or to support terminating the action).

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

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

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

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

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including but not limited to the following: the identified source of the volatile chemicals, the environmental remediation program, and analyte-specific, site-specific and building-specific factors.

Soil Vapor/Indoor Air Matrix C

May 2017

Analytes Assigned:
Vinyl Chloride

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)	
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 0.2	0.2 and above
< 6	1. No further action	2. IDENTIFY SOURCE(S) and RESAMPLE or MITIGATE
6 to < 60	3. MONITOR	4. MITIGATE
60 and above	5. MITIGATE	6. MITIGATE

No further action: No additional actions are recommended to address human exposures.

Identify Source(s) and Resample or Mitigate: We recommend that reasonable and practical actions be taken to identify the source(s) affecting the indoor air quality and that actions be implemented to reduce indoor air concentrations to within background ranges. For example, if an indoor or outdoor air source is identified, we recommend the appropriate party implement actions to reduce the levels. In the event that indoor or outdoor sources are not readily identified or confirmed, resampling (which might include additional sub-slab vapor and indoor air sampling locations) is recommended to demonstrate that SVI mitigation actions are not needed. Based on the information available, mitigation might also be recommended when soil vapor intrusion cannot be ruled out.

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These general recommendations are made with consideration being given to the additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX C

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

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate analyte-specific, building-specific conditions (e.g., dirt floor in basement, crawl spaces, thick slabs, current occupancy, etc.), and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, collection of additional samples may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Mitigation might be recommended when the results of multiple contaminants indicate monitoring is recommended. Proactive actions may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action might be undertaken for reasons other than public health (e.g., seeking community acceptance, reducing costs, etc.). However, actions implemented *in lieu* of sampling will typically be expected to be captured in the final engineering report and site management plan, and might not rule out the need for post-implementation sampling (e.g., to document effectiveness or to support terminating the action).

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

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 0.20 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples and dirt floor soil vapor samples, a minimum reporting limit of 1 microgram per cubic meter is recommended.

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

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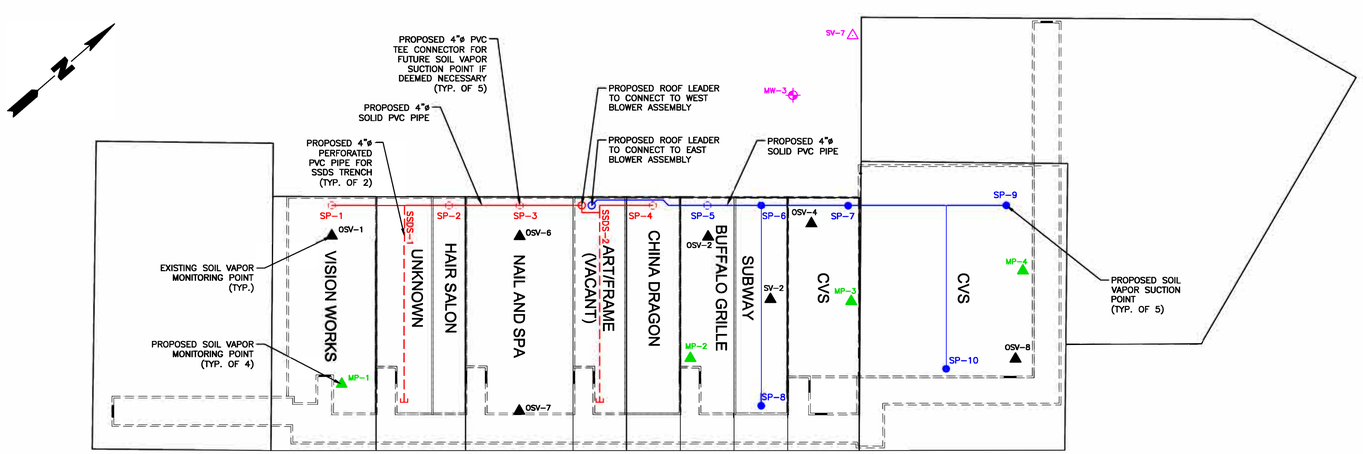
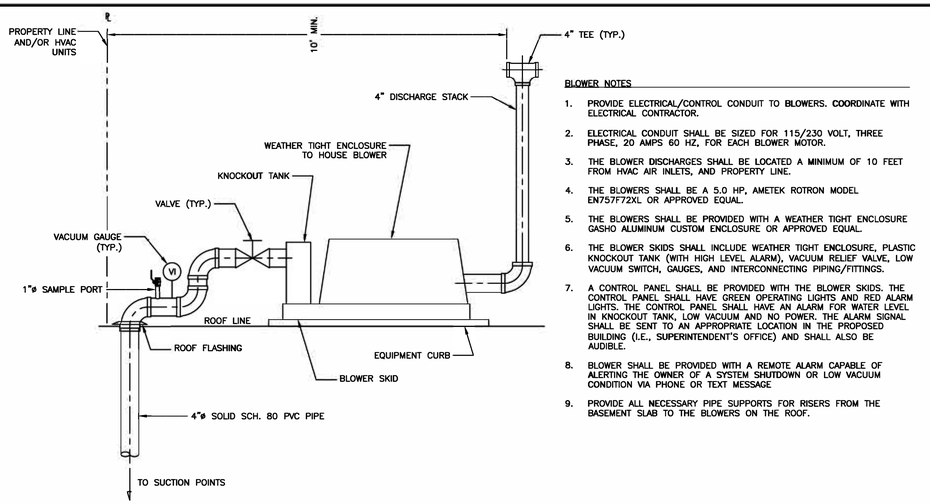
[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including but not limited to the following: the identified source of the volatile chemicals, the environmental remediation program, and analyte-specific, site-specific and building-specific factors.

APPENDIX B

Sub-Slab Depressurization System Design Drawings





BLOWER NOTES

1. PROVIDE ELECTRICAL/CONTROL CONDUIT TO BLOWERS. COORDINATE WITH ELECTRICAL CONTRACTOR.
2. ELECTRICAL CONDUIT SHALL BE SIZED FOR 115/230 VOLT, THREE PHASE, 20 AMPS 60 HZ, FOR EACH BLOWER MOTOR.
3. THE BLOWER DISCHARGES SHALL BE LOCATED A MINIMUM OF 10 FEET FROM HVAC AIR INLETS, AND PROPERTY LINE.
4. THE BLOWERS SHALL BE A 5.0 HP, AMETEK ROTRON MODEL EM757F72XL OR APPROVED EQUAL.
5. THE BLOWERS SHALL BE PROVIDED WITH A WEATHER TIGHT ENCLOSURE GASHO ALUMINUM CUSTOM ENCLOSURE OR APPROVED EQUAL.
6. THE BLOWER SKIDS SHALL INCLUDE WEATHER TIGHT ENCLOSURE, PLASTIC KNOCKOUT TANK (WITH HIGH LEVEL ALARM), VACUUM RELIEF VALVE, LOW VACUUM SWITCH, GAUGES, AND INTERCONNECTING PIPING/FITTINGS.
7. A CONTROL PANEL SHALL BE PROVIDED WITH THE BLOWER SKIDS. THE CONTROL PANEL SHALL HAVE GREEN OPERATING LIGHTS AND RED ALARM LIGHTS. THE CONTROL PANEL SHALL HAVE AN ALARM FOR WATER LEVEL IN KNOCKOUT TANK, LOW VACUUM AND NO POWER. THE ALARM SIGNAL SHALL BE SENT TO AN APPROPRIATE LOCATION IN THE PROPOSED BUILDING (I.E., SUPERINTENDENT'S OFFICE) AND SHALL ALSO BE AUDIBLE.
8. BLOWER SHALL BE PROVIDED WITH A REMOTE ALARM CAPABLE OF ALERTING THE OWNER OF A SYSTEM SHUTDOWN OR LOW VACUUM CONDITION VIA PHONE OR TEXT MESSAGE
9. PROVIDE ALL NECESSARY PIPE SUPPORTS FOR RISERS FROM THE BASEMENT SLAB TO THE BLOWERS ON THE ROOF.

4 TYPICAL BLOWER DETAIL

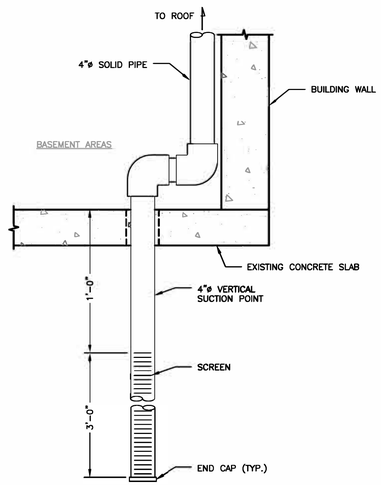
SCALE: NOT TO SCALE

LEGEND

- PROPOSED 4"ø PERFORATED PVC PIPE FOR SSDS TRENCH CONNECTED TO WEST BLOWER ASSEMBLY
- PROPOSED 4"ø SOLID PVC PIPE FOR SSDS HEADER CONNECTED TO WEST BLOWER ASSEMBLY
- PROPOSED 4"ø SOLID PVC PIPE FOR SSDS HEADER CONNECTED TO EAST BLOWER ASSEMBLY

SUB-SLAB DEPRESSURIZATION SYSTEM PLAN

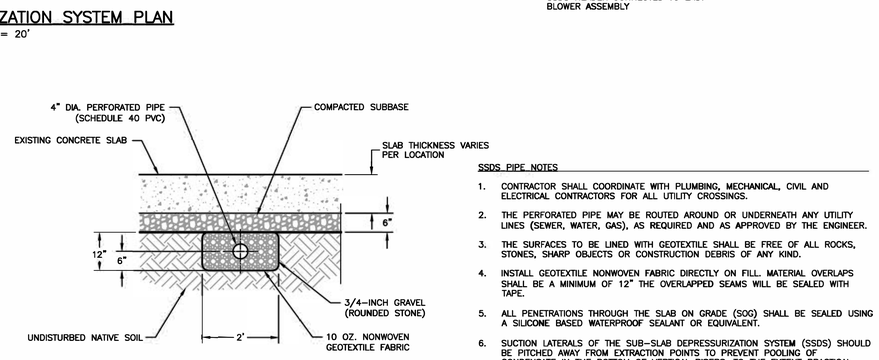
SCALE: 1" = 20'



SECTION VIEW

1 TYPICAL VERTICAL SUCTION POINT DETAIL

SCALE: NOT TO SCALE

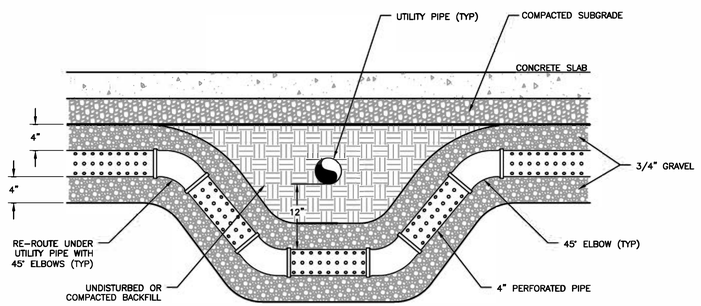


SSDS PIPE NOTES

1. CONTRACTOR SHALL COORDINATE WITH PLUMBING, MECHANICAL, CIVIL AND ELECTRICAL CONTRACTORS FOR ALL UTILITY CROSSINGS.
2. THE PERFORATED PIPE MAY BE ROUTED AROUND OR UNDERNEATH ANY UTILITY LINES (SEWER, WATER, GAS), AS REQUIRED AND AS APPROVED BY THE ENGINEER.
3. THE SURFACES TO BE LINED WITH GEOTEXTILE SHALL BE FREE OF ALL ROCKS, STONES, SHARP OBJECTS OR CONSTRUCTION DEBRIS OF ANY KIND.
4. INSTALL GEOTEXTILE NONWOVEN FABRIC DIRECTLY ON FILL. MATERIAL OVERLAPS SHALL BE A MINIMUM OF 12" THE OVERLAPPED SEAMS WILL BE SEALED WITH TAPE.
5. ALL PENETRATIONS THROUGH THE SLAB ON GRADE (SOG) SHALL BE SEALED USING A SILICONE BASED WATERPROOF SEALANT OR EQUIVALENT.
6. SUCTION LATERALS OF THE SUB-SLAB DEPRESSURIZATION SYSTEM (SSDS) SHOULD BE PITCHED AWAY FROM EXTRACTION POINTS TO PREVENT POOLING OF CONDENSATE IN THE BOTTOM OF VERTICAL RISERS, TO THE EXTENT PRACTICAL.

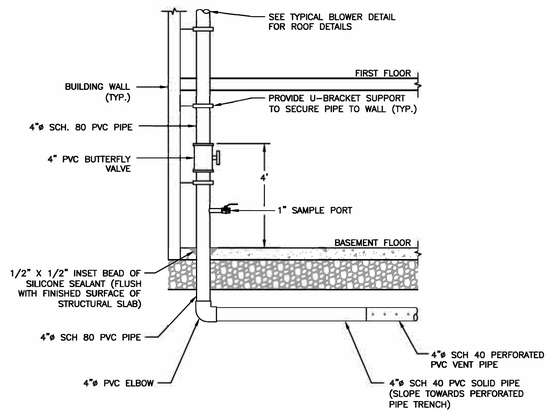
2 SUB-SLAB DEPRESSURIZATION SYSTEM PIPE DETAIL

SCALE: NOT TO SCALE



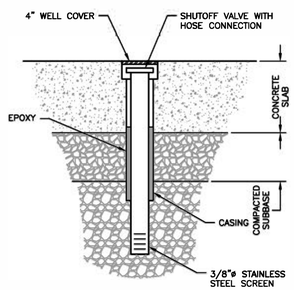
3 TYPICAL UTILITY PIPE CROSSING

SCALE: NOT TO SCALE



5 TYPICAL RISER DETAIL

SCALE: NOT TO SCALE



7 TYPICAL SOIL VAPOR MONITORING POINT DETAIL

SCALE: NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION	INT.
4	12AUG19	REMOVE SVE-1 AND REVISE DETAILS	D.E.K.
3	30APR19	ADD SSDS LATERAL NOTE	D.E.K.
2	19SEP18	ADD WELLS AND REVISE LAYOUT	D.E.K.
1	16AUG18	ADD SVE-1 AND REVISE DETAILS	D.E.K.

PROJ. ENGINEER: N.C.		DRAWN BY: D.E.K.	
DESIGNED BY: D.E.K.		CHECKED BY: N.C.	
DRAWING SCALE: AS SHOWN		PLOT SCALE: 1:1	
DRAWING DATE: 13JUN18		PRINT TYPE: B&W	
OFFICE: NY		PAPER SIZE: ARCH D	
PROJECT NO.: 2517.0001Y000			
DRAWING FILE: 2517.0001Y118.02 – REV 4.DWG			

ROUX
Roux Environmental Engineering & Geology, D.P.C.
209 SHAFTER STREET ISLANDIA NEW YORK 11749
(631) 232-2800

PROJECT NAME:
MORTON VILLAGE REALTY CO., INC.
1022 OLD COUNTRY ROAD, PLAINVIEW, NEW YORK

PROJECT FOR:
MORTON VILLAGE REALTY CO., INC.
1022 OLD COUNTRY ROAD, PLAINVIEW, NEW YORK

TITLE:
SUB-SLAB DEPRESSURIZATION SYSTEM PLAN AND DETAILS

DRAWING NO.
1
1 OF 1

APPENDIX C

Division of Air Resources (DAR 1) Screening Analysis

Division of Air Resources (DAR-1) Sceening Analysis

Table 1. Morton Village DAR-1 Screening Level Worksheet

998-1064 Old Country Road, Plainview, New York

Calculations based on maximum sub-slab sample results from the Former Cleaners, SV-1, 3/22/16 for PCE and OSV-4 on 3/21/17 for TCE and cis-12 DCE .

	µg/m3	PPMv
Tetrachloroethene (PCE) concentration:	18,800	2.727
Trichloroethene (TCE) concentration:	1,300	0.238
Dichloroethene (DCE) concentration:	1,590	0.394

Air flow rate (cubic feet per minute [cfm]): 360

Calculate Emission Rate in Pounds/Hour (lb/hr):

Flow Rate = 360 cfm

Emission Rate (lb/hr) = flow rate * concentration (PPMv) * molecular weight * 1.581E-07

Note that 1.581E-07 = $1/10^6$ ppm-v * 60 minutes/hour * 1 lb-mole/379.5 ft^3

Emission Rate for PCE (lb/hr) = 360 cfm * 2.727 PPMv * 165.8 * 1.581E-07 = **0.026 lb/hr or 225.4 lb/yr**

Emission Rate for TCE (lb/hr) = 360 cfm * 0.238 PPMv * 131.4 * 1.581E-07 = **0.002 lb/hr or 15.6 lb/yr**

Emission Rate for DCE (lb/hr) = 360 cfm * 0.394 PPMv * 97 * 1.581E-07 = **0.002 lb/hr or 19.1 lb/yr**

Standard Point Source Method (Appendix B – Division of Air Resources):

Hs (Height of Stack) = 25' Hb (Height of Building) = 15'

Hs/Hb = 1.67 >1.5 , but effluent will be released horizotally, so assume no reduction for plume rise

Therefore effective stack height = Hs, H_E= 25 feet

Calculate Maximum Annual Impact (Ca)

Ca (µg/m^3) = $6^* Q_a/H_E^{2.25}$

Q_a = Emission Rate in pounds per year calculated above

Ca for PCE (µg/m^3) = 0.97

Ca for TCE (µg/m^3) = 0.0669

Ca for DCE (µg/m^3) = 0.0819

Calculate Maximum Potential Annual Impact (Cp)

Cp (µg/m^3) = $52{,}500^*Q/H_E^{2.25}$ 1.66667

Q = Emission Rate in pounds per hour calculated above

Cp for PCE (µg/m^3) = 0.97

Cp for TCE (µg/m^3) = 0.0668

Hs/Hb = 1.67 >1.5 , but effluent will be released horizotally, so assume no reduction for plume rise

AGC for PCE = 4.0 µg/m^3	Ca for PCE =	0.97	< 4	OK
AGC for TCE = 0.2 µg/m^3	Ca for TCE =	0.07	< 0.2	OK
AGC for DCE = 63.0 µg/m^3	Ca for DCE =	0.08	< 63	OK

Calculate Maximum Short Term Impact (Cst)

Cst (µg/m^3) = Cp * 65

Cst for PCE (µg/m^3) = 62.84

Cst for TCE (µg/m^3) = 4.35

SGC for PCE = 300 µg/m^3	Cst for PCE =	62.84	< 300	OK
SGC for TCE = 20 µg/m^3	Cst for TCE =	4.35	< 20	OK

There is no SGC for DCE.

Since Ca for PCE and TCE are less than their respective AGC values,
no vapor phase carbon units are necessary.

APPENDIX D

Sub-Slab Depressurization System Component Specifications

Gasho
SINCE 1982
The Leader in Blower & Vacuum Solutions

Submittal Documentation

For:
ROUX Associates, Inc.
209 Shafter Street
Islandia, NY 11749

Gasho Custom Package Utilizing AMETEK Blower Model EN757F72XL, Dilution Valve, Moisture Separator GX100 Control Panel and Custom Sound Enclosure

Gasho, Inc.
460 West Gay Street
West Chester, PA 19380

JG18E-180615JLG.1

June 28, 2018

Gasho, Inc.
JG18E
REGEN BLOWER PACKAGE

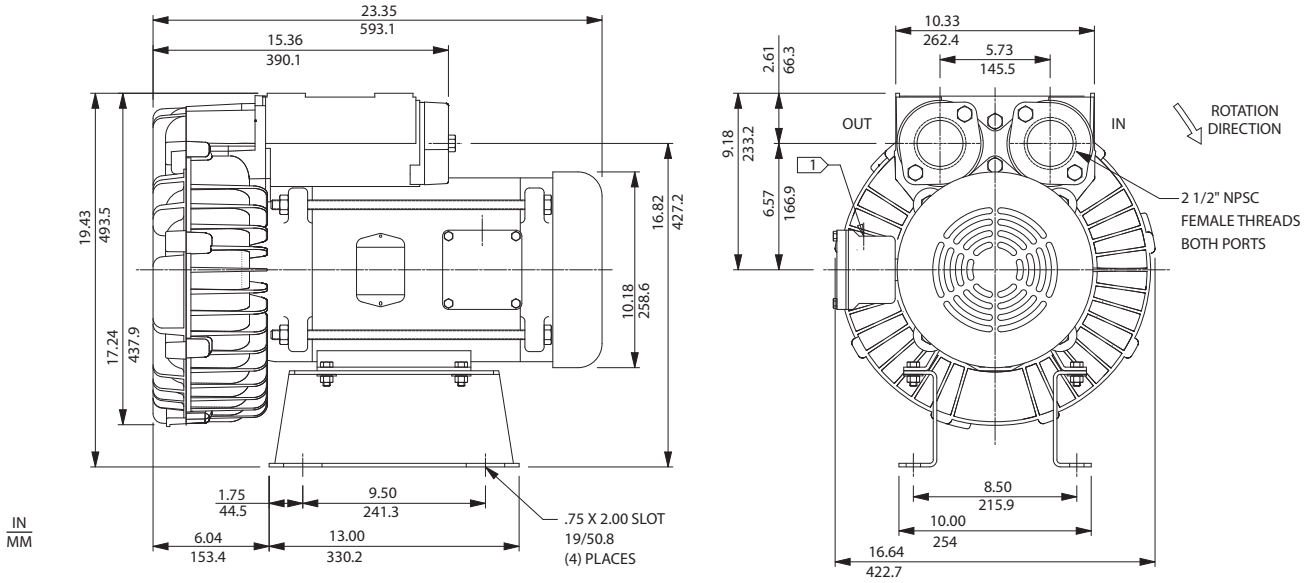
	Description	Date	Revision
			A

Item	Qty.	Supplier	Description	Gasho P/N	Part Number	Misc ID	Weight			
1	1	Ametek Rotron	Regenerative Blower	. BLW-EN757F72XL-0000	EN757F72XL	#08333 2 1/2"	158		81959	6/28/2018
2	1	Gasho	Base Weldment - Gasho Blue Enamel		1100-C-0754		200		81925	22-Jun
2.1	1	Gasho	Control Box Support				39			
3.1	1	McMaster	Camlock, 3"			3"FNPTX3" Male	3		81967	6/28/2018
4	1	Westwood	2." Dilution Valve	. FS-WS-2.0-P-0000	EMSP-2		8		81962	6/28/2018
4.1	1	Apollo	2." Ball Valve	. VBL-2.00-BT-0000			2	stock	stock	
5	1	Fisher	1" Relief Valve	. RV-1.00-B-S-0000	289H-41		6	stock	stock	
6	2	Gasho	Vacuum Gauges	. GV-2.5-0-060WC-0000	25.0.012.HG.160.IWC			stock	stock	
7	1	Gasho	Pressure Gauge	. GP-2.5-0-06PSI/160WC	25.0.006.PSI.160.IWC			stock	stock	
8	3	SMC Specialties	Isolation Valves	. VIS-0.25-FM-B-0000	VA BRS 025-4F4M-BT			stock	stock	
9	1	Gasho	Moisture Separator		GX-100		150	stock	stock	
9.1	1	Gasho	MS Lid			3" FNPT half coupling	10	stock	stock	
9.2	1	Jaeger	Tri-Paks			MS Media	9	stock	stock	
9.3	1	Dwyer	Liquid level switch	. SW-L7-1.0-BSR-0100	L6-EPB-B-S-3-0		2	stock	stock	
9.4	1	Oil Rite	Sight Gauge	. GS-12-0000	B1559-1-12		3	stock	stock	
9.4.1	2	Oil Rite	Adapters	. ARC0.38X0.25-9000	ARCO.38X0.25-9000	B3565-22, ADP 3/8 MNPT		stock	stock	
9.5	1	Cooney	4" cap			Clean out	4	stock	stock	
9.6	1	Apollo	1" ball valve	.VBL-1.00-BT-0000	77-105-01	Drain	3	stock	stock	
10	1	McMaster	Guzzler Hand Pump	. MSP-10-1.00-0000	4332K17		4	stock	stock	
11		ICP	Control Panel			230v/3ph	150		81804	released 6/28
12		Dwyer	Low Vacuum Switch		1950-P					
			autodailer with Verizon						81804	released 6/28
		Gasho	Enclosure	42:Lx32"Wx39"H			751			

EN 757 Single-Phase and CP Options

ROTRON®

Sealed Regenerative Blower w/Explosion-proof Motor



NOTES
1 TERMINAL BOX CONNECTOR HOLE 3/4" NPT FEMALE THREAD.
2 DRAWING NOT TO SCALE, CONTACT FACTORY FOR SCALE CAD DRAWING.
3 CONTACT FACTORY FOR BLOWER MODEL LENGTHS NOT SHOWN.

		Part/Model Number	
		EN757FL5MWL	CP757FX5MWLR
Specification	Units	081333	080616
Motor Enclosure - Shaft Mtl.	-	Explosion-proof-CS	CHEM XP-SS
Horsepower	-	5.5	5.5
Phase - Frequency	-	Single-60 hz	Single-60 hz
Voltage	AC	230	230
Motor Nameplate Amps	Amps (A)	21.7	21.7
Max. Blower Amps	Amps (A)	29.9	29.9
Locked Rotor Amps	Amps (A)	155	155
Service Factor	-	1	1
Starter Size	-	1.0	1.0
Thermal Protection	-	Class B - Pilot Duty	Class B - Pilot Duty
XP Motor Class - Group	-	I-D	I-D
Shipping Weight	Lbs	158	158
	Kg	71.7	71.7

Voltage - ROTRON motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both: **208-230/415-460 VAC-3 ph-60 Hz** and **190-208/380-415 VAC-3 ph-50 Hz**. Our dual voltage 1 phase motors are factory tested and certified to operate on both: **104-115/208-230 VAC-1 ph-60 Hz** and **100-110/200-220 VAC-1 ph-50 Hz**. All voltages above can handle a ±10% voltage fluctuation. Special wound motors can be ordered for voltages outside our certified range.

Operating Temperatures - Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F rated motors or 120°C for Class B rated motors. Blower outlet air temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

Maximum Blower Amps - Corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

XP Motor Class - Group - See Explosive Atmosphere Classification Chart in Section I

AMETEK DYNAMIC FLUID SOLUTIONS
75 North Street, Saugerties, NY 12477
USA: +1 215-256-6601 - Europe: +49 7703 930909 - Asia: +86 21 5763 1258
Customer Service Fax: +1 215.256.1338
www.ametekdfs.com

AMETEK®
PRECISION MOTION CONTROL
DYNAMIC FLUID SOLUTIONS

EN 757 Single-Phase and CP Options

ROTRON®

Sealed Regenerative Blower w/Explosion-proof Motor

FEATURES

- Manufactured in the USA - ISO 9001 and NAFTA compliant
- Maximum flow: 310 SCFM
- Maximum pressure: 80 IWG
- Maximum vacuum: 75 IWG
- Standard motor: 5.0 HP, explosion-proof
- Cast aluminum blower housing, impeller , cover & manifold; cast iron flanges (threaded); teflon® lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

MOTOR OPTIONS

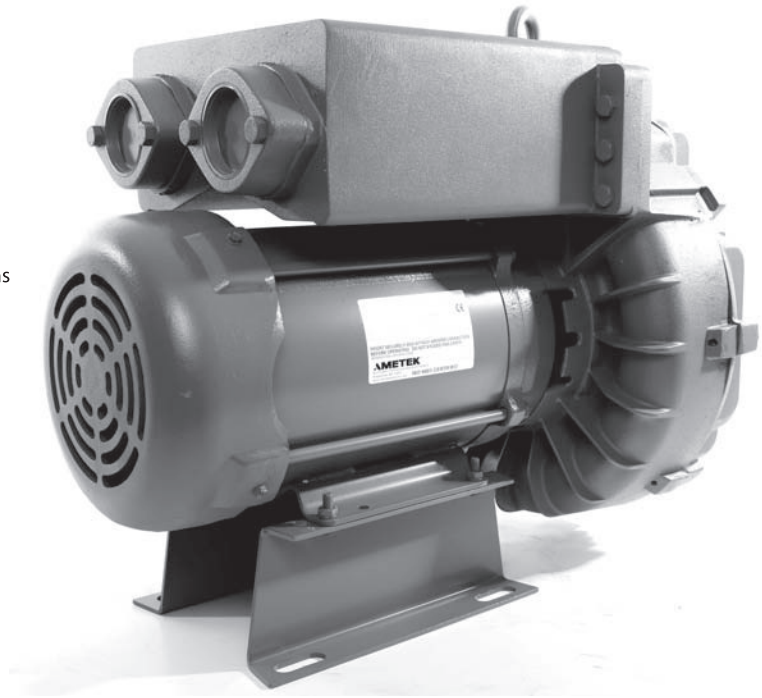
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

BLOWER OPTIONS

- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

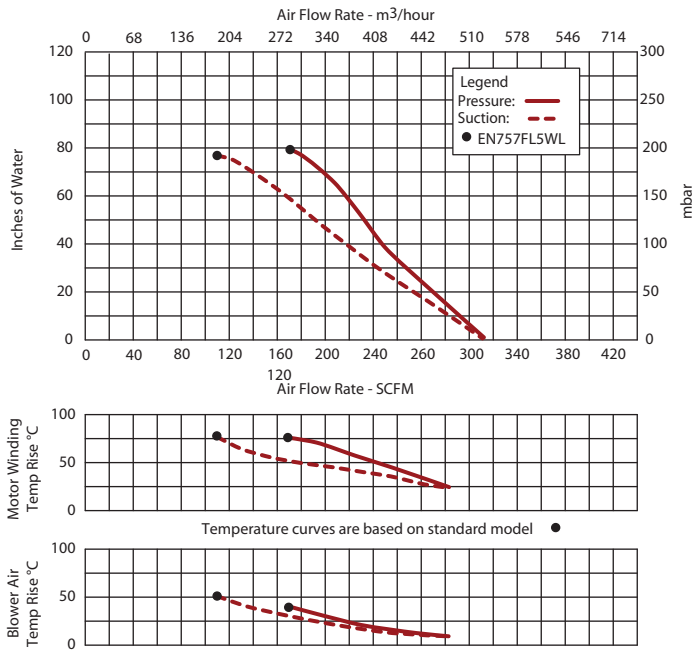
ACCESSORIES

- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges, & relief valves
- Switches - air flow, pressure, vacuum, or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)
- Variable frequency drive package



Blower Performance at Standard Conditions

60 Hz



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75 North Street, Saugerties, NY 12477
USA: +1 215-256-6601 - Europe: +49 7703 930909 - Asia: +86 21 5763 1258
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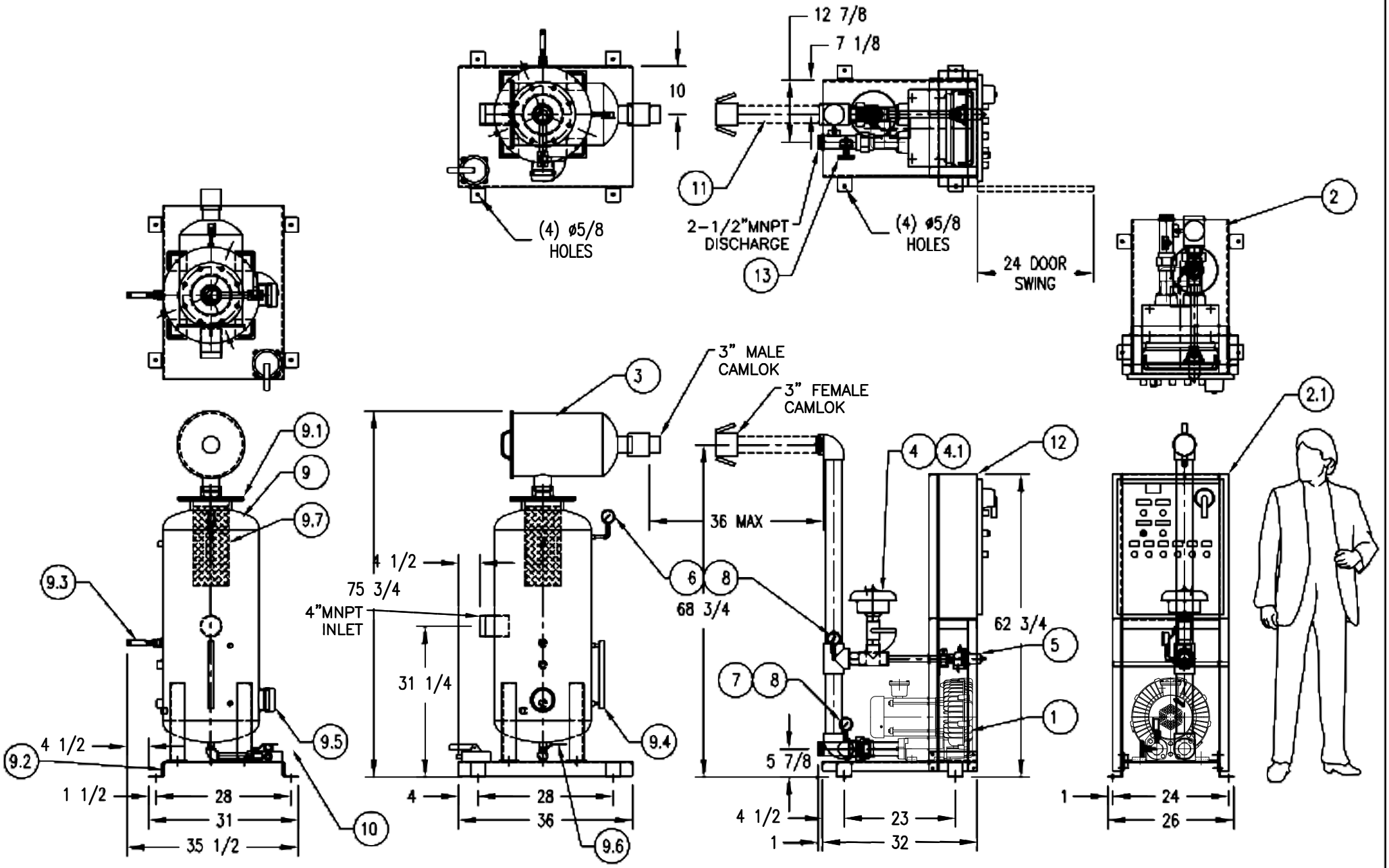


NOTES:
1. CUSTOMER PIPING TO BE INDEPENDENTLY SUPPORTED
2. TOLERANCE ± 1/2"
3. (DIM) ARE CRITICAL DIMENSIONS

REV.	DATE	DESCRIPTION

DRAWN BY: JJH
DATE: 6/1/18
APPROVED BY:
DATE:
DIMENSIONS IN INCHES
SCALE: NA
TOLERANCE: ±1/2"
ANGULAR TOLERANCE:
MATERIAL:
WEIGHT: 850
SHEET 1 OF 1

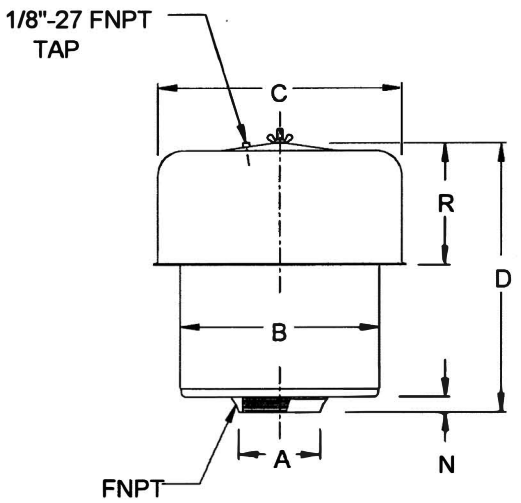
J.E.GASHO & Assoc., Inc.
460 W. GAY ST.
WEST CHESTER, PENNSYLVANIA 19380

ENVIRONMENTAL BLOWER PACKAGE, EN757 5HP M. SEPARATOR, PANEL

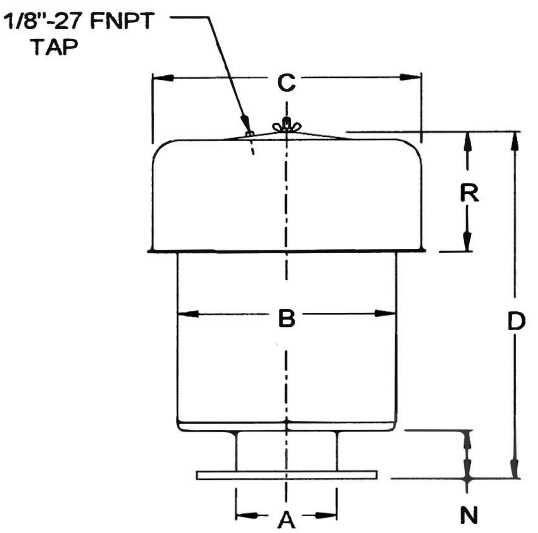
JG18-E-3264 | –

Air Intake Filter/Silencers

Model EMS - Series



1" to 4" Female NPT Connection
(4" flange connection available upon requrest)



5" and Larger-125/150# ANSI Drilled Plate Flange
(5" FNPT connection available upon request)

									Element Model Number		
Model No.	A	C	B	D	N	R	Weight	CFM	Paper	Felt	Wire
EMS-1	1	9 1/2	6 5/8	5 3/8	9/16	2 1/4	8	35	P-642	F-642	W-642
EMS-125	1 1/4	9 1/2	6 5/8	5 3/8	9/16	2 1/4	8	35	P-642	F-642	W-642
EMS-15	1 1/2	9 1/2	6 5/8	5 3/8	9/16	2 1/4	8	75	P-642	F-642	W-642
EMS-2	2	9 1/2	6 5/8	5 7/16	5/8	2 1/4	8	120	P-642	F-642	W-642
EMS-25	2 1/2	14 7/8	12	11 7/8	13/16	4 7/16	20	200	P-974	F-974	W-974
EMS-3	3	14 7/8	12	13 5/8	13/16	4 7/16	20	275	P-974	F-974	W-974
EMS-35	3 1/2	14 7/8	12	13 5/8	13/16	6 7/16	25	375	P-976	F-976	W-976
EMS-4	4	14 7/8	12	13 5/8	1	6 7/16	25	500	P-976	F-976	W-976
EMS-5	5	14 7/8	12	25 1/2	3	7 3/8	36	750	P-1197	F-1197	W-1197
EMS-6	6	22	18	26 1/4	3	8 5/8	53	1100	P-13118	F-13118	W-13118
EMS-8	8	22	18	25	3	10 3/4	70	2200	P-171310	F-171310	W-171310
EMS-10	10	22	18	25	3	10 3/4	95	3000	P-171310	F-171310	W-171310
EMS-12	12	22	18	25	3	10 3/4	108	4300	P-171310	F-171310	W-171310
EMS-14	14	30	24	40	4	15 3/4	180	5900	P-231914	F-231914	W-231914
EMS-16	16	30	24	40	4	15 3/4	190	7700	P-231914	F-231914	W-231914

- When ordering specify paper (P); felt (F) or wire mesh (W) filter element.
- 1 inch to 4 inch standard female NPT connection; 4 inch flange connection available upon request
- 5 inch to 16 inch standard 125/150# ANSI drilled plate flange connection; 5 inch female NPT connection available upon request

Dimensions in inches, weights in pounds. Dimensions and weights are nominal and may vary slightly with production models. Request certified drawings for exact dimensions.

Westwood Equipment· Sales@WestwoodEquipment.com • Temecula, CA 92592 •Phone (951) 303-3538 • Fax (866) 467-5412

Gasho
SINCE 1982
The Leader in Blower & Vacuum Solutions
460 West Gay Street
West Chester, PA 19380
610-692-5650 Fax 610-692-5837
cs@gasho.org

Gasho Replacement Inlet Filter Elements

High quality replacement elements are available for the filters of various manufactures used on packages built by Gasho.
Paper elements are normally used in inlet filters and replaced when they are dirty.
Polyester elements are cleanable.

Filter Size, In.	Gasho Filter #	Box Quantity	O.D.	I.D.	Ht.	List Price
1	GA-0470	6	5-13/16	4	2	$17.00
2	GA-0471	6	5-13/16	4	2-1/2	$17.00
2.5-3	GA-0472	2	9-3/4	7-1/4	4	$23.00
4	GA-1063	2	9-3/4	7-1/4	6	$27.00
5	GA-0474	1	11-1/2	9-7/8	7	$35.00
6	GA-0475	1	13-5/8	11-5/8	8-5/8	$53.00
8-12	GA-1163	1	17	13	10	$185.00

GA-0471 Elements are frequently used to replace GA -0470

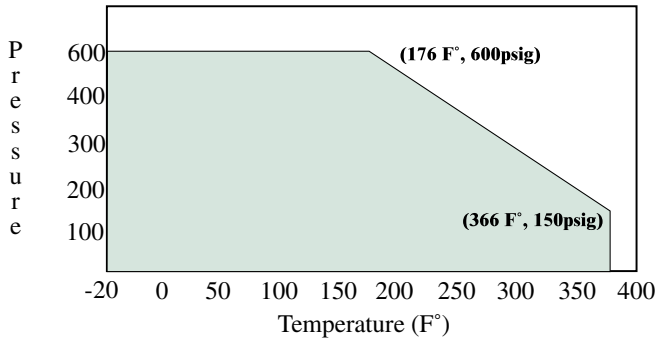
Manufacturer Cross Reference

Gasho Filter #	Universal Filter #	EM Prod. Filter #	Full-On Filters #	Solberg #
GA-0470	81-0470		FOF810470	32-00
GA-0471	81-0471	P-642	FOF810471	32-02
GA-0472	81-0472	P-974	FOF810472	32-04
GA-1063	81-1063	P-976	FOF811063	32-06
GA-0474	81-0474	P-1197	FOF810474	32-08
GA-0475	81-0475	P-13118	FOF810475	32-10
GA-1163	81-1163	P-171310	FOF811163	32-12

Standards Compliance

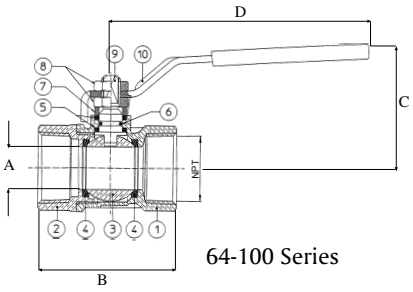
IPG's 64 series brass ball valves comply with the latest editions of these published standards:

- AGA Z21.15.CGA9.1
- AGA No. 3-88
- ANSI B1.20.1
- ANSI B16.18
- CAN/CGA-3.16-M88
- ASME/ANSI B16.33
- ASME/ANSI B16.38
- MSS SP-110
- UL Guide YSDT
- UL Guide YRPV
- UL Guide VQGU
- FM APPROVED

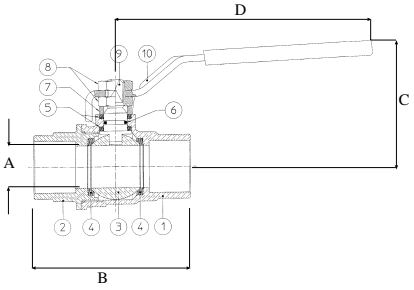


Materials of Construction

Description	Materials
1. Body	Brass UNI 5705-65
2. Retainer	Brass UNI 5705-65
3. Ball	Brass UNI 5705-65
4. Seats	PTFE
5. Stem Seals	PTFE
6. O-Ring	NBR 75 Shore A
7. Packing Gland	Brass UNI 5705-65
8. Nut	Plated Steel
9. Stem	Brass UNI 5705-65 Cr Plated
10. Lever Handle	Plated Steel 1/4" - 2" Models Aluminum 2 1/2" - 4" Models



64-100 Series



Optional Kits

Valve Size	Locking Handle	Stem Extensions	Balancing Stops
1/4", 3/8" & 1/2"	78-1659-01	78-1501-0	78-1506-01
3/4" & 1"	78-1660-01	78-1502-0	78-1507-01
1-1/4" & 1-1/2"	78-1661-01	78-1503-0	78-1508-01
2"	78-1662-01	78-1504-0	78-1509-01
2-1/2" & 3"	-	78-1505-0	78-1510-01

NOTE: Specify (-07) suffix for T-Handle i.e. 64-105-07.

64-100 Dimensional Data

Size	Part No.	A	B	C	D	(Cv)
1/4" NPT	64-101-01	0.39	2.02	1.75	3.85	6
3/8" NPT	64-102-01	0.39	2.02	1.75	3.85	7
1/2" NPT	64-103-01	0.59	2.44	1.88	3.85	19
3/4" NPT	64-104-01	0.78	2.71	2.28	4.80	34
1" NPT	64-105-01	0.98	3.07	2.44	4.80	50
1-1/4" NPT	64-106-01	1.25	3.42	3.07	6.02	104
1-1/2" NPT	64-107-01	1.57	3.89	3.34	6.02	268
2" NPT	64-108-01	1.96	4.33	3.79	6.37	309
2-1/2" NPT	64-109-01	2.56	5.59	5.02	8.07	629
3" NPT	64-100-01	3.15	6.45	5.45	8.07	1018
4" NPT	64-10A-01	3.94	7.60	6.34	10.23	1622

64-200 Dimensional Data

Size	Part No.	A	B	C	D	(Cv)
1/2"	64-203-01	0.59	2.53	1.88	3.85	19
3/4"	64-204-01	0.78	2.99	2.28	4.80	34
1"	64-205-01	0.98	3.58	2.44	4.80	50
1-1/4"	64-206-01	1.25	4.09	3.07	6.02	104
1-1/2"	64-207-01	1.57	4.56	3.34	6.02	268
2"	64-208-01	1.96	5.43	3.79	6.37	309
2-1/2"	64-209-01	2.56	6.93	5.02	8.07	629
3"	64-200-01	3.15	8.09	5.45	8.07	1018

APOLLO INTERNATIONAL
A Division of Conbraco Industires, Inc.

P.O. Box 247
Matthews, NC 28106

(704) 841-6000
Fax: (704) 841-6020
http://www.conbraco.com

Your local Conbraco distributor is:

PHFL64S 4/02
CG 7.5M

February 2012

289 Series Spring-Loaded Relief Valves

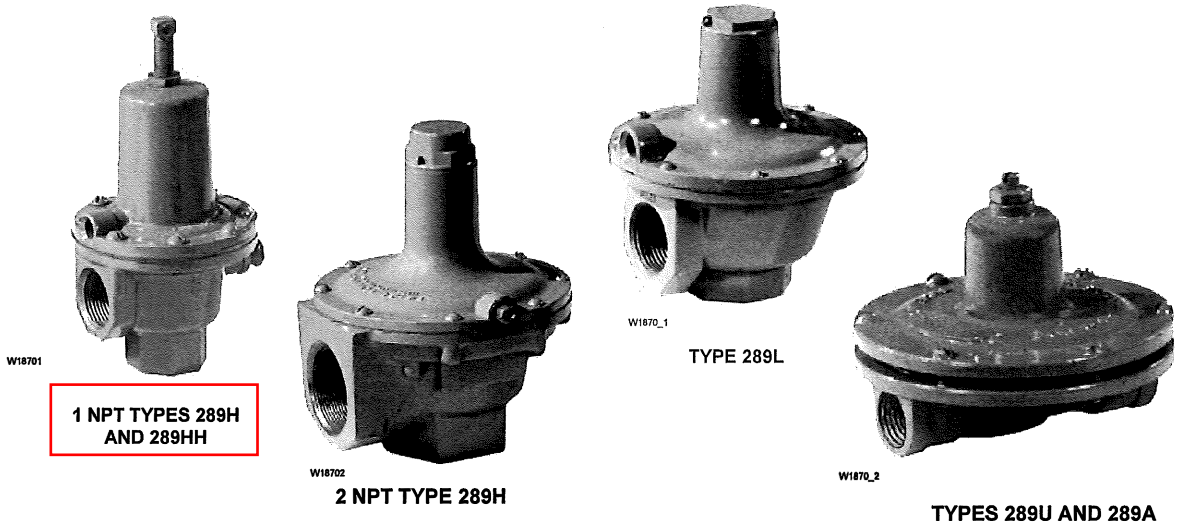


Figure 1. *Types 289H, 289L, and 289U Relief Valves*

Introduction

The 289 Series relief valve is a throttling relief valve used downstream of pressure regulators to protect the downstream system from overpressure. A smooth throttling action minimizes pressure surges in the system during emergency operation. These relief valves are available in 1/4, 3/4, 1, or 2 NPT sizes with spring ranges (relief pressure settings) from 5-inches w.c. to 75 psig / 12 mbar to 5.2 bar.

All sizes above 1/4 NPT feature a pitot tube booster (Figure 1) for achieving the highest possible relief capacity with a minimum buildup of system pressure. When the valve is opening, high gas velocity through the orifice creates an area of relatively low pressure near the end of the pitot tube. This pitot tube effect forms a partial vacuum above the diaphragm which helps to open the valve.

The relief valve diaphragm functions as a valve disk to control flow in all types except the Types 289H and 289HH, which use O-ring seats. The Nitrile (NBR) or Neoprene (CR) seating surfaces provide tight shutoff. The 289 Series relief valves are ideal for low-pressure settings due to the increased sensitivity provided by the large diaphragm area.

Features

- **Throttling Type Relief**—Smooth, sensitive throttling action minimizes pressure surges.
- **High Flow Rates**—As shown by the Figure 3 capacity curves, high flow rates can be achieved with minimum pressure buildup due to the boosting system which increases the relief valve opening.
- **Small Size**—The 289 Series relief valves are small and compact, making them suitable for areas limited in space.
- **Reliability Due to Simplicity**—A single internal assembly decreases the possibility of mechanical failure.

D100154X012

Specifications

Available Configurations

Type 289A: 1/4 NPT spring-loaded relief valve for relief pressure settings of 3 to 22 psig / 0.21 to 1.5 bar, two spring ranges

Type 289H: 1 or 2 NPT spring-loaded relief valve for relief pressure settings of 1 to 50 psig / 0.07 to 3.4 bar four spring ranges, in the 1 NPT and of 7-inches w.c. to 10 psig / 17 mbar to 0.69 bar, four spring ranges, in the 2 NPT

Type 289HH: 1 NPT spring-loaded relief valve for relief pressure settings of 45 to 75 psig / 3.1 to 5.2 bar

Type 289L: 3/4 or 1 NPT spring-loaded relief valve for relief pressure settings of 10 to 40-inches w.c. / 25 to 99 mbar, two spring ranges

Type 289U: 1/4 NPT spring-loaded relief valve for relief pressure settings of 5-inches w.c. to 3 psig / 12 mbar to 0.21 bar, two spring ranges

Inlet Connections

Type 289L: 3/4 or 1 NPT

Types 289A and 289U: 1/4 NPT

Type 289H: 1 or 2 NPT

Type 289HH: 1 NPT

Outlet (Vent) Connections

Same size as inlet connection

Maximum Allowable Relief (Inlet) Pressure[1] and Maximum Relief Set Pressure

See Table 1

Capacity Data

See Figure 3

Standard Construction Materials

Valve Body and Spring Case

Types 289A and 289U: Zinc
Types 289H (1 NPT), 289HH, and 289L: Aluminum
Type 289H (2 NPT): Cast iron body with Aluminum spring case

Diaphragm

Type 289A: Neoprene (CR)
Types 289H and 289HH: Nitrile (NBR) or Fluorocarbon (FKM)
Types 289L and 289U: Nitrile (NBR)

Standard Construction Materials (continued)

Orifice

Types 289A and 289L: Aluminum
Type 289H (2 NPT Only): Brass or Stainless steel

O-Ring Seat (Types 289H and 289HH Only):

Nitrile (NBR) or Fluorocarbon (FKM)[2]

O-Ring Seat Holder and Washer (1 NPT Types 289H and 289HH Only):

Aluminum

Seat Washer (2 NPT Type 289H Only):

Stainless steel

Pitot Tube

Types 289H, 289HH (1 NPT), and 289L: Aluminum*Type 289H (2 NPT):* Brass or Stainless steel

Gaskets

Type 289L: Neoprene (CR)
All Others: Composition

Spring: Zinc-plated steel

Diaphragm Plate

Types 289A and 289U: Zinc
All Others: Zinc-plated steel

Closing Cap

Type 289L: Plastic, Aluminum, or Zinc
Type 289H (2 NPT): Zinc

Temperature Capabilities[1]

With Nitrile (NBR) and Neoprene (CR) Elastomer:
-20° to 150°F / -29° to 66°C

With Fluorocarbon (FKM):
20° to 300°F / -7° to 149°C
Available with Types 289H and 289HH only

Approximate Weights

Types 289A and 289U: 0.75 pounds / 0.3 kg

Type 289H

1 NPT: 4 pounds / 2 kg
2 NPT: 15 pounds / 7 kg

Type 289HH: 4 pounds / 2 kg

Type 289L: 15 pounds / 7 kg

Options

- Polytetrafluoroethylene (PTFE) diaphragm protector (Types 289A and 289U only)
- Wire-seal on closing cap (1 NPT Type 289L only)

1. The pressure/temperature limits in this Bulletin and any applicable standard limitation should not be exceeded.
2. Bubble-tight shutoff cannot be attained at settings below 5 psig / 0.35 bar with Fluorocarbon (FKM) O-ring seat.

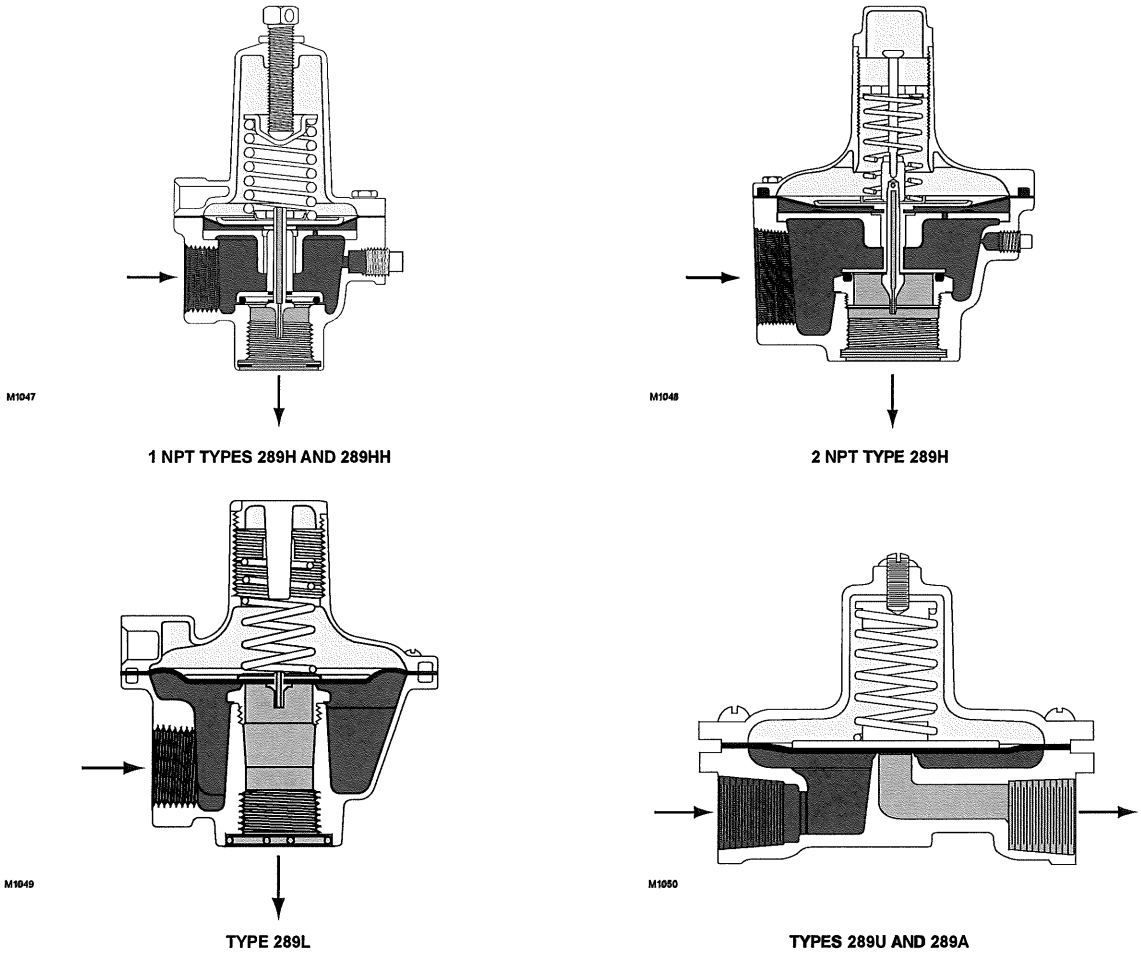
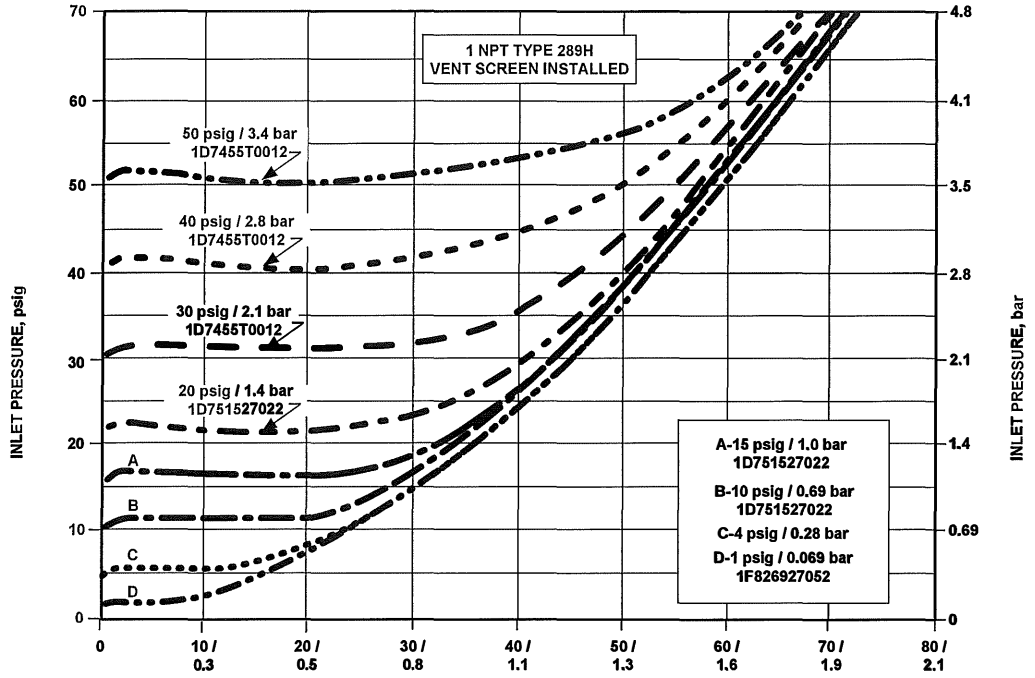


Figure 2. *Types 289H, 289L, and 289U Operational Schematics*

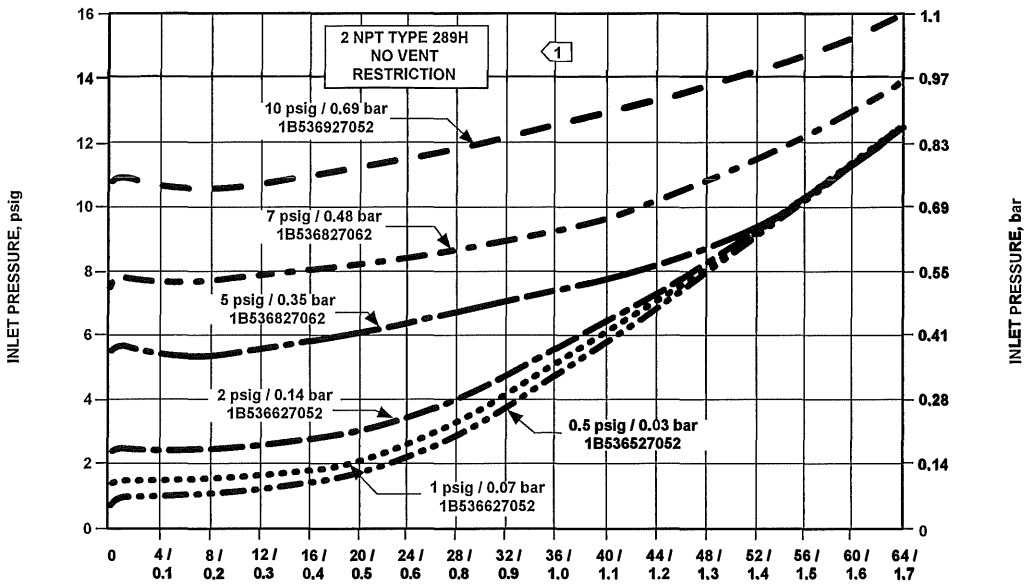
Table 1. *Maximum Allowable Relief (Inlet) Pressure*

AVAILABLE CONFIGURATION	BODY SIZE, NPT	SPRING PART NUMBER	COLOR CODE	SPRING RANGE (RELIEF PRESSURE SETTINGS)		MAXIMUM ALLOWABLE RELIEF (INLET) PRESSURE[1]	
Type 289A	1/4	0Z056327022 1B268227022	Silver Silver	3 to 13 psig 11 to 22 psig	0.21 to 0.90 bar 0.76 to 1.5 bar	45 psig	3.1 bar
Type 289H	1	1F826927052 1D892327022 1D751527022 1D7455T0012	Pink Red Silver Green	1 to 4.5 psig 4 to 15 psig 10 to 20 psig 15 to 50 psig	0.07 to 0.31 bar 0.28 to 1.0 bar 0.69 to 1.4 bar 1.0 to 3.5 bar	100 psig	6.9 bar
	2	1B536527052 1B536627052 1B536827062 1B536927052	Dark Blue Gray Dark Green Red Stripe	7 to 18-inches w.c. 0.5 to 2.25 psig 1.75 to 7 psig 4 to 10 psig	17 to 45 mbar 0.03 to 0.16 bar 0.12 to 0.48 bar 0.28 to 0.69 bar	25 psig	1.7 bar
Type 289HH	1	1D7455T0012	Green	45 to 75 psig	3.1 to 5.2 bar	100 psig	6.9 bar
Type 289L	3/4 or 1	13A7917X012 13A7916X012	Silver Red Stripe	10 to 18-inches w.c. 12 to 40-inches w.c.	25 to 45 mbar 30 to 99 mbar	7 psig	0.48 bar
Type 289U	1/4	0V060227022 0F058227022	Silver Silver	5 to 25-inches w.c. 20-inches w.c. to 3 psig	12 to 62 mbar 50 to 207 mbar	10 psig	0.69 bar

1. This value indicates the relief pressure setting plus pressure build-up.



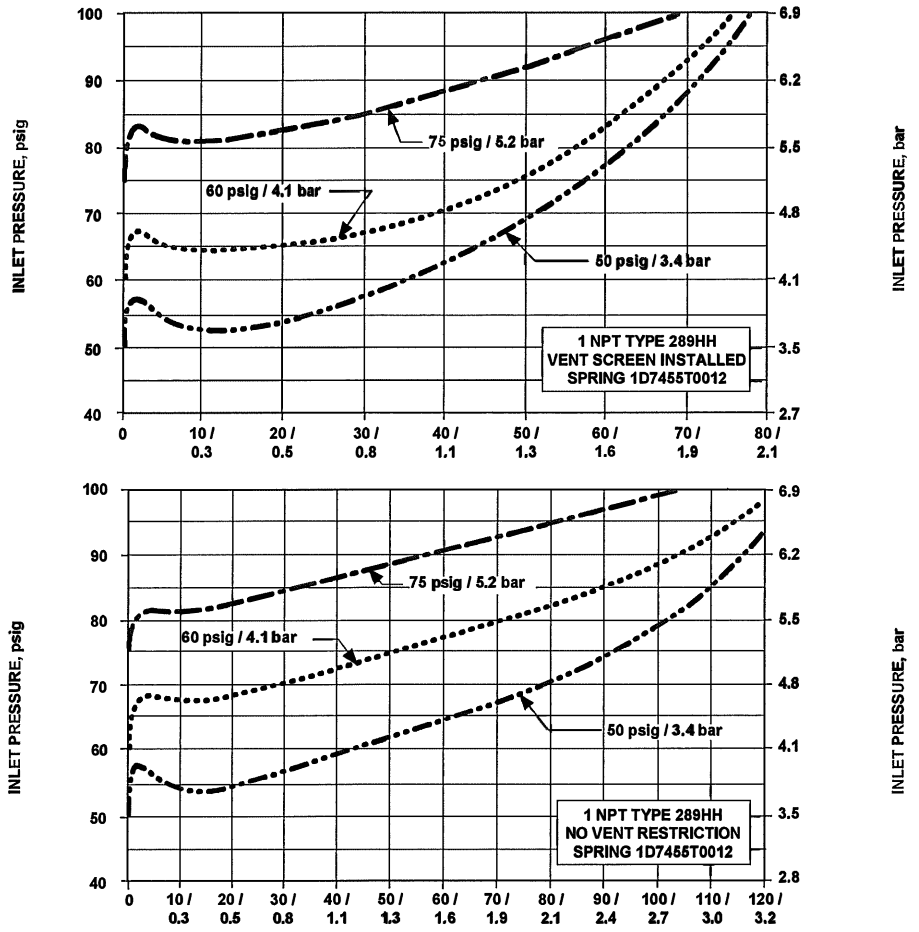
CAPACITIES IN THOUSANDS OF SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS AT 14.7 psia AT 60°F / 1.01325 bar AT 0°C



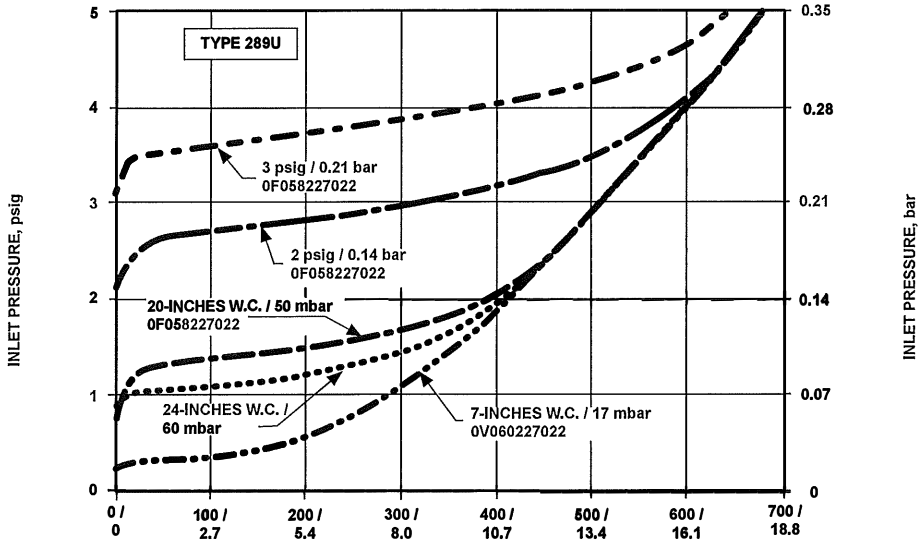
CAPACITIES IN THOUSANDS OF SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS AT 14.7 psia AT 60°F / 1.01325 bar AT 0°C

NOTE:
1. LESS THAN A 5% CAPACITY LOSS CAN BE EXPECTED WITH THE VENT SCREEN INSTALLED ON THE 2 NPT TYPE 289H AT MAXIMUM FLOW.
2. WHEN SELECTING ANY RELIEF VALVE FOR INSTALLATION DOWNSTREAM OF THE REGULATOR, THE CAPACITY OF THE RELIEF VALVE SHOULD BE COMPARED WITH THE WIDE-OPEN CAPACITY OF THE REGULATOR.
3. BUBBLE POINT RELIEF SETTING AND SPRING PART NUMBER ARE NOTED ON EACH CURVE.
4. TO CONVERT TO EQUIVALENT CAPACITIES OF OTHER GASES, MULTIPLY VALUES OBTAINED FROM CURVE BY THE FOLLOWING FACTORS: AIR–0.78, PROPANE–0.628, BUTANE–0.548, NITROGEN–0.789.

Figure 3. Capacity Curves



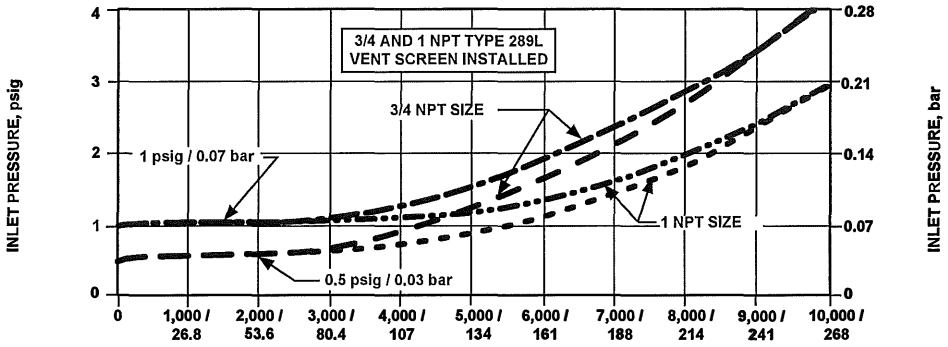
CAPACITIES IN THOUSANDS OF SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS AT 14.7 psia AT 60°F / 1.01325 bar AT 0°C



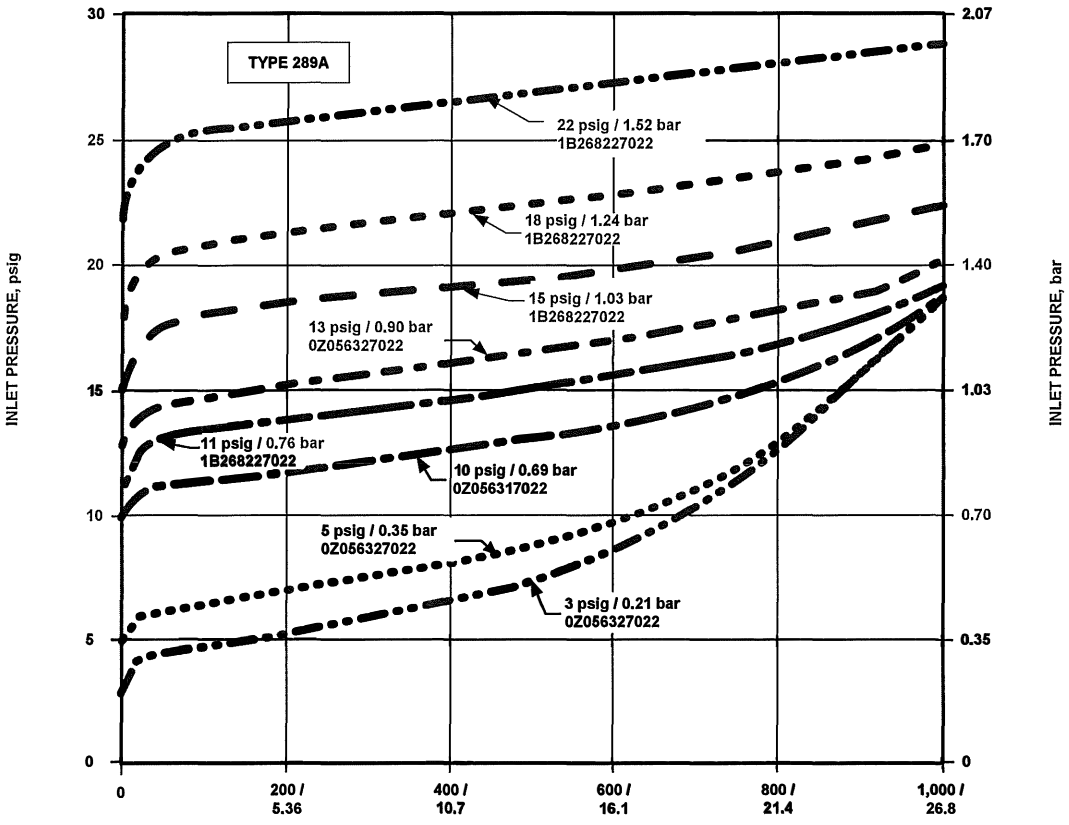
CAPACITIES IN 0.6 SPECIFIC GRAVITY GAS —
CUBIC FEET PER HOUR / Nm³/h—14.7 psia AT 60°F / 1.01325 bar AT 0°C

NOTE:
1. WHEN SELECTING ANY RELIEF VALVE FOR INSTALLATION DOWNSTREAM OF THE REGULATOR, THE CAPACITY OF THE RELIEF VALVE SHOULD BE COMPARED WITH THE WIDE-OPEN CAPACITY OF THE REGULATOR.
2. BUBBLE POINT RELIEF SETTING AND SPRING PART NUMBER ARE NOTED ON EACH CURVE.
3. TO CONVERT TO EQUIVALENT CAPACITIES OF OTHER GASES, MULTIPLY VALUES OBTAINED FROM CURVE BY THE FOLLOWING FACTORS: AIR–0.78, PROPANE–0.628, BUTANE–0.548, NITROGEN–0.789.

Figure 3. Capacity Curves (continued)



CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS AT 14.7 PSIA AT 60°F / 1.01325 bar AT 0°C



CAPACITIES IN SCFH / Nm³/h OF 0.6 SPECIFIC GRAVITY NATURAL GAS AT 14.7 psia AT 60°F / 1.01325 bar AT 0°C

NOTE:
1. WHEN SELECTING ANY RELIEF VALVE FOR INSTALLATION DOWNSTREAM OF THE REGULATOR, THE CAPACITY OF THE RELIEF VALVE SHOULD BE COMPARED WITH THE WIDE-OPEN CAPACITY OF THE REGULATOR.
2. BUBBLE POINT RELIEF SETTING IS NOTED ON EACH CURVE.
3. TO CONVERT TO EQUIVALENT CAPACITIES OF OTHER GASES, MULTIPLY VALUES OBTAINED FROM CURVE BY THE FOLLOWING FACTORS: AIR–0.78, PROPANE–0.628, BUTANE–0.548, NITROGEN–0.789.

Figure 3. Capacity Curves (continued)

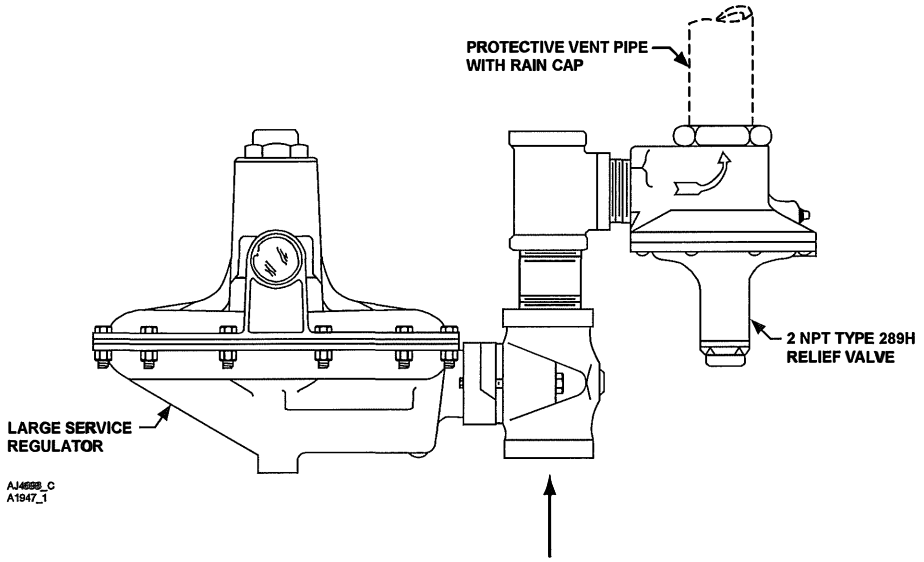


Figure 4. Typical Installation of a 289 Series Relief Valve

Installation

The 289 Series relief valves may be installed in any position. However, the outlet connection must be protected against the entrance of rain, snow, insects, or any other foreign material that may plug the outlet or affect the opening and closing of the valve (see Figure 4). If it is necessary to pipe away the outlet, remove the outlet screen (if one is present).

Flow through the valve must be as indicated by the flow direction arrow on the body (inlet connection is marked on some sizes).

The spring case vent on the 2 NPT Type 289H is tapped and plugged. This vent opening must remain plugged to allow the pitot tube booster to function.

Overpressure

Overpressure conditions in a regulating system may cause personal injury or equipment damage due to bursting of pressure-containing parts or explosion of accumulated gas. Check the system for damage if any of the maximum allowable relief (inlet) pressure ratings in Table 1 are exceeded.

Ordering Information

When ordering, specify:

1. Type number and size
2. Relief pressure range and setting desired
3. Type of gas (natural gas, air, etc.); list any factors such as impurities in the gas that may affect compatibility of the gas with valve trim parts
4. Temperature and specific gravity of the gas
5. Maximum relief (inlet) pressure and flow rate desired
6. Line size and end connection size of adjacent piping
7. For Types 289H and 289HH, specify material of diaphragm and O-ring seat; for 2 NPT Type 289H, specify material of orifice and pitot tube
8. Options desired, if any

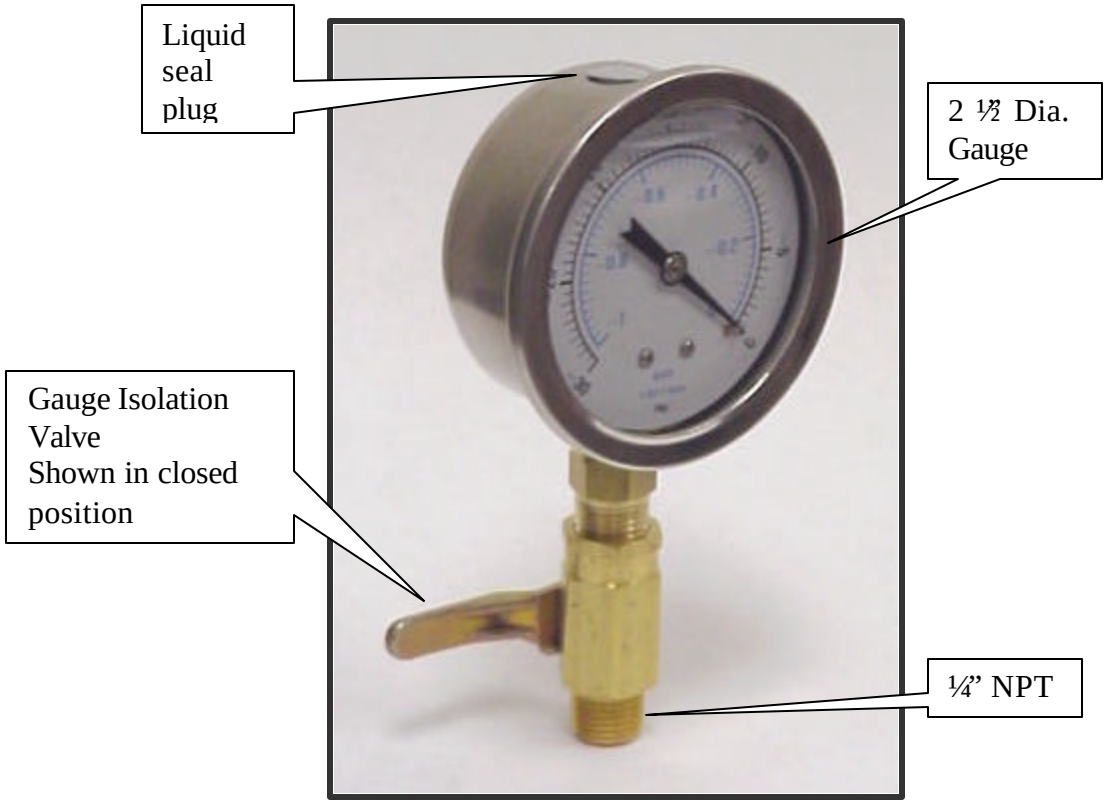
J. E. GASHO & ASSOCIATES, INC.

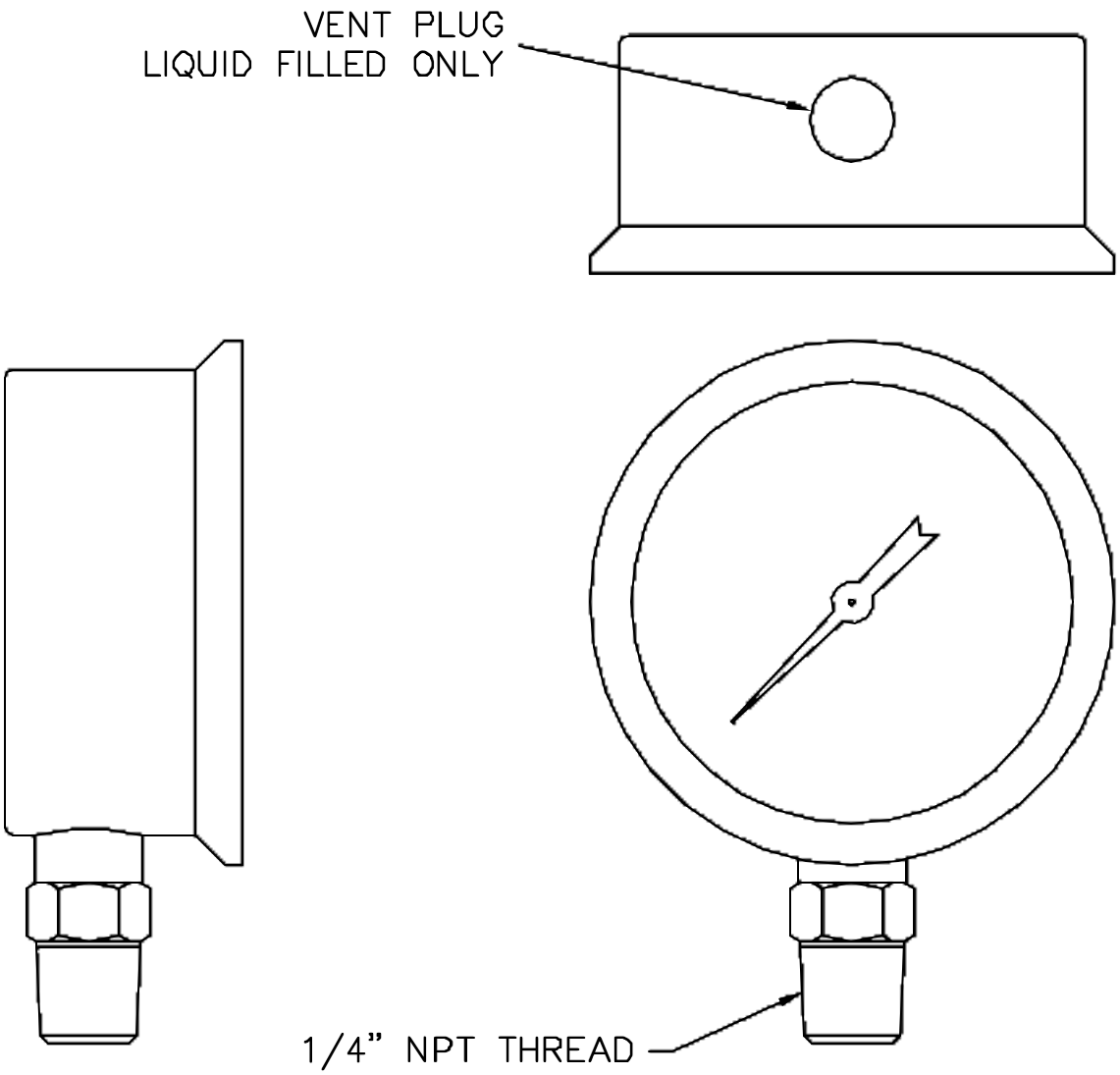
Authorized Manufacturer's Representative
Air / Gas Moving Equipment
460 W. GAY STREET
WEST CHESTER, PA 19380
PHONE: 610-692-5650 FAX: 610-692-5837

Pressure and Vacuum Gauges

We use both standard gauges and liquid filled gauges from a variety of manufacturers. Gauges are installed on our packages with gauge isolation valves (gauge cocks) part number BRS-VA-025-4F4M-BT. The gauge isolation valve can be used as a snubber while reading the gauge by opening it slightly. To protect gauges from damage due to shocks or pulsations in the system, gauge isolation valves should be closed except when the gauge is being read.

Liquid filled gauges may display incorrect readings due to variations in atmospheric pressure. To determine if a gauge is subject to this condition, the liquid filled cavity should be temporarily vented to atmosphere. Most liquid filled gauges have a seal plug in the liquid filled cavity. Remove this plug to allow the cavity to be vented to atmosphere. In some instances the case can be lightly squeezed to burp it. Replace the plug.





25.0.015PSI

NOMINAL SIZE
- 25 = 2.5in
- 40 = 4.0 in.

TYPE
- 0 = NON-FILLED
- 1 = LIQUID FILLED

RANGE

NOTES:
1. WE USE BOTH STANDARD GAUGES & LIQUID FILLED GAUGES FROM A VARIETY OF MANUFACTURERS
2. STANDARD RANGES:
   - PRESSURE: 0-6 PSI & 0-160 IWC
     0-15 PSI
     0-30 PSI
   - VACUUM: 0-12 IN. HG. & 0-160 IWC
     0-30 IN., HG.

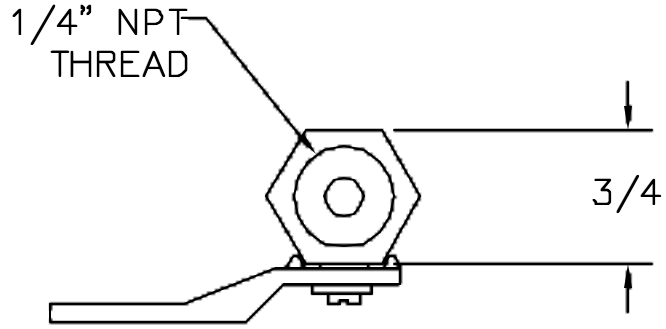
REV.	DATE	DESCRIPTION

DRAWN BY: M. WITTE — DATE: 8-18-00
APPROVED BY: — DATE:
DIMENSIONS IN INCHES
SCALE:
TOLERANCE — ANGULAR TOLERANCE
MATERIAL — WEIGHT
SHEET 1 OF 1

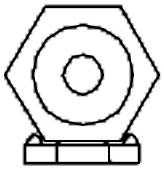
J. E. GASHO & Assoc., Inc.
460 W. GAY ST.
WEST CHESTER, PENNSYLVANIA 19380

PRESSURE GAUGE NUMBERING SYSTEM

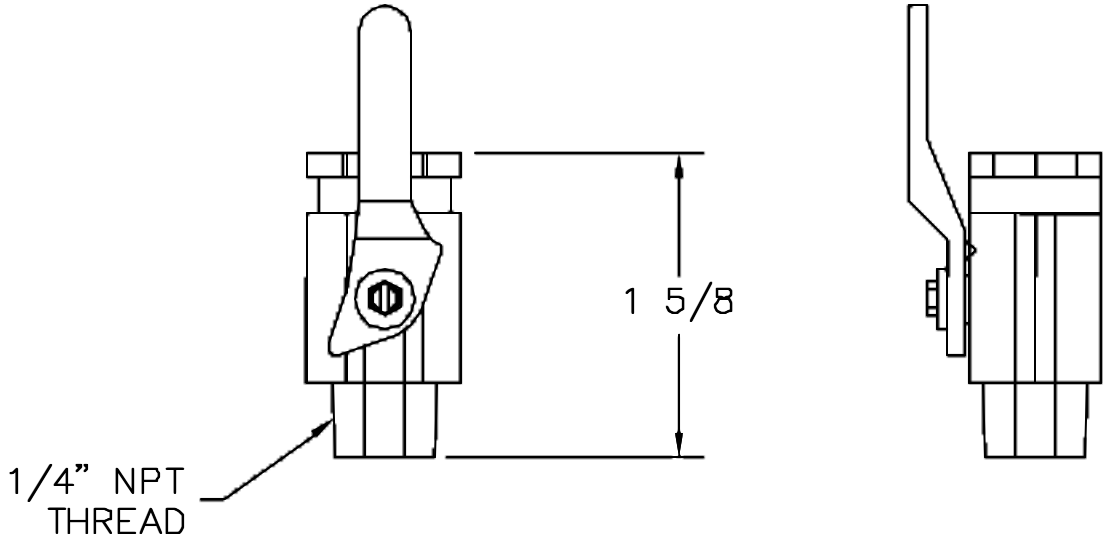
—



PLAN VIEW – CLOSED



PLAN VIEW – OPEN



			DRAWN BY: M. WITTE	DATE 8–17–00	J. E. GASHO & Assoc., Inc. 460 W. GAY ST. WEST CHESTER, PENNSYLVANIA 19380
			APPROVED BY:	DATE	
			DIMENSIONS IN INCHES		GAUGE ISOLATION VALVE SMC VA BRS 025–4F4M–BT
			SCALE		
			TOLERANCE	ANGULAR TOLERANCE	
			MATERIAL	WEIGHT	
REV.	DATE	DESCRIPTION	SHEET 1 OF 1		—

Maximum Operating Pressure - 500 psi
Maximum Operating Temperature - 180 Degrees F
Ball Through Hole Diameter - .218

025 SERIES BALL VALVE

025 One-Way Ball Valve Design Considerations

The 025 Series One-Way Ball Valve compact design promotes multiple configurations to fit the exact end use application. The 025 Ball Valve Series is rated to 500 psi and will support flow and pressure only in the flow direction. The 025 Series has a one-piece body construction, stamped with directional flow arrows, to cover 1/4" NPT end configuration applications. The Zinc Die Cast Lever Handle is standard. Handles can be ordered Reversed - to lie over the outlet when the valve is in the open position. UL configurations are available and rated to 250 psi. UR configurations are available and rated to 500 psi.

Example:	Inlet End	Outlet End	Seal	Handle	Plating
	1/4 FNPT	1/4 MNPT	Buna-N	Steel	ENP

SMC Part Number: 025-4F4M-B,SH,ENP

The handle will lie over the Inlet port when the valve is in the open position. SMC Part Numbers are a description of the valve as read left to right, Inlet to Outlet.
Example: 025-4F4M-B,SH,ENP = 1/4 FNPT Inlet x 1/4 MNPT Outlet

025 Series Options

Material Options Brass Body, Nickel Plated Brass Ball, Teflon® Seats, Stainless Handle Screw

Seal Options Buna-N, Ethylene Propylene, Fluoroelastomer (Viton®), Neoprene

Body Options

- 1/4 Female x 1/4 Female NPT
- 1/4 Female x 1/4 Male NPT
- 1/4 Female x 1/8 Female NPT
- 1/4 Female x 1/8 Male NPT
- 1/4 Female x 1/4 Hose Barb
- 1/4 Female x 11/16-16 Male
- 1/4 Female x 7/16-24 Female
- 1/4 Female x 1/4 Female Flare
- 1/4 Female x 3/8 Compression

Handle Options Zinc Die Cast Lever (Standard), Zinc Die Cast Lever with Red Vinyl Sleeve, Steel Lever, Steel Lever, Round Handle, Steel Lever, Steel Lever with Red Vinyl Sleeve, Round Zinc Die Cast Handle, Black Nylon T-Handle, Blue Nylon Knob, .312 x 1" Stem, Screw Slot Headed Ball

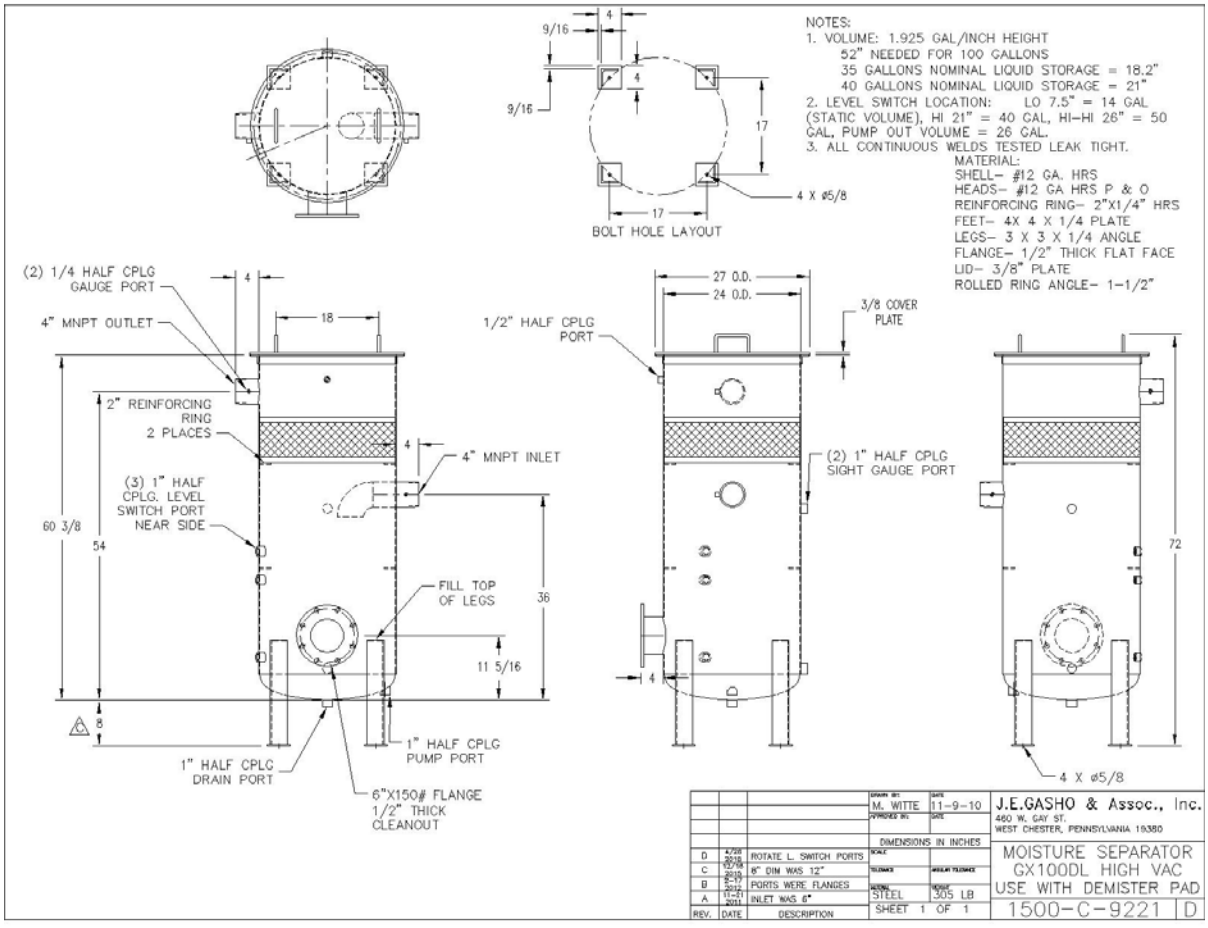
Plating Options Electroless Nickel, Black Zinc

SMC will quote alternate materials or customize our standard products when quantities ensure competitive pricing.
Contact Customer Service at (651) 653-0599, FAX - (651) 653-0989, E-Mail - info@specialtymfg.com

The Leader in Blower & Vacuum Solutions
460 West Gay Street
West Chester, PA 19380

GX100-DL Moisture Separator Specification

100 gallon vessel with approx. 40 gallons of storage
Reinforced for high vacuum
Flow Rate- 400 ICFM
Integral SS demister / filter media, 99.5% entrained water removal
Pressure drop through clean media = .25 IWC
External Site Gauge, 1" ports for clear tube sight gauge
Level Switch Ports- (3) 1" NPT ports
4" MNPT inlet and outlet



J. E. Gasho and Associates, Inc.
460 West Gay Street, West Chester, PA 19380
ph 610.692.5650 fax 610.692.5837

Moisture Separator
Operating and Maintenance Instructions

Operation:

The moisture separator is a static vessel with no moving parts. It removes moisture by reducing the flow rate of incoming air and allowing the entrained moisture to coalesce and precipitate.

Maintenance:

The moisture separator has been designed to require minimal maintenance.
During normal operation a layer of sludge may build up on the bottom of the separator.
Open isolating ball valve to drain the sludge. If the unit is furnished with a sludge pump, operate pump until the sludge is removed and only liquid is being removed.
The moisture separator is provided with a clean out port that can be removed and the inside cleaned with water.
Check sight gauge, clean if needed.
Demister material is included in the throat of the moisture separator. It can be inspected and washed through the top opening of the moisture separator.

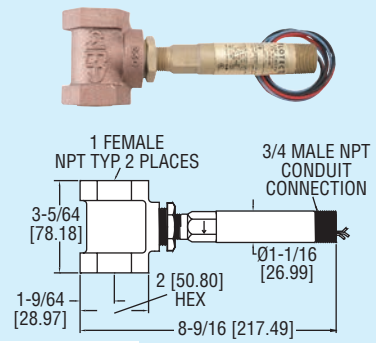
If there are accessories attached to the moisture separator follow the operating and maintenance instructions for those items

Series L6

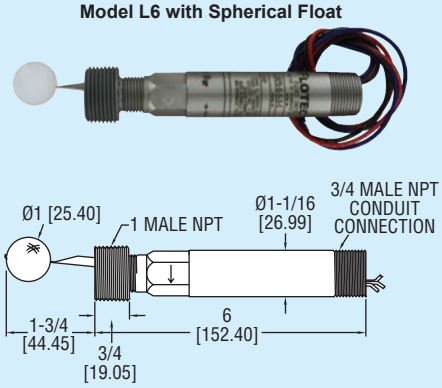
FLOTECT® Liquid Level Switch

Easy In-wall or External Installation, Up to 2000 psig (138 bar)

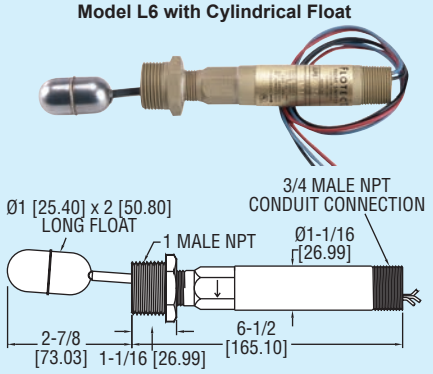
Model L6 with External Float Chamber



Model L6 with Spherical Float



Model L6 with Cylindrical Float



Scan here to watch product video

Surprisingly compact, the Series L6 Flotect® Level switch is designed and built for years of trouble-free service in a wide variety of process liquid level applications. Operation is simple and dependable with no mechanical linkage as the level switch is magnetically actuated. The float lever pivoted within the body moves when the process liquid displaces the float. A magnet on the opposite end of the float lever controls a second magnet on the switch actuating lever located in the switch housing.

FEATURES

- Leak proof lower body machined from bar stock
- Choice of models for direct side wall mounting or mounted in a tee to act as an external float chamber
- Weatherproof
- Explosion-proof (listings included in specifications)
- Electrical assembly can be easily replaced without removing the unit from the installation so that the process does not have to be shut down
- Sensitive to level changes of less than 1/2″ (12 mm)

Model	Body	Installation	Float Material	Max. Pressure psig (bar)	Min. Sp. Gr.
L6EPB-B-S-3-O	Brass	Side Wall Mounting	Polypropylene Spherical	1000 (69)	0.9
L6EPB-B-S-3-A	Brass	Side Wall Mounting	304 SS Cylindrical	200 (13.8)	0.5
L6EPB-B-S-3-C	Brass	Side Wall Mounting	304 SS Spherical	350 (24.1)	0.7
L6EPB-B-S-3-B	Brass	Brass External Float Chamber (Tee)	Polypropylene Spherical	250 (17.2)	0.9
L6EPB-B-S-3-H	Brass	Brass External Float Chamber (Tee)	304 SS Spherical	250 (17.2)	0.7
L6EPS-S-S-3-O	303 SS	Side Wall Mounting	Polypropylene Spherical	2000 (138)	0.9
L6EPS-S-S-3-A	303 SS	Side Wall Mounting	304 SS Cylindrical	200 (13.8)	0.5
L6EPS-S-S-3-C	303 SS	Side Wall Mounting	304 SS Spherical	350 (24.1)	0.7
L6EPS-S-S-3-S	303 SS	304 SS External Float Chamber (Tee)	Polypropylene Spherical	2000 (138)	0.9
L6EPS-S-S-3-L	303 SS	304 SS External Float Chamber (Tee)	304 SS Spherical	350 (24.1)	0.7

OPTIONS

Gold Plated Contacts option for dry circuits, add suffix **-MV** (see electrical rating in specifications)
High Temperature option rated 400°F (204°C), add suffix **-MT** (see electrical rating in specifications, no listings or approvals, only available on models with stainless steel floats)
CSA and UL approved construction, includes weatherproof and explosion-proof junction box, add suffix **-CSA**
ATEX compliant construction includes, weatherproof and explosion-proof, junction box, add suffix **-AT**
IECEx certified construction, add suffix **-IEC**
DPDT contacts, change seventh character in model number to “D”.
Example: L6EPB-B-D-3-O

Options Not Shown: 1-1/2″ and 2″ male NPT process connection, 2″ female NPT connection tee, and top mount.

SPECIFICATIONS

Service: Liquids compatible with wetted materials.
Wetted Materials:
Float: Solid polypropylene or 304 SS.
Lower Body: Brass or 303 SS.
Magnet: Ceramic.
External Float Chamber (Tee): Matches lower body choice of brass or 303 SS.
Other: Lever Arm, Spring, Pin, etc.: 301 SS.
Temperature Limit: -4 to 220°F (-20 to 105°C) Standard, MT high temperature option 400°F (205°C)(MT not UL, CSA, ATEX, IECEx and KC). ATEX compliant AT, IECEx IEC and KC option ambient temperature -4 to 167°F (-20 to 75°C) process temperature: -4 to 220°F (-20 to 105°C).
Pressure Limits: See model chart.
Enclosure Rating: Weatherproof and Explosion-proof. Listed with UL and CSA for Class I, Groups A, B, C and D; Class II, Groups E, F, and G. (Group A on stainless steel body models only).
ATEX CE 0344 Ex II 2 G Ex d IIC T6 Gb Process Temps≤75°C.
EC-Type Certificate No.: KEMA 04ATEX2128.
ATEX Standards: EN 60079-0: 2009; EN60079-1: 2007.
IECEx Certified: For Ex d IIC T6 Gb Process Temps≤ 75°C.
IECEx Certificate of Conformity: IECEx DEK II.0039.
IECEx Standards: IEC 60079-00: 2007; IEC 60079-1: 2007.
Korean Certified (KC) for Ex d IIC T6 Gb Process Temps≤75°C.
KTL Certificate Number: 2012-2454-75.
Switch Type: SPDT snap switch standard, DPDT snap switch optional.
Electrical Rating: UL models: 5A @ 125/250 VAC (V~). CSA, ATEX and IECEx models: 5A @ 125/250 VAC (V~); 5A res., 3A ind. @ 30 VDC (V⎓). MV option: .1A @ 125 VAC (V~). MT option: 5A @125/250 VAC (V~). [MT option not UL, CSA, ATEX or IECEx].
Electrical Connections: UL models: 18 AWG, 18″ (460 mm) long. ATEX/CSA/IECEx models: terminal block.
Upper Body: Brass or 303 SS.
Conduit Connection: 3/4″ male NPT standard, 3/4″ female NPT on junction box models.
Process Connection: 1″ male NPT on models without external float chamber, 1″ female NPT on models with external float chamber.
Mounting Orientation: Horizontal with index arrow pointing down.
Weight: Approximately 1 lb (.5 kg) without external float chamber, 1.75 lb (.8 kg) with external float chamber.
Specific Gravity: See chart.
Agency Approvals: ATEX, CE, CSA, IECEx, KTL, UL.

Oil-Rite Corporation
4325 Clipper Drive, P.O. Box 1207, Manitowoc, WI. 54221-1207
Telephone: (920) 682-6173 Fax: (920) 682-7699
E-Mail: sales@oilrite.com Web site: www.oilrite.com

Item # B-1559-1, Level Gages Flush Channel - Steel

larger image

Level Gages Flush Channel - Steel

Level Gages Flush Channel - Steel can be mounted flush against the outside surface of a reservoir with only a small amount of protrusion. Liquid level gages for flush mounting are used for a multitude of applications, such as on tanks, reservoirs, packaged hydraulic equipment, large steel mill pumps, hydraulic presses, and for any other application where it is desirable to indicate fluid levels. These level gages are used to determine the liquid level inside a metal reservoir by visual observation of the level in a transparent sight. The clarity and condition of the liquid can also be checked. Models with a thermometer will show the temperature of the liquid as well. Extremely sturdy and rigid, these gages come with glass sights mounted inside the steel channel shield to provide maximum protection against breakage. Visibility of the liquid level is excellent through the large sight opening. A reflector enhances the visibility of the liquid level. Liquid level markings can be added on request. Back mounting gages are used on tanks permitting access to the inside, in order to fasten the nuts on the mounting studs inserted in drilled holes in reservoirs. Front mounting gages are used on reservoirs which do NOT permit access to the inside, therefore, the tanks must have two tapped holes, 1/2 - 20 N.F., to receive the mounting studs, which are fastened from the outside.

Specifications

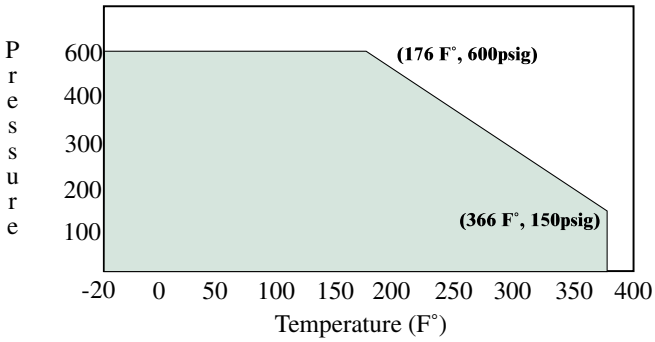
Style	Plain
Pressure	125 P.S.I. Max.
Temperature	225° F. Max.
Centerline Distance Between Mtg. Holes	3" to 60"
Body	Steel, Plated (Optional Material Available)
Sight	Red Line Gage Glass
Seals	Buna-N
Mounting Shanks	Steel, Plated 1/2-20 N.F.

Print Back

Standards Compliance

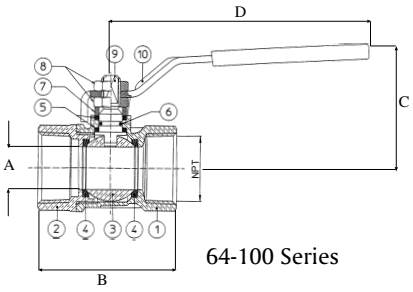
IPG's 64 series brass ball valves comply with the latest editions of these published standards:

- AGA Z21.15.CGA9.1
- AGA No. 3-88
- ANSI B1.20.1
- ANSI B16.18
- CAN/CGA-3.16-M88
- ASME/ANSI B16.33
- ASME/ANSI B16.38
- MSS SP-110
- UL Guide YSDT
- UL Guide YRPV
- UL Guide VQGU
- FM APPROVED

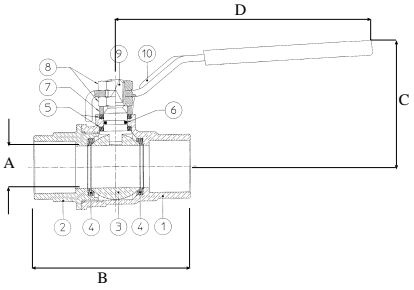


Materials of Construction

Description	Materials
1. Body	Brass UNI 5705-65
2. Retainer	Brass UNI 5705-65
3. Ball	Brass UNI 5705-65
4. Seats	PTFE
5. Stem Seals	PTFE
6. O-Ring	NBR 75 Shore A
7. Packing Gland	Brass UNI 5705-65
8. Nut	Plated Steel
9. Stem	Brass UNI 5705-65 Cr Plated
10. Lever Handle	Plated Steel 1/4" - 2" Models Aluminum 2 1/2" - 4" Models



64-100 Series



Optional Kits

Valve Size	Locking Handle	Stem Extensions	Balancing Stops
1/4", 3/8" & 1/2"	78-1659-01	78-1501-0	78-1506-01
3/4" & 1"	78-1660-01	78-1502-0	78-1507-01
1-1/4" & 1-1/2"	78-1661-01	78-1503-0	78-1508-01
2"	78-1662-01	78-1504-0	78-1509-01
2-1/2" & 3"	-	78-1505-0	78-1510-01

NOTE: Specify (-07) suffix for T-Handle i.e. 64-105-07.

64-100 Dimensional Data

Size	Part No.	A	B	C	D	(Cv)
1/4" NPT	64-101-01	0.39	2.02	1.75	3.85	6
3/8" NPT	64-102-01	0.39	2.02	1.75	3.85	7
1/2" NPT	64-103-01	0.59	2.44	1.88	3.85	19
3/4" NPT	64-104-01	0.78	2.71	2.28	4.80	34
1" NPT	64-105-01	0.98	3.07	2.44	4.80	50
1-1/4" NPT	64-106-01	1.25	3.42	3.07	6.02	104
1-1/2" NPT	64-107-01	1.57	3.89	3.34	6.02	268
2" NPT	64-108-01	1.96	4.33	3.79	6.37	309
2-1/2" NPT	64-109-01	2.56	5.59	5.02	8.07	629
3" NPT	64-100-01	3.15	6.45	5.45	8.07	1018
4" NPT	64-10A-01	3.94	7.60	6.34	10.23	1622

64-200 Dimensional Data

Size	Part No.	A	B	C	D	(Cv)
1/2"	64-203-01	0.59	2.53	1.88	3.85	19
3/4"	64-204-01	0.78	2.99	2.28	4.80	34
1"	64-205-01	0.98	3.58	2.44	4.80	50
1-1/4"	64-206-01	1.25	4.09	3.07	6.02	104
1-1/2"	64-207-01	1.57	4.56	3.34	6.02	268
2"	64-208-01	1.96	5.43	3.79	6.37	309
2-1/2"	64-209-01	2.56	6.93	5.02	8.07	629
3"	64-200-01	3.15	8.09	5.45	8.07	1018

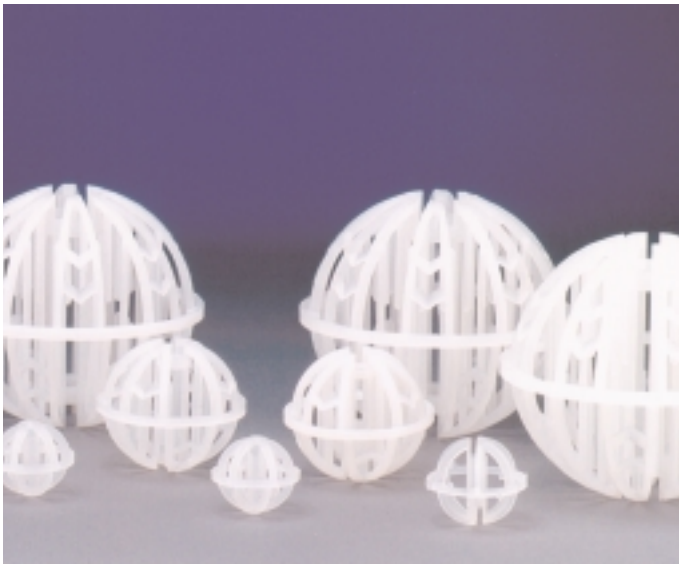
APOLLO INTERNATIONAL
A Division of Conbraco Industires, Inc.

P.O. Box 247
Matthews, NC 28106

(704) 841-6000
Fax: (704) 841-6020
http://www.conbraco.com

Your local Conbraco distributor is:

PHFL64S 4/02
CG 7.5M



Jaeger Tri-Packs®

TABLE OF CONTENTS

Features

- Jaeger Tri-Packs® are hollow, spherical packings made of injection molded plastic, available in four diameters: 1”, 1 ¼”, 2”, and 3 ½”.
- Symmetrical geometry made from a unique network of ribs, struts, and drip rods.
- High active surface areas.
- Extremely low pressure drops.
- Extremely high operating capacities.

Benefits

- High mass and heat transfer rates.
- Excellent gas and liquid dispersion characteristics.
- Resist nesting, making removal easy.
- Installs to packed position - no settling.
- Available in a wide variety of plastics.
- Predictable performance.

Jaeger Tri-Packs®-PP are NSF Certified to ANSI/NSF Standard 61 when made in polypropylene.

Specifications & Physical Properties

Materials.

Twelve standard, injection moldable plastics are available:

- Polypropylene (PP)
- Polyethylene (PE)
- Polypropylene Glass-Filled (PPG)
- Noryl® (PPO)
- Polyvinylchloride (PVC)
- Corzan™ (CPVC)
- TopEx® (LCP)
- Kynar® (PVDF)
- Halar® (ECTFE)
- Teflon® (PFA)
- Tefzel® (ETFE)
- Tefzel® Glass-Filled (ETFE-G)

Other plastics are available on request.

IMPORTANT NOTE:
Design data presented in this bulletin are for preliminary calculations only. Contact Jaeger before finalizing calculations.

Properties Table

Size (in.)	1	1 1/4	2	3 1/2
Geometric Surface Area (ft^2/ft^3)	85	70	48	38
Packing Factor (1/ft)	28	25	16	12
Void Space (%)	90	92	93.5	95
Bulk Density (lb/ft^3) (PP)	6.2	5.6	4.2	3.3

Maximum Operating Temperatures for Plastic Jaeger Tri-Packs®

Jaeger Tri-Packs® are available in a variety of injection-molded plastics for different applications. The maximum operating temperatures for these different resins vary from material to material and are also affected by specific process variables. The data presented below correspond to maximum continuous operating temperatures at atmospheric pressure and systems that are essentially air and water. The presence of solvents, acids, free radicals, and oxidants needs to be considered. Furthermore, these temperatures correspond to the maximum recommended bed depth for each packing size and material. These maximum bed depths are different depending on the application. Consult with Jaeger in respect to the maximum bed depth for your particular application.

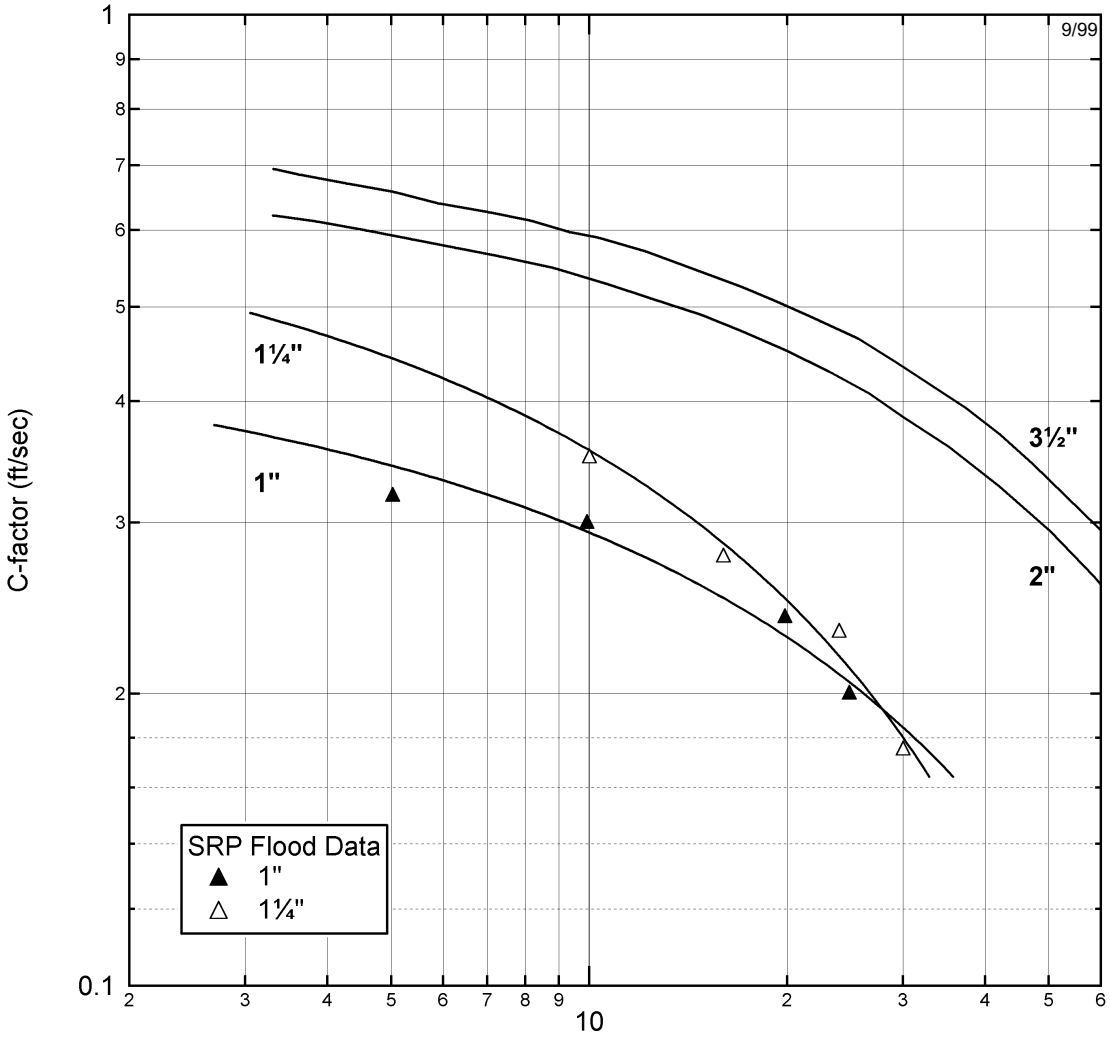
Material	Maximum Temperature (Deg. F) (1 atm, air/water, at max. recommended depth)	Bulk Density Factor
Polyvinyl Chloride (PVC)	140	1.50
Polyethylene (PE)	160	1.02
Polypropylene (PP)	180	1.00
Corzan™ (CPVC)	230	1.74
Chlorinated Polyvinyl Chloride (CPVC)	210	1.74
Polypropylene - Glass-Filled (10-30%) (PP-G)	210-230*	1.17-1.38*
Noryl® (PPO)	230	1.24
Kynar® (PVDF)	280	1.98
Halar® (ECTFE)	290	1.86
Tefzel® (ETFE)	350	1.93
Teflon® (PFA)	400	2.45
Tefzel® - Glass Filled (25% Glass) (ETFE-G)	410	2.2

*Depending on glass content.

Generalized Flooding Curves

Plastic Jaeger Tri-Packs®

Ambient Air-Water Systems at 1 atm, 70°F



C-Factor = $V_s[(\rho_V)/(\rho_L - \rho_V)]^{1/2}$ where
V_s = Superficial Vapor Velocity in ft/sec
ρ_L and ρ_V = Density of Liquid and Vapor in lb/ft³

For Air/Water systems at 70°F & 1 atm: C-Factor x 7776.2 = lb/hr-ft²; gpm/ft² x 499.7 = lb/hr-ft²

SRP - Separations Research Program, University of Texas at Austin.

JAEGER
1611 Peachleaf St., Houston, Texas 77039 800-678-0345 Phone: 281-449-9500 Fax: 281-449-9400 www.jaeger.com

Conversion Factors

FROM	TO	MULTIPLY BY	ADD OFFSET
mg/ml	ppm_W	1.0	
1/ft	1/m	3.2808	
atm	psia	14.696	
atm	psig	14.696	-14.696
atm	torr	760	
C	F	1.8	32
C	K	1	273.15
C-factor (air/water @70°F) ft/se	lb/hr ft^2	7776.2	
F	K	.5556	255.3722
ft	cm	30.48	
ft	m	.3048	
ft^2/ft^3	m^2/m^3	3.2808	
ft^3	gal (US)	7.4805	
ft^3	m^3	.0283	
g/cm^3	lb/ft^3	62.428	
gm/cm^3	kg/m^3	1000	
gpm/ft^2	lb/hr ft^2 (water @ 70°F)	499.7	
hr	sec	3600	
in	m	.0254	
in wc/ft	$dyne/cm^3$	81.5617	
in wc/ft	Pa/m	815.6168	
kg	gm	1000	
kg	lb	2.2046	
kg/m^2*sec	lb/ft^2*hr	737.3402	
kg/sec	lb/hr	7936.6829	
kg mole/m^2*sec	lbmole/ft^2*hr	737.3402	
kW	hp	1.341	
lb	gm	453.59	
m^2	cm^2	10000	
m^2	ft^2	10.7639	
m^2/m^3	cm^2/cm^3	.01	
m^3	liters	1000	
mg/l	ppm_W	1.0	
Millions of Gallons/Day	gpm	694.46	
min	sec	60	
ppm_W	ppb_W	1000	

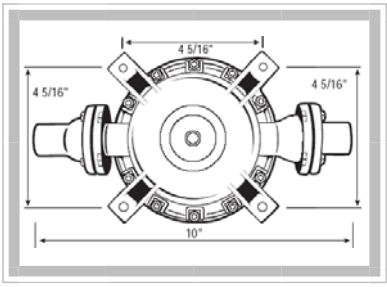
GUZZLER® 400 HAND PUMP

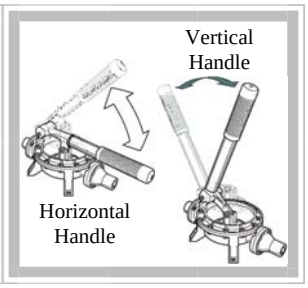
Model GH-400

Description Hand pump for use with 1/2" to 1 1/4" hose. Available with either horizontal or vertical handle.

Features

- Lightweight, economical
- Durable – tough Delrin® plastic
- Clamp ring adjusts to 12 different handle orientations
- Can be configured with either vertical or horizontal handle





Performance

	per Stroke	per Minute (@ 90 cycles/min)
Flow Rate	0.44 Qt 0.42 L	10 Gals 37.9 L
Max Pressure	20 psi	1.4 kg/cm^2
Max Head	12 ft	3.7 m
Max Lift	12 ft	3.7 m

Available Materials

Pump Body	Delrin (Gray)
Clamp Ring	Delrin, Epoxy-coated Aluminum
Diaphragm	Buna Nitrile (Buna N), Buna N Double Sided, Buna-N 3-Ply, Neoprene, Viton, EPDM, Urethane, Silicone
Valves	Buna N, Neoprene, Viton, EPDM, Silicone *(Silicone only available with umbrella valve)*

Dimensions

	Length			Width	Height	
	Body	incl. H. Handle	incl. V. Handle		incl. H. Handle Up	incl. V. Handle Up
in	10 1/4	12 3/4	12	5 1/2	12	13 5/8
cm	26.0	32.39	30.48	13.97	30.48	34.61

Mounting Holes	4		
Mounting Hole Diameter	1/4 in	0.64 cm	**Weight**
Bolt Circle Diameter	6 1/8 in	15.56 cm	1.70 lb 0.77 kg
Hole-to-Hole Distance	4 5/16 in	10.95 cm	

Inlet & Outlet Ends & Sizes

in	cm	Hose (Smooth)	N.P.T. Female (Tapped Inside)	N.P.T. Male (Threaded Outside)	Male (Threaded Outside) Garden Hose	Barbed
1/2	1.27		●			
3/4	1.91	●	●	●	●	●
1	2.54	S		●		
1 1/8	2.86	●				●
1 1/4	3.18	●				

(**S**: standard ●: optional)

Other Options

Item	Standard	Optional	
Valves	Flapper	Duckbill	Umbrella
Handle Style	Horizontal (H)	Vertical (V) (removable)	
Other		Thru Deck Mounting Kit *(only for vertical handle)*	
		Internal Spring	

Consult factory for other options.

930 Waterman Avenue East Providence, Rhode Island 02914
Ph: 888-438-1110 Fax: 401-438-2713 Web: www.thebosworthco.com

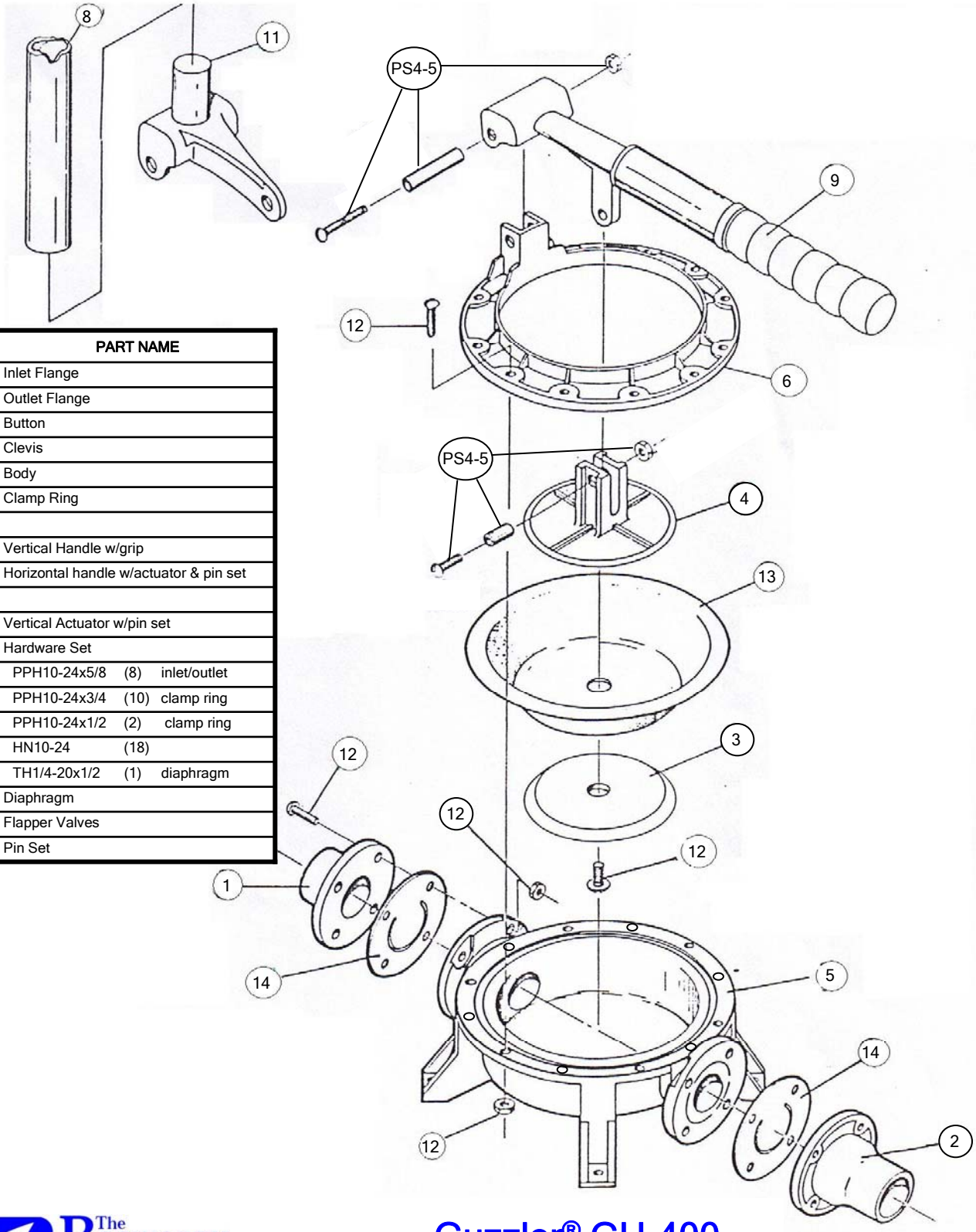
Hand-Operated Diaphragm Pumps

A little elbow grease is all these pumps need to do their job. All pumps have a Delrin housing. Intake and discharge connections are unthreaded male slip-on style. All pumps have check valves, are self-priming, and can be run dry. Not for use with solids. Maximum discharge pressure is 12 feet of head (5 psi). Maximum viscosity is 100,000 centipoise (similar to toothpaste). Temperature range is 33° to 140° F.

Common Compatible Chemicals

Deionized Water, Diesel Fuel, Glycol, Kerosene, Methanol, Mineral Spirits, Salt Water, Water

Diaphragm Material	Flow Rate, oz/stroke	For Hose ID	Overall Size, Ht. x Wd. x Dp.	
Buna-N	14.08	1"	4 1/2" x 5 1/2" x 12 3/4"	4**332K17**
Buna-N	21.44	1 1/2"	4 1/2" x 5 1/2" x 13 3/8"	4332K18
Silicone	14.08	1"	4 1/2" x 5 1/2" x 12 3/4"	4332K37



ITEM	PART NAME
1	Inlet Flange
2	Outlet Flange
3	Button
4	Clevis
5	Body
6	Clamp Ring
7	
8	Vertical Handle w/grip
9	Horizontal handle w/actuator & pin set
10	
11	Vertical Actuator w/pin set
12	Hardware Set
	PPH10-24x5/8 (8) inlet/outlet
	PPH10-24x3/4 (10) clamp ring
	PPH10-24x1/2 (2) clamp ring
	HN10-24 (18)
	TH1/4-20x1/2 (1) diaphragm
13	Diaphragm
14	Flapper Valves
PS4-5	Pin Set

Guzzler® GH-400

The Bosworth Company
930 Waterman Avenue East Providence, RI 02914
Ph: 401-438-1110 888-438-1110 Fax: 401-438-2713
www.thebosworthco.com

SUITABLE FOR USE ON A CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 5Ka RMS SYMMETRICAL AMPERES, 240 VOLTS MAXIMUM

UPSTREAM PROTECTION: FUSIBLE DISCONNECT OR CIRCUIT BREAKER MUST BE PROVIDED BY INSTALLER AS PER STATE AND LOCAL REQUIREMENTS.

SUPPLY: 230 V 3PH 60HZ

DISC. L1 1L1 L2 1L2 L3 1L3 40 AMP G

FB-1 1L11 M OL T1 1L12 T2 1L13 T3 MOTOR SVE BLOWER 5 HP 230V FU-1,2,3 25 AMP

FB-4 FU-10,11 5 AMP 230 VOLT H1 H3 H2 H4 T1 250 VA 115 VOLT FU-12 3.5 AMP

SVE BLOWER OFF HAND AUTO MOD SS-1 COM JUMPER R1 R2 R3 R4 PL-1 M1 ETM OL1 SVE BLOWER ON SVE BLOWER

ALARM COND. RESET PB-1 HIGH LEVEL LS-3 N.O. TR1 R1 PL-2 HIGH LEVEL SPARE 1 N.O. R2 PL-3 SPARE 1 SPARE 2 N.O. R3 PL-4 SPARE 2 ON PULSE SET AT 2 SEC. DIP SWITCH SETTINGS 1 2 3 4 5 UP DOWN

TR1 R4 HTS-1 SVE N.C. R4 PL-5 SVE BLOWER HIGH TEMP.

1 CONT. NEXT COLUMN

2 CONT. NEXT COLUMN

1 FROM PREVIOUS COLUMN FROM PREVIOUS COLUMN 2 RECEP.-1

A.D. CELL A.D. SENSAPHONE FGD-400 BBU

1 20 R1 21 C HIGH LEVEL
2 22 R2 23 C SPARE 1
3 24 R3 25 C SPARE 2
4 26 R4 27 C SVE BLOWER HIGH TEMP.

REVISIONS				
REV.	DATE	BY	CHKD.	DESCRIPTION

J.E. GASHO & ASSOCIATES
PO# 81804-3264
ICP S.O.# XXX
HP 5
VOLTAGE 230/3/60

TITLE BLOWER CONTROL PANEL

DATE	PAGE	DWG NO.	
5/29/18	1 OF 2	GASH213	INTERNATIONAL CONTROL PRODUCTS, INC.

NOTES:

1. ☐ INDICATES TERMINAL BLOCK
2. ○ INDICATES COMPONENT TERMINAL POINT
3. USE COPPER WIRE ONLY
4. REPLACE WITH LIKE FUSES ONLY
5. HTS – INDICATES TEMPERATURE SWITCH
6. LS – INDICATES LEVEL SWITCH
7. ALL CONTACTS SHOWN WITH POWER OFF
8. UL LISTED CONTROL PANEL
9. TORQUE TERMINAL BLOCK TO 5–7 LB–IN
10. APPROX 150LBS

DOOR LAYOUT

PL–1 SVE BLOWER ON
PL–2 HIGH LEVEL
PL–3 SPARE 1
PL–4 SPARE 2
PL–5 SVE BLOWER HIGH TEMP.
SS–1 SVE BLOWER HAND–OFF–AUTO
PB–1 ALARM COND. RESET

DISC

BILL OF MATERIALS

ITEM	QTY	ITEM LABEL	MFG.	DESCRIPTION	PART NUMBER
1	1	ENCL	RITTAL	30x24x8 NEMA 4 ENCLOSURE	AE1076.500
2	2	ENCL	RITTAL	SCREWDRIVER INSERT	SZ2464.000
3	1	DISC.	ABB	3P 40 AMP DISCONNECT	OT40F3
4	1	DISC.	ABB	NEMA 4 DISCONNECT HANDLE	OHB65L6
5	1	DISC.	ABB	DISCONNECT SHAFT	OXP6X210
6	1	FB–1	MERSEN	3P 30A CLASS J FUSE BLOCK	60308SJ
7	3	FU1,2,3	MERSEN	25 AMP CLASS J FUSE	AJT25
8	1	M	SIEMENS	25 AMP IEC CONTACTOR	3RT2026–1AK60
9	1	OL	SIEMENS	OVERLOAD RELAY (14–20 FLA)	3RU2126–4BB0
10	1	SS–1	ABB	3 POS. S.S. SPRG. RET. L TO C (2 N.O.)	M3SS7–30B–20
11	1	PL–1	ABB	GREEN F.V. PILOT LIGHT – 120V	CL–100G
12	4	PL–2,3,4,5	ABB	RED F.V. PILOT LIGHT – 120V	CL–100R
13	1	PB–1	ABB	BLACK FLUSH P.B. (1 N.C.)	MP1–30B–01
14	1	ETM	ENM	ELAPSED TIME METER	T50B2–12
15	1	T1	SIEMENS	250VA CONTROL TRANSFORMER	MT0250A
16	1	FB–4	MERSEN	2P 30A CLASS CC FUSE BLOCK	30322R
17	2	FU–10,11	MERSEN	5 AMP CLASS CC FUSE	ATDR5
18	1	FU–12	MERSEN	3 1/2 AMP TIME DELAY FUSE	TRM3 1/2
19	4	R1,2,3,4	FINDER	4 POLE RELAY – 120V	56.34.8.120.0040
20	4	R1,2,3,4	FINDER	4 POLE RELAY SOCKET	96.74
21	1	A.D.	SENSAPHONE	4 CHANNEL AUTO DIALER	FGD–400
22	1	A.D.	SENSAPHONE	A.D. CELLULAR (VERIZON)	FT2260
23	1	BBU	APC	UNINTERRUPTIBLE POWER SUPPLY	APC–BE425M
24	1	ANT.	WILSON	OMNI–DIRECTIONAL NMO ANTENNA	311104
25	1	ANT.	WILSON	NMO ANTENNA MOUNT	905814
26	1	RECEPT.	RED DOT	RECEPTACLE BOX	RIH31LM
27	1	RECEPT.	LEVITON	GFCI RECEPTACLE	GFNT1–W
28	12	T.B.'S	PHOENIX	TERMINAL BLOCK	3004362
29	1	T.B.'S	PHOENIX	TERMINAL BLOCK END COVER	3003020
30	2	T.B.'S	PHOENIX	DIN RAIL END RETAINER	0800886
31	2	GROUND	BURNDY	14–2 AWG GROUND LUG	DLA2
32					

REVISIONS

REV.	DATE	BY	CHKD.	DESCRIPTION

J.E. GASHO & ASSOCIATES
PO# 81804–3264

ICP S.O.# XXX

HP 5

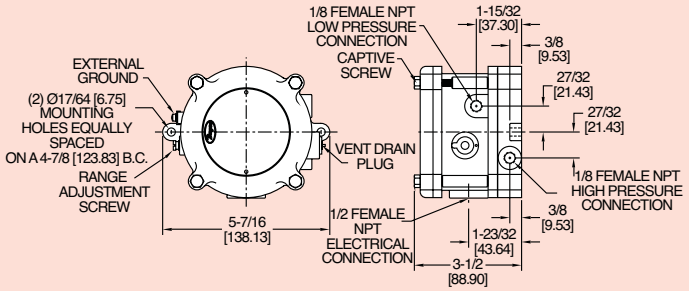
VOLTAGE 230/3/60

TITLE: BLOWER CONTROL PANEL

DATE	PAGE	DWG NO.	
5/29/18	2 OF 2	GASH213	INTERNATIONAL CONTROL PRODUCTS, INC.

Series 1950 Explosion-proof Differential Pressure Switches

Compact, Low Cost, Explosion-proof and Weatherproof



Model 1950 Explosion-Proof Differential Pressure Switch combines the best features of the popular Dwyer® Series 1900 Pressure Switch with an integral explosion-proof and weatherproof housing, making it an exceptional value for either application. It is CE, UL and CSA listed, FM approved for use in Class I, Div 1, Groups C and D, Class II Groups E, F, and G and Class III hazardous atmospheres (NEMA 7 & 9), Raintight (NEMA 3). Weatherproof features include a drain plug and O-ring seal in cover. Electrical connections are easily made by removing front cover. For convenience the set point adjustment screw is located on the outside of the housing. Twelve models offer set points from .03 to 20˝ w.c. (7.5 to 5 kPa) and from .5 to 50 psi (0.035 to 3.5 bar). The unit is very light and compact – about half the weight and bulk of other explosion-proof or weather-proof switches with separate enclosures.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -40 to 140°F (-40 to 60°C); 0 to 140°F (-17.8 to 60°C) for 1950P-8, 15, 25, and 50. -30 to 130°F (-34.4 to 54.4°C) for 1950-02.
Pressure Limits:
Continuous: 1950's - 45˝ w.c. (0.11 bar); 1950P's - 35 psi (2.41 bar); 1950P-50 only - 70 psi (4.83 bar).
Surge: 1950's - 10 psi (0.69 bar), 1950P's - 50 psi (3.45 bar), 1950P-50 only - 90 psi (6.21 bar).
Enclosure Rating: IP64, NEMA 3, 7 and 9.
Switch Type: Single-pole double-throw (SPDT).
Electrical Rating: 15 A @, 125, 250, 480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz.
Electrical Connections: 3 screw type, common, normally open and normally closed.
Process Connections: 1/8˝ female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw type on top of housing.
Weight: 3.25 lb (1.5 kg); 1950-02 model, 4.4 lb (2 kg).
Agency Approvals: CE, UL, CSA, FM.

SERIES 1950 SWITCHES - MODELS, OPERATING RANGES AND DEAD BANDS

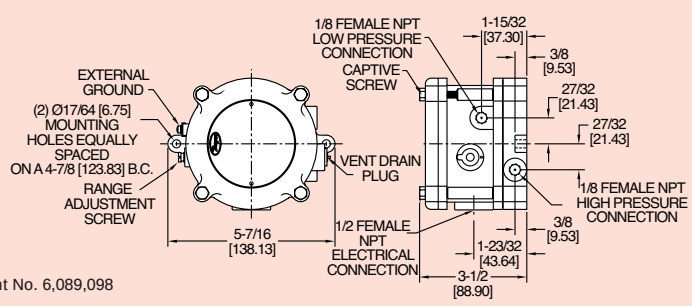
Model Number	Range, Inches W.C.	Approximate Dead Band at	
		Min. Set Point	Max. Set Point
1950-02-2S	.03 to .10	.025	.05
1950-00-2F	.07 to .15	.04	.05
1950-0-2F	.15 to .50	.10	.15
1950-1-2F	.4 to 1.6	.15	.20
1950-5-2F	1.4 to 5.5	.30	.40
1950-10-2F	3 to 11	.40	.50
1950-20-2F	4 to 20	.40	.60

Model* Number	Range, PSID	Approximate Dead Band at	
		Min. Set Point	Max. Set Point
1950P-2-2F	0.5 to 2	.3	.3
1950P-8-2F	1.5 to 8	1.0	1.0
1950P-15-2F	3 to 15	.9	.9
1950P-25-2F	4 to 25	.7	.7
1950P-50-2F	15 to 50	1.0	1.5

CAUTION: For use only with air or compatible gases. Applications with hazardous atmospheres and a single positive pressure may require special venting.
*P=PSID range models

Series 1950G Explosion-proof Differential Pressure Switch

Explosion-proof, Weatherproof, Compatible with Natural Gases



Patent No. 6,089,098

The Model 1950G Explosion-Proof Switch combines the best features of the popular Dwyer® Series 1950 Pressure Switch with the benefit of natural gas compatibility. Units are rain-tight for outdoor installations, and are UL listed for use in Class I, Groups A, B, C, & D; Class II, Groups E, F, & G and Class III atmospheres, Directive 94/9/EC (ATEX) Compliant for CE Ex II 2 G EExd IIB & Hydrogen T6 and CSA & FM approved for Class I, Div 1, Groups B, C, D; Class II, Div 1, Groups E, F, G and Class III atmospheres. The 1950G is very compact, about half the weight and bulk of equivalent conventional explosion-proof switches.
Easy access to the SPDT relay and power supply terminals is provided by removing the top plate of the aluminum housing. A supply voltage of 24 VDC, 120 or 240 VAC is required. A captive screw allows the cover to swing aside while remaining attached to the unit. Adjustment to the set point of the switch can be made without disassembly of the housing.

SPECIFICATIONS

Service: Air and compatible combustible gases.
Wetted Materials: Contact Factory.
Temperature Limits: 0 to 140°F (-17 to 60°C). Note: Set point drift may occur with ambient temperature changes.
Pressure Limits: 45˝ w.c. (11.2 kPa) continuous; 10 psig (68.95 kPa) surge.
Enclosure Rating: IP64, NEMA 3, 7 and 9.
Switch Type: 1 Form C relay (SPDT).
Electrical Rating: 10A, 120/240 VAC, 28 VDC. Resistive 50mA, 125 VDC.
Power Requirements: 24 VDC ±10%. 120 or 240 VAC ±10% optional.
Electrical Connections: Internal terminal block.
Process Connections: 1/8˝ female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw type on top of housing.
Weight: 2 lb, 15.7 oz (1.35 kg).
Agency Approvals: CE, UL, CSA, FM, ATEX.

MODELS

Model Number[1]	Range, Inches W.C.	Approximate Dead Band at	
		Min. Set Point	Max. Set Point
1950G-00-B-24-NA	.07 to .15	.04	.06
1950G-0-B-24-NA	.15 to .50	.06	.11
1950G-1-B-24-NA	.4 to 1.6	.11	.29
1950G-5-B-24-NA	1.4 to 5.5	.4	.9
1950G-10-B-24-NA	3 to 11	.9	1.8
1950G-20-B-24-NA	4 to 20	1.2	3.0

[1]Note: For alternate supply voltages change 24 to 120 or 240. Example: 1950G-00-B-120. For ATEX approved models remove"-NA".

SENSAPHONE®
REMOTE MONITORING SOLUTIONS

Sensaphone 400 & 800
Technical Specifications

INPUT ZONES

Number of Zones: 400 - 4, 800 - 8

Zone Connector: terminal block

Zone Types:

N.O./N.C. contact,
2.8K Thermistor -20° to 150°F | -30° to 65°C

Zone Characteristics: 5.11K to 2.85V (Short circuit current: 1mA max.)

A/D Converter Resolution: 10 bits ±2 LSB

Zone Protection: 5.5VDC Metal Oxide Varistor with fast acting diode clamps.

RELAY OUTPUT

Rated for 1A 30VAC/1A 30VDC maximum.

LED INDICATORS

System On, Phone In Use, Alarm, Battery Ok.

MICROPHONE

Internal Electret Condenser: For listening in to on-site sounds and detecting high sound levels.

PHONE INTERFACE

Line RJ11 Jack: For connection to a two-wire analog telephone line. (6' modular cord included)

Extension RJ11 Jack w/ Line Seizure: For connecting other devices on the same telephone line, devices connected to this jack are disconnected in the event that the 400 must dial out for an alarm.

Phone Line Protection: Metal Oxide Varistor & self-resetting fuse

POWER SUPPLY

Power Supply: 120VAC/9VDC 60Hz 6W wall plug-in transformer w/6' cord.

Power Consumption: 1.5 Watts

Power Protection: Metal Oxide Varistor

Battery Backup: Six size-C alkaline batteries (not included), providing up to 24 hours of back-up time.

ENVIRONMENTAL

Operating Temperature:
32° to 122°F | 0° to 50°C

Operating Humidity:
0–90% RH non-condensing

Storage Temperature:
32° to 140°F | 0° to 60°C

PHYSICAL

Dimensions: 2.1 x 7.8 x 8.8"d | 5 x 20 x 22mm

Weight: 8 lbs. | 3.6kg

Enclosure: Indoor rated plastic housing suitable for wall or desktop installation

901 Tryens Road • Aston, PA 19014 • PH: 877-373-2700 • F: 610-558-0222 • www.sensaphone.com

SENSAPHONE®
REMOTE MONITORING SOLUTIONS

SENSAPHONE® 400
User's Manual

Stay informed and in control of vital environmental conditions and processes with the fully-programmable Sensaphone® 400.

LIT-0129

SENSAPHONE®

Model 400

User's Manual

Version 1.5.4

Every effort has been made to ensure that the information in this document is complete, accurate and up-to-date. PHONETICS, Inc. assumes no responsibility for the results of errors beyond its control. PHONETICS, Inc. also cannot guarantee that changes in equipment made by other manufacturers, and referred to in this manual, will not affect the applicability of the information in this manual.

First Edition, version 1.5.4, March 2015

Written and produced by Sensaphone.

Please address all comments on this publication to:

SENSAPHONE

901 Tryens Road

Aston, PA 19014

www.sensaphone.com

IMPORTANT SAFETY INSTRUCTIONS

Your Model 400 has been carefully designed to give you years of safe, reliable performance. As with all electrical equipment, however, there are a few basic precautions you should take to avoid hurting yourself or damaging the unit:

- Read the installation and operating instructions in this manual carefully. Be sure to save it for future reference.
- Read and follow all warning and instruction labels on the product itself.
- To protect the Model 400 from overheating, make sure all openings on the unit are not blocked. Do not place on or near a heat source, such as a radiator or heat register.
- Do not use your Model 400 near water, or spill liquid of any kind into it.
- Be certain that your power source matches the rating listed on the AC power transformer. If you're not sure of the type of power supply to your facility, consult your dealer or local power company.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Do not overload wall outlets and extension cords, as this can result in the risk of fire or electric shock.
- Never push objects of any kind into this product through ventilation holes as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock.
- To reduce the risk of electric shock, do not disassemble this product, but return it to Sensaphone Customer Service, or other approved repair facility, when any service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the unit is subsequently used.
- If anything happens that indicates that your Model 400 is not working properly or has been damaged, unplug it immediately and follow the procedures in Appendix F for having it serviced. Return the unit for servicing under the following conditions:

1. The power cord or plug is frayed or damaged.
2. Liquid has been spilled into the product or it has been exposed to water.
3. The unit has been dropped, or the cabinet is damaged.
4. The unit doesn't function normally when you're following the operating instructions.

- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.

CAUTION

To Reduce the Risk of Fire or Injury to Persons, Read and Follow these Instructions:

1. Use only the following type and size batteries:
   Alkaline, size C.
2. Do not dispose of the batteries in a fire. The cell may explode. Check with local codes for possible special disposal instructions.
3. Do not open or mutilate the batteries. Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.
4. Exercise care in handling batteries in order not to short the battery with conducting materials such as rings, bracelets, and keys. The battery or conductor may overheat and cause burns.
5. Do not mix old and new batteries in this product.

FCC Requirements

Part 68: The Sensaphone® Model 400 complies with Part 68 of the FCC rules. On the back of the unit there is a label that contains, among other information, the FCC Registration Number and the Ringer Equivalence Number (REN) for this equipment. You must, upon request, provide this information to your local telephone company.

The REN is useful to determine the quantity of devices that you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices that you may connect to your line, you may want to contact your local telephone company to determine the maximum REN for your calling area.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

Should the Model 400 cause harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice isn't practical, the telephone company may temporarily discontinue service without notice and you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC. The telephone company may make changes in its facilities, equipment, operations, or procedures where

such action is reasonably required in the operation of its business and is not inconsistent with the rules and regulations of the FCC that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this equipment, or you need information on obtaining service or repairs, please contact:

PHONETICS, INC.

901 Tryens Road, Aston, PA 19014

877-373-2700 Fax: 610-558-0222

The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

Part 15: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Canadian Department of Communications Statement

Notice: The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, where the company's inside wiring is associated with a single line, individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device to prevent overloading. The termination on loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100. For the Sensaphone® Model 400, the Load Number is 0.3.

1 YEAR LIMITED WARRANTY

PLEASE READ THIS WARRANTY CAREFULLY BEFORE USING THE PRODUCT.

THIS LIMITED WARRANTY CONTAINS SENSAPHONE'S STANDARD TERMS AND CONDITIONS. WHERE PERMITTED BY THE APPLICABLE LAW, BY KEEPING YOUR SENSAPHONE PRODUCT BEYOND THIRTY (30) DAYS AFTER THE DATE OF DELIVERY, YOU FULLY ACCEPT THE TERMS AND CONDITIONS SET FORTH IN THIS LIMITED WARRANTY.

IN ADDITION, WHERE PERMITTED BY THE APPLICABLE LAW, YOUR INSTALLATION AND/OR USE OF THE PRODUCT CONSTITUTES FULL ACCEPTANCE OF THE TERMS AND CONDITIONS OF THIS LIMITED WARRANTY (HEREINAFTER REFERRED TO AS "LIMITED WARRANTY OR WARRANTY"). IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS THIS WARRANTY, INCLUDING ANY LIMITATIONS OF WARRANTY, INDEMNIFICATION TERMS OR LIMITATION OF LIABILITY, THEN YOU SHOULD NOT USE THE PRODUCT AND SHOULD RETURN IT TO THE SELLER FOR A REFUND OF THE PURCHASE PRICE. THE LAW MAY VARY BY JURISDICTION AS TO THE APPLICABILITY OF YOUR INSTALLATION OR USE ACTUALLY CONSTITUTING ACCEPTANCE OF THE TERMS AND CONDITIONS HEREIN AND AS TO THE APPLICABILITY OF ANY LIMITATION OF WARRANTY, INDEMNIFICATION TERMS OR LIMITATIONS OF LIABILITY.

1. **WARRANTOR**: In this Warranty, Warrantor shall mean "Dealer, Distributor, and/or Manufacturer."

2. **ELEMENTS OF WARRANTY**: This Product is warranted to be free from defects in materials and craftsmanship with only the limitations and exclusions set out below.

3. **WARRANTY AND REMEDY**: One-Year Warranty — In the event that the Product does not conform to this warranty at any time during the time of one year from original purchase, warrantor will repair the defect and return it to you at no charge.

This warranty shall terminate and be of no further effect at the time the product is: (1) damaged by extraneous cause such as fire, water, lightning, etc. or not maintained as reasonable and necessary; or (2) modified; or (3) improperly installed; or (4) misused; or (5) repaired or serviced by someone other than Warrantors' authorized personnel or someone expressly authorized by Warrantor's to make such service or repairs; (6) used in a manner or purpose for which the product was not intended; or (7) sold by original purchaser.

LIMITED WARRANTY, LIMITATION OF DAMAGES AND DISCLAIMER OF LIABILITY FOR DAMAGES: THE WARRANTOR'S OBLIGATION UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT, AT THE WARRANTOR'S OPTION AS TO REPAIR OR REPLACEMENT. IN NO EVENT SHALL WARRANTORS BE LIABLE OR

RESPONSIBLE FOR PAYMENT OF ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL AND/OR PUNITIVE DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO ANY LABOR COSTS, PRODUCT COSTS, LOST REVENUE, BUSINESS INTERRUPTION LOSSES, LOST PROFITS, LOSS OF BUSINESS, LOSS OF DATA OR INFORMATION, OR FINANCIAL LOSS, FOR CLAIMS OF ANY NATURE, INCLUDING BUT NOT LIMITED TO CLAIMS IN CONTRACT, BREACH OF WARRANTY OR TORT, AND WHETHER OR NOT CAUSED BY WARRANTORS' NEGLIGENCE. IN THE EVENT THAT IT IS DETERMINED IN ANY ADJUDICATION THAT THE LIMITED WARRANTIES OF REPAIR OR REPLACEMENT ARE INAPPLICABLE, THEN THE PURCHASER'S SOLE REMEDY SHALL BE PAYMENT TO THE PURCHASER OF THE ORIGINAL COST OF THE PRODUCT, AND IN NO EVENT SHALL WARRANTORS BE LIABLE OR RESPONSIBLE FOR PAYMENT OF ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL AND/OR PUNITIVE DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO ANY LOST REVENUE, BUSINESS INTERRUPTION LOSSES, LOST PROFITS, LOSS OF BUSINESS, LOSS OF DATA OR INFORMATION, OR FINANCIAL LOSS, FOR CLAIMS OF ANY NATURE, INCLUDING BUT NOT LIMITED TO CLAIMS IN CONTRACT, BREACH OF WARRANTY OR TORT, AND WHETHER OR NOT CAUSED BY WARRANTORS' NEGLIGENCE.

WITHOUT WAIVING ANY PROVISION IN THIS LIMITED WARRANTY, IF A CIRCUMSTANCE ARISES WHERE WARRANTORS ARE FOUND TO BE LIABLE FOR ANY LOSS OR DAMAGE ARISING OUT OF MISTAKES, NEGLIGENCE, OMISSIONS, INTERRUPTIONS, DELAYS, ERRORS OR DEFECTS IN WARRANTORS' PRODUCTS OR SERVICES, SUCH LIABILITY SHALL NOT EXCEED THE TOTAL AMOUNT PAID BY THE CUSTOMER FOR WARRANTORS' PRODUCT AND SERVICES OR $250.00, WHICHEVER IS GREATER. YOU HEREBY RELEASE WARRANTORS FROM ANY AND ALL OBLIGATIONS, LIABILITIES AND CLAIMS IN EXCESS OF THIS LIMITATION.

INDEMNIFICATION AND COVENANT NOT TO SUE: YOU WILL INDEMNIFY, DEFEND AND HOLD HARMLESS WARRANTORS, THEIR OWNERS, DIRECTORS, OFFICERS, EMPLOYEES, AGENTS, SUPPLIERS OR AFFILIATED COMPANIES, AGAINST ANY AND ALL CLAIMS, DEMANDS OR ACTIONS BASED UPON ANY LOSSES, LIABILITIES, DAMAGES OR COSTS, INCLUDING BUT NOT LIMITED TO DAMAGES THAT ARE DIRECT OR INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL, AND INCLUDING ATTORNEYS FEES AND LEGAL COSTS, THAT MAY RESULT FROM THE INSTALLATION, OPERATION, USE OF, OR INABILITY TO USE WARRANTORS' PRODUCTS AND SERVICES, OR FROM THE FAILURE OF THE WARRANTORS' SYSTEM TO REPORT A GIVEN EVENT OR CONDITION, WHETHER OR NOT CAUSED BY WARRANTORS' NEGLIGENCE.

YOU AGREE TO RELEASE, WAIVE, DISCHARGE AND COVENANT NOT TO SUE WARRANTORS, THEIR OWNERS, DIRECTORS, OFFICERS, EMPLOYEES, AGENTS, SUPPLIERS OR AFFILIATED COMPANIES, FOR ANY AND ALL LIABILITIES POTENTIALLY ARISING FROM ANY CLAIM, DEMAND OR ACTION BASED UPON ANY LOSSES, LIABILITIES, DAMAGES

OR COSTS, INCLUDING BUT NOT LIMITED TO DAMAGES THAT ARE DIRECT OR INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL, AND INCLUDING ATTORNEYS FEES AND LEGAL COSTS, THAT MAY RESULT FROM THE INSTALLATION, OPERATION, USE OF, OR INABILITY TO USE WARRANTORS' PRODUCTS AND SERVICES, OR FROM THE FAILURE OF THE WARRANTORS' SYSTEM TO REPORT A GIVEN EVENT OR CONDITION, WHETHER OR NOT CAUSED BY WARRANTORS' NEGLIGENCE, EXCEPT AS NECESSARY TO ENFORCE THE EXPRESS TERMS OF THIS LIMITED WARRANTY.

EXCLUSIVE WARRANTY: THE LIMITED WARRANTY OR WARRANTIES DESCRIBED HEREIN CONSTITUTE THE SOLE WARRANTY OR WARRANTIES TO THE PURCHASER. ALL IMPLIED WARRANTIES ARE EXPRESSLY DISCLAIMED, INCLUDING: THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR USE AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND THE WARRANTY OF NON-INFRINGEMENT AND/OR ANY WARRANTY ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

It must be clear that the Warrantors are not insuring your premises or business or guaranteeing that there will not be damage to your person or property or business if you use this Product. You should maintain insurance coverage sufficient to provide compensation for any loss, damage, or expense that may arise in connection with the use of products or services, even if caused by Warrantors' negligence. The warrantors assume no liability for installation of the Product and/or interruptions of the service due to strikes, riots, floods, fire, and/or any cause beyond Seller's control, further subject to the limitations expressed in any License Agreement or other Agreement provided by Warrantors to purchaser.

The agreement between the Warrantors and the Purchaser, including but not limited to the terms and conditions herein shall not be governed by the Convention for the International Sale of Goods. Where applicable, the Uniform Commercial Code as adopted by the State of Delaware shall apply.

4. **PROCEDURE FOR OBTAINING PERFORMANCE OF WARRANTY**: In the event that the Product does not conform to this warranty, the Product should be shipped or delivered freight prepaid to a Warrantor with evidence of original purchase.

5. **LEGAL REMEDIES AND DISCLAIMER**: Some jurisdictions may not allow, or may place limits upon, the exclusion and/or limitation of implied warranties, incidental damages and/or consequential damages for some types of goods or products sold to consumers and/or the use of indemnification terms. Thus, the exclusions, indemnification terms and limitations set out above may not apply, or may be limited in their application, to you. If the implied warranties can not be excluded, and the applicable law permits limiting the duration of implied warranties, then the implied warranties herein are to be limited to the same duration as the applicable written warranty or warranties herein. The warranty or warranties

herein may give you specific legal rights that will depend upon the applicable law. You may also have other legal rights depending upon the law in your jurisdiction.

6. **CHOICE OF FORUM AND CHOICE OF LAW**: In the event that a dispute arises out of or in connection with this Limited Warranty, then any claims or suits of any kind concerning such disputes shall only and exclusively be brought in either the Court of Common Pleas of Delaware County, Pennsylvania or the United States District Court for the Eastern District of Pennsylvania.

Regardless of the place of contracting or performance, this Limited Warranty and all questions relating to its validity, interpretation, performance and enforcement shall be governed by and construed in accordance with the laws of the State of Delaware, without regard to the principles of conflicts of law.

Effective date 05/01/2004
PHONETICS, INC. d.b.a. SENSAPHONE
901 Tryens Road
Aston, PA 19014
Phone: 610.558.2700 Fax: 610.558.0222
www.sensaphone.com

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

The Sensaphone® Model 400 is a fully-programmable, environmental monitoring system that offers extensive on-site and remote monitoring capability to small businesses, private homes, farms, greenhouses, computer rooms, and remote facilities. Designed for desktop or wall mounting, the Model 400 is simple to install, program and operate; no changes to standard electrical or telephone service are required. When connected to a telephone line, it will respond to an alarm by dialing up to four separate telephone numbers. When the call is answered, an "Alert Condition" message is delivered in user recordable voice.

The Model 400 features built-in sensors to monitor a variety of conditions:

- High sound level
- AC electric power failure
- Battery backup
- Temperature*

  ***Note:** While technically not a "built-in" sensor, temperature is factory installed on zone 1.

The 400 is equipped with 4 alert zones. Additional sensors* can be added to extend monitoring capabilities to include:

- Intrusion or unauthorized entry
- Water leaks and seepage
- Temperature
- Humidity
- Equipment operation
- Many other conditions that may require unique monitoring solutions

* Refer to Appendix D for information on additional sensors (available separately from Sensaphone) best suited to your application.

The status of each monitored condition is readily obtained at the unit's installation site, or remotely by telephone. At the close of every Status Report, time is provided for listening to on-site sounds.

To ensure reliable operation, the Model 400 features power backup capability; in the event of AC power failure, six C-cell alkaline batteries (not included) will continue to power the unit for approximately 24 hours.

FEATURE SUMMARY

The Sensaphone 400 includes the following features:

- Four zones configurable as temperature or dry contact
- Each zone can be individually enabled or disabled
- Fully automatic input configuration
- Temperature sensor included on zone #1
- Calibration for each zone
- Power monitor
- High sound-level monitor
- User-recordable voice messages
- Dial out to four telephone numbers
- Alarm dial out via voice and numeric pager
- Microphone for onsite listen-in
- Built-in line seizure
- Relay output (manual or automatic control)
- Four status LEDs
- Surge protection on all zones, telephone line, and power supply
- 24 hour battery backup (batteries not included)
- Wall or desktop installation

ABOUT THIS MANUAL

This manual comprises the instructions and commands for installing and operating the Model 400. The Quick Start chapter is included to speed understanding of programming and operation. Communication and Alarm Programming chapters demonstrate step-by-step methods for utilizing the full range of available features. The Troubleshooting chapter provides assistance in the event that problems are encountered.

LAYOUT

1. Programming Keypad
2. Power Jack
3. Phone Extension Jack
4. Phone Line Jack
5. Speaker
6. Built in Microphone
7. System on LED
8. Phone-in-use LED
9. Alarm LED
10. Battery OK LED
11. Battery Compartment
12. Input/Output Wiring Door

LED INDICATORS

The LEDs provide on-site alarm and status information. Listed below are descriptions of how the LEDs work.

System On

LED Off: Unit is off

LED On: Unit is in Run mode

LED Blinking: Unit is in Standby mode

Phone-In-Use

LED On: The unit or some other device is communicating on the phone line

LED Off: Phone line is not in use

LED Blinking: No telephone service detected

Alarm

LED Off: No alarms exist

LED Blinking: Unacknowledged alarm exists

LED On: Acknowledged alarm exists

Battery OK

LED On: Battery condition good

LED Blinking: Battery condition low

LED Off: No battery/critically low battery condition

TECHNICAL SUPPORT

If any questions arise upon installation or operation of the Model 400, please contact the Sensaphone Technical Service Department at the number shown below, and have the following information:

- Date of Purchase _____
- Serial number of your Model 400 _____

Technical Support is available from 8:00am to 5:00pm EST.

You may also e-mail us at support@sensaphone.com.

SENSAPHONE
901 Tryens Road
Aston, PA 19014

Phone: 877-373-2700
Fax: 610-558-0222

www.sensaphone.com

CHAPTER 2: INSTALLATION

Correctly installing the Model 400 will ensure proper functioning of the unit. Please read the entire chapter before starting the installation process.

Within the packaging will be a Warranty Registration Card. Please take the time to fill this out and mail. The One Year Limited Warranty is explained in the front of this manual.

2.1 OPERATING ENVIRONMENT

The Model 400 should be installed and operated in a clean, dry area that provides space for wiring sensors to the screw terminals, near an AC power source and telephone line. Operating temperature ranges from 32° Fahrenheit (0° Celsius) to +122° Fahrenheit (+50° Celsius).

> **NOTE:** The Model 400 is a sensitive electronic device. Do not install the Model 400 near strong electrostatic, electromagnetic or radioactive fields. Do not expose to humid environments, fumes, or corrosive vapors.

2.2 MOUNTING

Flat Mount: Place the Model 400 on top of a desk or other horizontal surface. Wall Mount: Mount on a wall with two flathead screws using the keyholes on the back panel of the unit. Place the flathead screws or bolts 4” apart at the desired height from the floor. Hook the unit over the screws and toward the floor. Refer to Figure 2-1.

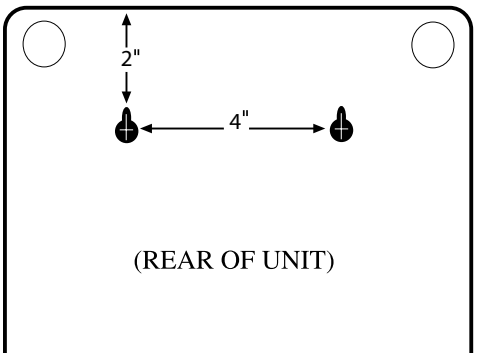


Figure 2-1. Wall Mount

2.3 POWER SURGE PROTECTION

The Model 400 can be damaged by power surges and lightning through the telephone line and the 120 VAC power supply. Although the Model 400 has built-in surge protection, we recommend that additional protection be obtained for the unit and for any electronic equipment that is attached

to your power supply and telephone lines. Power surge protection is especially important if you live in a lightning-prone area. The ISOTEL Surge Protector Model IB-4 is available through Sensaphone. See Appendix D.

2.4 POWER SUPPLY AND BATTERY BACKUP

The Model 400 is provided with a DC power transformer that will plug into any standard 120 VAC outlet and a battery backup (batteries not included) that enables the unit to continue functioning if AC power is removed (due to electric power disruption or failure). The Model 400 uses six, C-cell alkaline batteries. Do not use rechargeable batteries. Connect the DC power transformer into the jack on the back of the unit and plug the adapator into a 120VAC outlet

NOTE: Be sure that the DC transformer is plugged into an outlet before installing batteries.

To install the batteries, remove the battery compartment door located on the front of the unit below the keypad. Press down and slide the door away from the unit, align batteries according to the diagram shown in Figure 2-2, and replace the hatch.

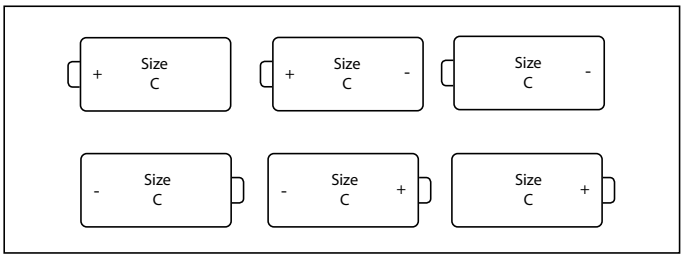


Figure 2-2. Battery Installation

2.5 STARTING THE MODEL 400

When the DC power transformer is first plugged into the electrical outlet, the Model 400 automatically starts in RUN mode. The System On light will begin to glow. The unit will respond with,"Hello, this is Sensaphone 400."

2.6 RUN MODE AND STANDBY MODE

Pressing the RUN/STANDBY key on the Model 400 keypad will alternately activate or deactivate the unit. If the unit is activated and in RUN mode, the system on light glows steadily. In STANDBY mode, the system on light goes out, but will blink every few seconds to indicate that power is still supplied to the unit.

In RUN mode, the Model 400 is able to receive incoming calls and to dial out automatically in the event of an alarm on one of the monitored conditions. To enter STANDBY mode, press RUN/STANDBY.

As soon as the Model 400 enters STANDBY mode, it responds with "Goodbye." The system on light immediately goes out and then resumes with a blink every few seconds. While in STANDBY mode, all functions are disabled, but programmed memory is preserved. Upon exiting STANDBY mode, any currently existing alarms will be announced.

> **NOTE:** STANDBY mode is not equivalent to "power off"—an electrical source, such as the 120 VAC, or the battery backup, continues to provide full power to the unit. If the unit is placed in STANDBY mode, unplugged from the 120 VAC outlet, and placed in storage, the batteries will continue to power the Model 400, discharging until they fail. Consequently, batteries should always be removed from the unit following disconnection from any 120 VAC outlet, prior to storage.

Press the RUN/STANDBY key again to return to RUN mode.

Figure 2-3. The RUN/STANDBY Key

2.7 TELEPHONE LINE

The Model 400 will operate with all standard analog telephone lines that accept pulse or tone dialing. The Model 400 cannot be used on an extension line to dial its own telephone number. Also, it may not be installed on a party line, pay telephone line, or digital telephone system.

Certain private telephone systems and public switching equipment may not accept the Model 400 dialing or may generate an unacceptable ring signal. In those cases, a dedicated line may be required. Consult the supplier of your telephone system if you encounter problems.

If you do not have a modular telephone extension at the Model 400's location, you must contact your local telephone company to have one installed (there is a charge for this service). If you have four-pin jacks, adapters are available to convert them to the modular plugs. Contact your local telephone company or electronics parts store.

> **CAUTION:** Never install telephone wiring during a lightning storm. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface. Use caution when installing or modifying telephone lines.

To install the telephone line, plug one end of the modular cord into the "line" jack on the back of the model 400 (as shown) and plug the other end into any standard RJ11 phone outlet.

Refer to Figure 2-4.

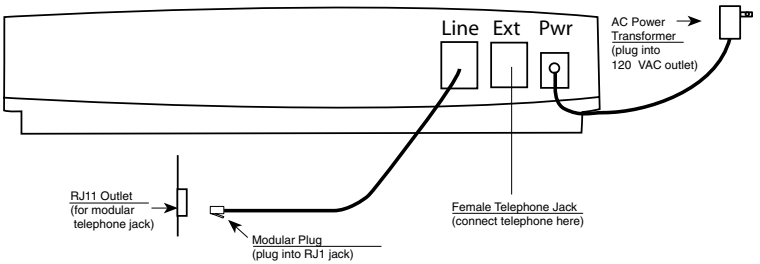
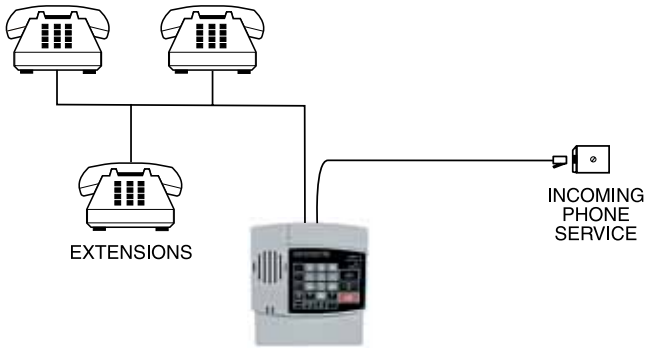


Figure 2-4. Installing the Telephone Line

On the back of the Model 400 is an extra female telephone jack labeled "EXT". This is provided so that a telephone or other answering device may be used on the same line as the unit. (It is not necessary to hook up a telephone for the Model 400 to operate.) This extension jack features Line Seizure which means that it will disconnect the extension jack when the Model 400 needs to make a telephone call. To ensure that the unit has priority over any other device on the line, you must connect all extensions to this jack. (see figure)

On the unit there are two RJ11C phone jacks:

- The RJ11C jack labeled "LINE"is to be connected to the incoming line of your phone service, ahead of all other phones or telephone extensions.
- The RJ11C telephone jack labeled "EXT" is to be connected to all extensions.



2.8 THE MICROPHONE

The Model 400 is provided with a built-in microphone which is used to monitor high sound levels produced near the installation site. The sensitivity of the microphone is configurable and will detect a continuous as well as a pulsating alarm. Note that beeping alarms that have a half second or more of silence between beeps will not be detected.

Other programming options that apply to the microphone include setting the length of time before a high sound causes an alarm.

If this sound level exists for 8 consecutive seconds (default) or for the programmed length of time, the Model 400 will dial out with an alarm message.

> **NOTE:** The proximity of the audible alarm to the microphone is extremely important.

Normally, the Model 400 and the audible alarm must be in the same room. The maximum distance can vary considerably depending on the alarm, the acoustics, and the size of the room.

During an alarm dial-out, the microphone allows four-second intervals to listen-in to sounds at the Model 400's location.

When calling for a Status Report, the microphone permits listening to on-site sounds for a programmed time interval.

2.9 ALERT ZONES

Open the input/output wiring door located above the keypad.The Model 400 can monitor up to 4 zones (represented by the numbered terminal screws shown in Figure 2-5, below).

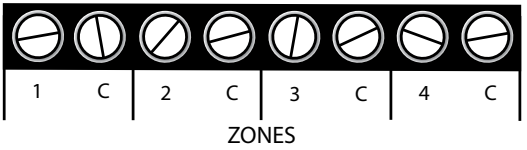


Figure 2-5 Alert Zones

Zones are configured as either dry contact or temperature. A zone configured as dry contact can be used with any normally open (N.O.) or normally closed (N.C.) device. "Open" refers to an opened circuit path; if conditions cause the circuit to close, an alert condition occurs. "Closed" refers to a continuous circuit path; if a closed circuit is opened, an alert condition occurs. The Model 400 determines the way zones are configured by the type of sensor connected to each alert zone (refer to Chapter 5.)

A zone configured as "temperature" is designed to evaluate a range of settings. The Model 400 will read the temperature at the sensor's loca-

tion and compare that value to programmed high and low temperature limits. Temperature zones must be used with Sensaphone's 2.8K Remote Temperature Sensor or weatherproof sensor.

> **NOTE:** Before wiring, it is advisable to disable the zones to prevent accidentally tripping an alarm. See Chapter 5.

Important Note regarding Ultra-Low temperature freezers:
If you are connecting the Sensaphone to an ultra low temperature freezer (-80° C) and the freezer is equipped with alarm terminals/contacts you can connect these directly to one of the zones on your Sensaphone (refer to your freezer owner's manual for proper connection).

2.10 INSTALLING THE SENSOR

After you have selected the sensor, loosen the screw of the alert zone and its corresponding common (c). Two wire leads are used to connect any monitoring sensor. Fasten one lead to the numbered screw and the other lead to C. Tighten both screws. If the zone was not disabled, the Model 400 may recite its "Alarm Exists" message as you connect the sensor. If it does, just press ALARM CANCEL to stop it. Re-enable the zone after wiring. Refer to Figures 2-6 and 2-7 for connecting a sensor to an alert zone.

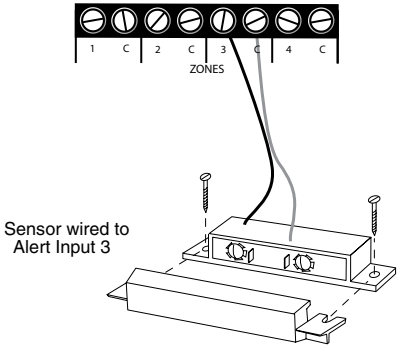


Figure 2-6. Sensor Connected to an Alert Zone

Any sensor can be attached to the Model 400 using 18-26-gauge wire (#22 recommended). The sensor can be several hundred feet from the unit, as long as the total resistance of the circuit is not greater than 50 ohms. Use wire appropriate for the application.

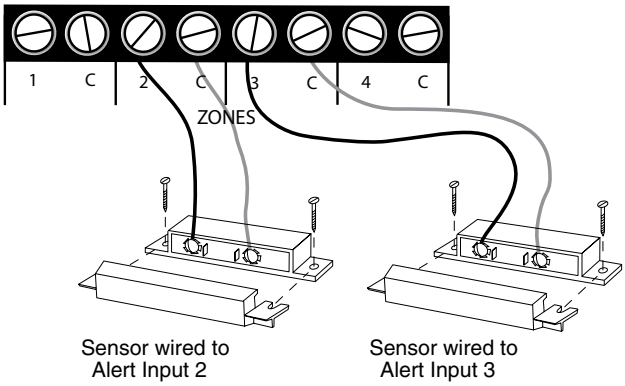


Figure 2-7 Two Sensors Wired to Adjacent Zones

NOTE: Do not use sensors, switches, or relays that supply any voltage or current to the Model 400. Be aware of proximity to other electrical wires or components when placing wires that lead from the sensors to the unit. Avoid running the wires near electrical devices that use high voltage or current, such as motors, heavy machinery, etc. This voltage may be inductively coupled into the sensor wiring and could result in damage to the the Model 400's circuitry. Try to place wires at least 6 inches from other electrical wiring or devices.

2.11 MULTIPLE SENSORS

The Model 400 may have more than one sensor connected to the same alert zone, as long as the normal condition for each sensor on the same alert zone is identical (either all N.O. or all N.C.). However, only one remote temperature sensor can be used on each zone.

When wiring several normally closed sensors on one zone, they must be connected in series. Connect one lead from the first sensor to the numbered screw of the alert zone. Next, take the other lead from the first sensor and connect it to one lead from the next sensor. Continue connecting sensors end-to-end until you have connected all of your sensors. Take the second lead from the last sensor and connect it to the common screw on the Model 400. See Figure 2-8. Multiple N.C. sensors are typically magnetic reed switches to monitor the security of windows and doors.

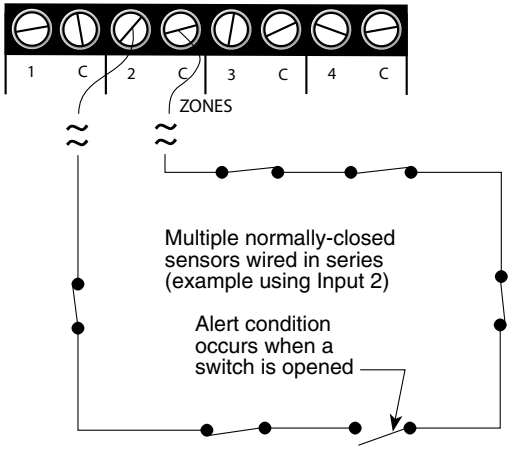


Figure 2-8. Multiple Normally Closed Sensors

To wire several normally open sensors to one alert zone, connect them in parallel. To do this, take one lead from each sensor and attach it to the numbered terminal. Then, take the second lead from each sensor and attach each to the corresponding common screw. Refer to Figure 2-9.

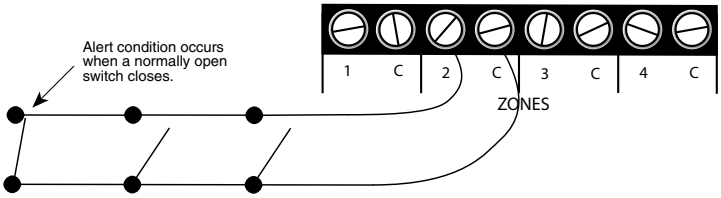


Figure 2-9 Multiple Normally Open Sensors

2.12 OUTDOOR WIRING

When wiring sensors outdoors, DO NOT allow exposed wires to run freely in open air; under such conditions, the Model 400 is susceptible to serious damage during a lightning storm. Depending upon the distance outdoor wiring must travel, consideration should be given to the use of shielded wire inside a metal conduit. Both shield and conduit should be connected to an earth ground. This prevents stray voltage from entering the unit.

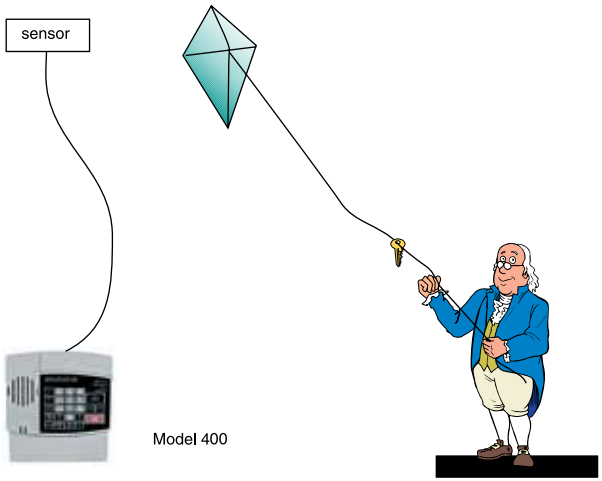


Figure 2-10. Potential Sensor Damage from Stray Electrical Noise

2.13 DISCONNECTING THE MODEL 400 FOR STORAGE OR SEASONAL USE.

If you plan to employ the Model 400 as a seasonal "watchdog" for a few months during the year, you must disconnect all wires from the unit completely to avoid damage to the circuitry when the unit is not in use. If the unit is unplugged but left in place with all the sensors still connected, the wires act as antennae that draw in any stray "electrical noise" from such devices as fans, blowers, microwaves, etc.

Additionally, it is important to remove the batteries, or they will discharge until they fail.

Preserve your Model 400 during the off-season, or when not in use:

- Remove the sensor wires at the screw terminals
- Remove the batteries
- Unplug the unit and store in a safe place

CHAPTER 3: QUICK START

This section presents a useful guide for first-time programming of the Model 400. Follow instructions for installation before attempting to program the Model 400. Refer to Chapter 2: Installation.

3.1 THE LOCAL KEYPAD

Programming is accomplished using the local keypad (shown below, Figure 3-1). Notice that a single key has several functions assigned to it; programming results are determined by the order in which keys are pressed.

Individual keystrokes are illustrated to show programming steps in the correct order. If you make a mistake by entering the wrong key, do not press another key until you hear the message "Error 1." Then, start over with the first key in the programming sequence.

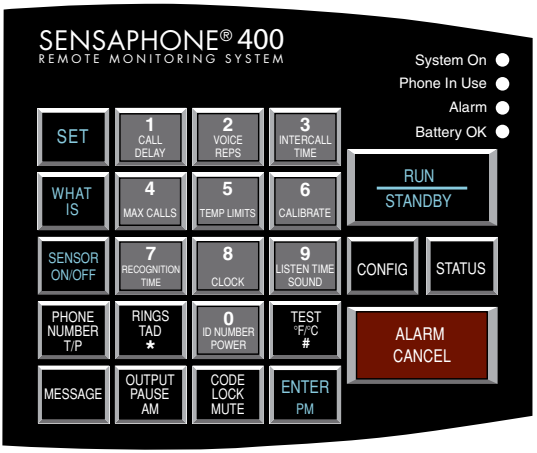


Figure 3-1. The Model 400 Keypad

3.2 PREPARATION FOR PROGRAMMING

Read complete instructions in Chapter 2: Installation, and make sure to follow these three steps first:

1. Plug the AC adapter into the 120 VAC outlet.

2. Install the batteries.

3. Connect the Model 400 to a telephone line.

When these steps are completed, the Model 400 is fully operational and able to monitor temperature, high sound, AC power failure and battery backup condition; it can also be called on the telephone for a Status Report or be used for listening to on-site sounds from any remote location. Now, the unit is ready for programming.

3.3 QUICK-START PROGRAMMING STEPS

STEP 1: SET CONFIGURATION OF ZONES

The Model 400 will scan the 4 external zones and determine if they are N.O. (normally open), N.C. (normally closed), or Temperature. If external sensors are added, make sure they are in their normal positions before proceeding—refer to Chapter 5, Section 5.1.

1. Press STANDBY to place the Model 400 in Standby mode.

2. If you have external sensors available, wire the sensors to the zones on the back of the Model 400 (see Chapter 2, Section 2.10). Otherwise, skip this step and move to step 3.
3. Press RUN. The System On light glows when the Model 400 returns to Run mode.

4. Press SET.

5. Press CONFIGURE.

6. The Model 400 will audibly recite the new configuration for each of the four zones, responding with "normally open", "normally closed", or "Temperature." If a zone is unused, it is treated as normally open.

STEP 2: SET THE ID NUMBER

It is recommended that you set the ID number to reflect the telephone number on which the Model 400 is installed.

1. Press SET

2. Press ID NUMBER.

3. Using the number keys, enter the digits (up to 16 are permitted) for the ID number. The Model 400 will recite the digits as they are pressed.

4. Press ENTER. The 400 will respond: "Okay."

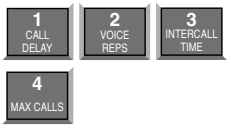
STEP 3: SET DIAL-OUT TELEPHONE NUMBERS

To program dial-out telephone numbers:

1. Press SET.

2. Press PHONE NUMBER.

3. Select which telephone number to program. Press any unassigned number key (from 1 to 4) to represent the new telephone number entry. Model 400 will respond: "Enter number."



4. Enter the complete telephone number using the number keys.

The Model 400 will recite the digits as they are pressed.

5. Press ENTER. The unit will respond: "Okay."

6. Repeat above procedure to program up to four separate telephone numbers.

STEP 4: SET TEMPERATURE LIMITS

High and low temperature limits can be separately programmed for each zone that is configured as temperature. Limits can range from –20° to +150°F, or from –30° to 65°C. Default settings are: 10° F for low temperature and 100° F for high temperature. Do not set temperature limits too close to normal room temperature, since minor fluctuations could result in frequent and unnecessary alarm dialouts.

1. Press SET.

2. Press TEMP LIMITS.

3. Using the number keys, press a number (from 1 to 4) that corresponds to the temperature zone being programmed.

The Model 400 responds: “Enter low temperature limit.”

4. Using the number keys, enter a value for low temperature limit. The Model 400 will recite the digits as they are pressed. If a negative number is required, first press *, then enter the number.

5. Press ENTER.

The Model 400 responds: “Enter high temperature limit.”

6. Using the number keys, enter the value for high temperature limit. The Model 400 will recite the digits as they are pressed.

7. Press ENTER. The Model 400 responds: “Enter.”

This concludes minimum programming to achieve normal operation of the Model 400. In addition to the programming just accomplished, default settings for many more features take effect when the unit is first powered. You will be able to reprogram most of these factory-set defaults to suit your application.

For a complete explanation of each feature (with illustrations of key-strokes), refer to Chapter 4: Communications Programming and Chapter 5: Alarm Programming.

To gain a basic understanding of how the alarm dial-out feature works, refer to this chapter, Section 3-4. For extended information regarding dial-out and related programmable parameters, refer to Chapter 7: Operation.

3.4 SUMMARY OF THE ALARM DIAL-OUT PROCESS

Action—Response	Programmable Feature
1. THE MODEL 400 DETECTS AN ALERT CONDITION An alert condition is not the same as a valid alarm—the condition must continue for the programmed time period, or ***Recognition Time***, before it is recognized as a valid alarm.	• **Recognition Time** This is the programmed waiting period to determine if an alert condition has persisted long enough to be considered a valid alarm. If the sensor returns to normal within recognition time, then no alarm will occur.
2. A VALID ALARM IS CONFIRMED An audible, on-site alarm message begins and continues until the alarm is acknowledged. (If the Mute feature is turned on, there is no on-site message.) ***Call Delay*** is activated.	• **Call Delay** This is the programmed waiting period, before the first telephone number is called, to report an alarm.
3. DIAL-OUT BEGINS Dial-out begins by calling telephone number 1 to report an alarm. If there is no acknowledgment, the Model 400 waits the programmed ***Intercall Time*** before dialing subsequent telephone numbers. Dial-out continues in this manner, cycling through the remaining telephone numbers, for the programmed ***Max Calls***.	• **Intercall Time** This is the programmed waiting period, in between sequential dialing of telephone numbers, to report an alarm.

4. THE ALARM IS ACKNOWLEDGED When the alarm is acknowledged, the dial-out process is cancelled and the audible, on-site alarm message stops.	• **Max Calls** This is the total number of telephone calls that will be dialed in response to any valid alarm. Telephone numbers are dialed sequentially, and continue to cycle until the maximum number of calls is reached. If no acknowledgment occurs, then at the completion of Max Calls, all alarms are automatically acknowledged.

CHAPTER 4: COMMUNICATIONS PROGRAMMING

This chapter explains the keypad commands for communications programming of the Model 400, including interrogation and resetting of the following:

- Voice Messages
- The Unit ID Number
- Dial-out Telephone Numbers
- Tone or Pulse Dialing
- Special Dialing with Pagers, Beepers and Access Numbers.
- Dial-out test mode
- Rings Until Answer
- Telephone Answering Device Compatibility
- Listen-in Time
- Call Delay
- Local Voice Mute
- Voice Repetitions
- Intercall Time
- Maximum Number of Calls
- The Clock
- Security Code

4.1 VOICE MESSAGES

The 400's digital speech recording feature allows you to record custom messages for each of the four Zones and an ID Message. This means that when the 400 calls you during an alarm, you will hear a personalized Voice Message identifying the unit and telling you exactly what alarm condition exists. You can record a separate message for each of the four Zones. The message can run a maximum of 5 seconds. The ID Message can be a maximum of 8 seconds. You can shorten the message length by pressing the ENTER key after reciting the message.

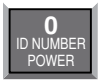
The **ID Message** is used to identify the unit. This could be a particular building name, its location (address or city), or some other identifier.

To program the ID Message:

1. Press the SET key.

2. Press the MESSAGE key. The 400 will say "Enter Message Number."

3. Press the ID key (number 0 key).



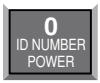
4. When the unit beeps, begin speaking your message into the microphone. The unit will say "OK," when the recording time has elapsed; then it will play back your recorded message.

To play back the ID Message:

1. Press the WHAT IS key.

2. Press the MESSAGE key.

3. Press the ID key (number 0 key).



The 400 will play back your recorded message.

The Zone Messages are used to identify the device or condition being monitored such as temperature, humidity, equipment alarms, security alarms, etc.

To program the Voice Message for a Zone:

1. Press the SET key.

2. Press the MESSAGE key. The 400 will say, "Enter Message Number."

3. Press the number key for the corresponding Zone.

4. When the unit beeps, begin speaking your message into the microphone. The unit will say "OK," when the recording time has elapsed; then it will play back your recorded message.

To play back the message for a Zone:

1. Press the WHAT IS key.

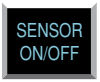
2. Press the MESSAGE key.

3. Press the corresponding Zone number key.

The 400 will play back your recorded message.

To erase a Zone or ID message:

1. Press the SENSOR ON/OFF key.



2. Press the MESSAGE key.

The 400 will say "Enter message number."

3. Press the Zone Number or ID key.

The 400 will say, "Message erased."

4.2 THE UNIT ID NUMBER

The Unit ID Number is the identification number of the Model 400. This number is typically the telephone number where the unit is installed, or it may be designated using any number that best suits your application.

The purpose of the Unit ID Number is to immediately provide the source of any alarm, especially when using multiple Model 400 units in a complex monitoring system. When the Model 400 is called from a remote location, it always begins its message with the identification number:

"Hello, this is (Unit ID Number)."

4.2.1 PROGRAMMING THE ID NUMBER

To program the ID Number:

1. Press SET.

2. Press ID NUMBER.

3. Using the number keys, enter up to 16 digits for the ID number. The Model 400 will recite the digits as they are pressed.

4. Press ENTER. The Model 400 will respond: "Okay."

4.2.2 INTERROGATING THE ID NUMBER

To interrogate the ID numbers:

1. Press WHAT IS.

2. Press ID NUMBER. The Model 400 will recite the Unit ID Number programmed.

4.2.3 DELETING THE ID NUMBER

To delete the ID number

1. Press SET.

2. Press ID NUMBER

3. Press ENTER

4.3 DIAL-OUT TELEPHONE NUMBERS

The Model 400 can store up to four 48-digit phone numbers. These are the numbers that will be called during alarm dial-out. In the event of an alarm, the numbers are dialed sequentially, 1 through 4. Begin programming the first telephone number by assigning it to the key labeled with the number 1 on the keypad, and continue to assign any other telephone numbers in numerical order. A pause, pound or star can be added to an individual phone number to access different phone and beeper systems. See Special Dialing, Section 4.5.

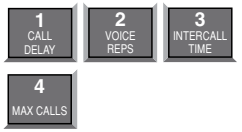
4.3.1 PROGRAMMING DIAL-OUT TELEPHONE NUMBERS

To program dial-out telephone numbers:

1. Press SET.

2. Press PHONE NUMBER.

3. Select which telephone number to program. Press any unassigned number key (from 1 to 4) to represent the new telephone number entry. The Model 400 will respond: "Enter number."



4. Enter the complete telephone number using the number keys.

5. Press ENTER. The unit will respond with "Okay."

6. Repeat above procedure to program up to four separate telephone numbers.

Model 400 will respond again “Enter number”

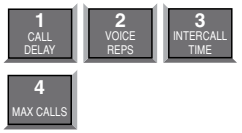
4.3.2 INTERROGATING A DIAL-OUT TELEPHONE NUMBER

To interrogate dial-out telephone numbers:

1. Press WHAT IS.

2. Press PHONE NUMBER.

3. Press a number key (from 1 to 4).



Model 400 will recite the corresponding telephone number. If there is no number programmed for a particular key, the unit will respond: “No number.”

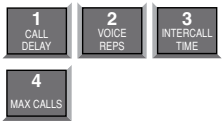
4.3.3 ERASING A TELEPHONE NUMBER

To erase a telephone number:

1. Press SET.

2. Press PHONE NUMBER.

3. Press the number key (from 1 to 4) representing the telephone number you want to erase.



4. Press ENTER. The Model 400 will say "Number # erased."

4.4 DIAL-OUT TEST MODE

The 400 allows you to test your telephone programming by simulating an alarm dialout to any programmed telephone number. This can be a valuable tool for insuring that your programming is correct and also for troubleshooting dialing problems. In this mode all signals on the telephone line are audible through the local speaker.

4.4.1 TO TEST A DIALOUT PHONE NUMBER:

1. Press the SET key.

2. Press the TEST key.

The 400 will say "Enter Number."

3. Press a number key (1–4) corresponding to the phone number entry you wish to test, and press ENTER.

The 400 will dial the number and announce the time for voice calls, or send its ID number for pager calls.

4.4.2 MANUALLY DIAL A TELEPHONE NUMBER

1. Press the SET key.

2. Press the TEST key.

The 400 will say "Enter number."

3. Press 0 then ENTER to enter manual dialing mode. The 400 will go off-hook and you should hear a dial tone through the speaker. Press any number keys to dial a telephone number.

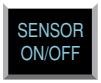
4. Press ALARM CANCEL to hang up and exit the test.

4.5 TONE OR PULSE DIALING

The Model 400 can dial out in pulse or Touch Tone™. Select the type of dialing, in either pulse or tone, depending upon the type of service provided by your telephone company. The default is tone.

To program for either pulse or tone:

1. Press the SENSOR ON/OFF key.



2. Press PHONE NUMBER T/P.

The Model 400 will respond: "Tone" to indicate that tone dialing is enabled, or "Pulse" to indicate that pulse dialing is on and enabled.

3. Repeat key sequence to switch between settings.

4.6 SPECIAL DIALING

The Model 400 has provisions for special dialing sequences. Special dialing sequences allow:

- Dialing that requires an access number to connect with an outside line.
- Dialing that requires the pound (#) or star (*).
- Dialing to a beeper or pager.

4.6.1 SPECIAL DIALING KEYS

The following designated keys represent special functions when used with PHONE NUMBER entries:

1. Pause

PAUSE represents a two-second pause in dialing. It can be used when an access number is required before dialing to an outside line. (For example, in some cases a "9" or other number, must be dialed first, in order to get a dial tone for an outside line.)

2. Pound (#)

A pound may be required when calling some phone or beeper systems.

3. Star (*)

A star may be required when calling some phone or beeper systems.

4. Code

The CODE key can be used to perform special functions during the dialing sequence. These include: Pager dialing, Wait for Answer, and Switch to Touch-tones. These functions enable the Sensaphone to send a numeric page, or dial a telephone number + office extension, or combine pulse & touch-tone dialing in the same telephone number. Multiple codes can be used during telephone number programming if required. See section 4.5.4 for special instructions on dialing to a beeper or pager.

Code 1 Pager

When CODE + 1 is inserted as the first digit of the telephone number, the Model 400 will make a pager call. This means that the unit will expect the call to be answered by a paging service provider, then it will send its ID number (using touch-tones), followed by the digits that identify the zone(s) in alarm. The unit will hang-up after it completes the call. See section 4.5.4 for specific programming examples for dialing a pager.

Code 2 Wait-For-Answer

You can force your Sensaphone to Wait-For-Answer in the middle of dialing a telephone number. This is useful when calling a telephone extension that is initially answered by an auto-attendant. By inserting the wait-for-answer code you can instruct your Sensaphone to call the main number, then wait for an answer by the auto-attendant, then dial the extension. The Sensaphone will not speak it's voice message until the telephone is answered at the extension.

Example:

SET + PHONE NUMBER + any unassigned number key 1-4

+ telephone number + CODE + 2 + extension number + ENTER

Code 3 Switch to Touch-tone

This command allows you to change from pulse dialing to touch-tone dialing in the middle of dialing a telephone number. This is useful when your telephone service only supports pulse dialing, but you need to send touch-ones after connecting – such as when dialing a numeric pager or navigating a voice menu.

Example:

In this example a telephone number is dialed, the Sensaphone waits for the call to be answered, then changes to touch-tones to dial an extension.

SET + PHONE NUMBER + any unassigned number key 1-4 +

telephone number + CODE + 2 + CODE + 3 +

extension number + ENTER

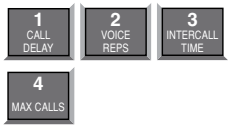
4.6.2 INCORPORATING A PAUSE

Incorporate PAUSE to access an outside telephone line:

1. Press SET.

2. Press PHONE NUMBER.

3. Press any unassigned number key (from 1 to 4) to represent the new telephone number entry. Model 400 will respond: "Enter number."



4. From the number keys, enter the access digit (i.e., 9). The Model 400 will recite the digit.

5. Press PAUSE. The Model 400 will "pause."

6. Enter the complete telephone number using the number keys. The Model 400 will recite the digits as they are pressed.

7. Press ENTER. The Model 400 will say "Okay."

4.6.3 INCORPORATING A POUND (#) OR STAR (*)

Incorporate a pound or star if it is normally included in telephone number:

1. Press SET.

2. Press PHONE NUMBER.

3. Press any unassigned number key (from 1 to 4) to represent the new telephone number entry. Model 400 will respond: "Enter number."

4. Enter the telephone number using the number keys. The Model 400 will recite the digits as they are pressed.

5. Position the pound (#) or star (*) within the telephone number where required by pressing the designated keys. The Model 400 will say "pound" or "star" each time the key is pressed.

–OR–

6. Enter any remaining digits of the telephone number.

7. Press ENTER. The Model 400 will say "Enter."

4.6.4 SPECIAL DIALING TO A BEEPER OR PAGER

Your Sensaphone can be programmed to send an alarm message to a numeric beeper/pager. The message will include the Sensaphone's telephone number (ID number) and the Zone numbers that are in alarm. For example, if zones 1 and 4 are in alarm, the message on your pager would be: 8882227777-1-4, where 8882227777 is the unit's ID number. A Sound alarm will appear as alarm -9 and a Power alarm will appear as alarm -0. To program a telephone number for Pager dialout, you must enter Code 1 at the beginning of the telephone number. The Sensaphone will say "Code one, Pager" when you enter the command.

Follow the key sequence below to dial a numeric pager:

SET + PHONE NUMBER + any unassigned number key 1-4 +

CODE + 1 + pager telephone number + ENTER

To check your programming:

WHAT IS + PHONE NUMBER + assigned # 1-4

The Sensaphone will say "Pager", followed by the programmed telephone number.

To send a test page:

SET + TEST + assigned # key 1-4 + ENTER

The Sensaphone will let you listen to the dialout sequence through its speaker and send you a message that includes the Sensaphone's telephone number (ID number).

Voice Prompted Paging Systems

If your paging provider is answered by a voice prompt which requires you to enter one or more touch-tones to send a message, then use the wait-for-answer code (4.5.1) in combination with the Pause key and other number keys to navigate the voice menu until you reach the message entry point. The Sensaphone will automatically send it's telephone number, Zone numbers, and a pound (#) tone at the end of the number. For assistance contact Sensaphone Technical Support at 1(877)373-2700.

4.7 RINGS UNTIL ANSWER

Rings Until Answer is the programmed number of times the telephone rings before the Model 400 will answer an incoming call. This can be set from 1 to 15 rings. The default value is 4.

4.7.1 PROGRAMMING RINGS UNTIL ANSWER

To program Rings Until Answer:

1. Press SET.

2. Press RINGS/TAD. The Model 400 will respond: "Enter number."

3. Using the number keys, enter a value.

4. Press ENTER. The Model 400 will respond: "Okay."

4.7.2 INTERROGATING RINGS UNTIL ANSWER

To interrogate Rings Until Answer:

1. Press WHAT IS.

2. Press RINGS/TAD.

4.8 TAD (TELEPHONE ANSWERING DEVICE)

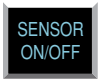
The TAD feature is especially useful because it integrates the operation of the Model 400 with your telephone answering device (e.g. answering machine) in a way that retains the full flexibility of each system. This allows you to have on-demand telephone access to the Model 400, for obtaining a Status Report, or for issuing call-in commands, while your telephone answering device is set to receive outside calls. Programming for use with a telephone answering device (TAD) is always used in conjunction with Rings Until Answer, detailed in section 4.6.

> **NOTE:** The TAD feature only applies to answering devices connected to the same telephone line as the Model 400.

4.8.1 TAD ENABLE/DISABLE

To enable/disable the TAD feature:

1. Press SENSOR ON/OFF.



2. Press RINGS/TAD.

The Model 400 will respond: "TAD On." (If the Model 400 says "TAD Off," repeat steps 1 and 2 to reactivate TAD.)

4.8.2 USING THE TAD FEATURE

1. Make sure the TAD feature is enabled on the Model 400. (The default setting is disabled, so you must enable it first.)
2. Determine the number of rings your telephone answering device uses to answer the telephone. (Most answering devices require 4 rings; others are selectable.)
3. On the Model 400, program Rings Until Answer to a greater number than the number of rings set on your answering machine.

Example:

Telephone answering device, rings = 4

Model 400, Rings Until Answer = 6

Using the procedure just outlined, all incoming calls will be answered by the telephone answering device, allowing it to operate normally. With the programming just accomplished, the Model 400 can be accessed remotely, by telephone, to obtain the Status Report.

1. Dial the telephone number of the Model 400.
2. Let the telephone ring once and then hang up.
3. Wait approximately ten seconds
4. Call the Model 400 back.

It will answer the telephone on the first ring.

Explanation: The pattern of one ring, followed by a second call (within 30 seconds), signals the Model 400 to answer your incoming call, bypassing the telephone answering device.

> **NOTE:** Special Case: If the Model 400 shares the same line with a telephone answering device, and during certain time periods, frequent, incoming calls are expected on that line, then you may want to temporarily disable the TAD feature. If you leave the TAD enabled, it will not adversely affect normal operation, but if two outside telephone calls are received within the same 30-second time window, the Model 400 will interpret this pattern as a signal to answer the telephone. If this occurs, press any key on the Model 400 to hang up.

4.8.3 NO TAD IN USE

If a telephone answering device is not used on the same telephone line as the Model 400, make sure that the TAD feature is disabled, or turned off. Only Rings Until Answer programming will determine how incoming calls are answered. For example, if you program Rings Until Answer to 3, incoming calls will be answered in 3 rings.

4.9 LISTEN-IN TIME

The Listen-in Time is the amount of time you can listen to sounds from the Model 400's built-in microphone at its installation site. When you call in for a Status Report, the Model 400 announces Listen-in Time at the end of its first round of status readings, saying, "Listen for (programmed time entered)." The programmable range is from 0 to 255 seconds (or up to 4.17 minutes). The default value is 15 seconds.

NOTE: The microphone is also used to monitor high sound level. See Chapter 5, Section 5.10 through Section 5.11.1.

4.9.1 PROGRAMMING THE LISTEN-IN TIME

To program the Listen-in Time:

1. Press SET.

2. Press LISTEN TIME. The Model 400 will respond: "Enter seconds."

3. Using the number keys, enter the seconds. The Model 400 will recite the digits as they are pressed.

4. Press ENTER. The Model 400 will respond: "Okay."

4.9.2 INTERROGATING THE LISTEN-IN TIME

To interrogate the Listen-in Time:

1. Press WHAT IS.

2. Press LISTEN TIME. The Model 400 will recite the listen-in time.

4.10 CALL DELAY

Call Delay is the programmed length of time the Model 400 waits, following detection of an alarm, before it begins the dial-out sequence. This applies only to the first call. (Delay time between calls is also programmable: refer to Intercall Time, Section 4-12.)

The purpose for Call Delay is to allow time for personnel at the Model 400's installation site to respond to and cancel an alarm before dial-out begins. During this time, the Model 400 will audibly repeat its "alarm" message (unless the Local Voice Mute feature has been activated—refer to Section 4.10). The default for Call Delay is 30 seconds. Call Delay can be programmed from 0 seconds to 60 minutes (1 hour).

4.10.1 PROGRAMMING THE CALL DELAY

To program the Call Delay:

1. Press SET.

2. Press CALL DELAY.

The Model 400 will respond: "Enter minutes."

3. Using the number keys, enter the minutes.

The Model 400 recites the digits as they are pressed.

4. Press ENTER. The Model 400 responds: "Enter seconds."

5. Using the number keys, enter the seconds. The Model 400 recites the digits as you press them.

6. Press ENTER. The Model 400 responds: "Okay."

4.10.2 INTERROGATING CALL DELAY

To interrogate Call Delay:

1. Press WHAT IS.

2. Press CALL DELAY.

The Model 400 will recite the programmed Call Delay.

4.11 LOCAL VOICE MUTE

When the Model 400 dials out to report an alarm, it also audibly recites the alarm message through it's speaker. The Local Voice Mute command allows you to turn off the speaker at the Model 400's site during alarm dialouts and status call-ins. This feature is used to prevent intruders or unauthorized persons from hearing the alarm dial-out message or from hearing the Status Report during an off-site call.

4.11.1 ENABLE/DISABLE LOCAL VOICE MUTE

To enable/disable Local Voice Mute:

1. Press SENSOR ON/OFF.

2. Press MUTE.

The Model 400 will say "Mute On" to indicate that Local Voice Mute is enabled, or "Mute Off" to indicate that it is disabled.

3. Repeat key sequence to switch between enabled or disabled Local Voice Mute.

4.12 VOICE REPETITIONS

The Voice Repetitions feature allows programming of the number of times the alarm message is repeated per phone call during alarm dial-out.

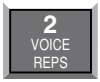
The maximum repetitions may be set to 10; the default is 3 repetitions.

4.12.1 PROGRAMMING VOICE REPETITIONS

To program Voice Repetitions:

1. Press SET.

2. Press VOICE REPS.



The Model 400 will respond: "Enter number."

3. Using the number keys, enter a value from 1 to 10.

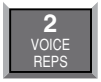
4. Press ENTER. The Model 400 will respond: "Okay."

4.12.2 INTERROGATING VOICE REPETITIONS

To interrogate Voice Repetitions:

1. Press WHAT IS.

2. Press VOICE REPS.



The Model 400 will recite the number programmed.

4.13 INTERCALL TIME

The Intercall Time is the programmable period of time the Model 400 waits in calling subsequent telephone numbers. Intercall Time is activated only after alarm dial-out to the first telephone number fails to be acknowledged. This period can be programmed from 10 seconds to 60 minutes. The default intercall time is 1 minute.

If an incoming telephone call is made to the Model 400 during Intercall Time (in between its dialing of subsequent telephone numbers to report an alarm), it will answer the incoming call and immediately report any existing alarms.

4.13.1 PROGRAMMING INTERCALL TIME

To program Intercall Time:

1. Press SET.

2. Press INTERCALL TIME.

The Model 400 will respond: "Enter minutes."

3. Using the number keys, enter the minutes.

The Model 400 recites the digits as you press them.

4. Press ENTER. The Model 400 will respond: "Enter seconds."

5. Using the number keys, enter the seconds. The Model 400 recites the digits as you press them.

6. Press ENTER. The Model 400 responds: "Okay."

4.13.2 INTERROGATING INTERCALL TIME

To interrogate Intercall Time:

1. Press WHAT IS.

2. Press INTERCALL TIME.

The Model 400 will recite the programmed Intercall Time.

4.14 MAXIMUM NUMBER OF CALLS (MAX CALLS)

The Max Calls feature controls the total number of repeated calling attempts by the Model 400 in the event of an alarm. When an alarm occurs, the dial-out process begins, and continues to cycle through your programmed telephone numbers until the alarm is acknowledged or until the maximum number of calls is reached. The Max Calls setting regulates the number of calls that will be made as a result of any alarms; if more than one alarm is detected at once, or if a second alarm occurs during dial-out on the first alarm, the Max Calls setting will start the calling process from zero, until the programmed number of calling attempts are completed.

The default setting for Max Calls is 100, but it may be programmed from 1 to 255 calls. Max Calls is cancelled when an alarm is acknowledged. If the maximum number of calls is completed and no alarm acknowledgement has occurred, the Model 400 will automatically acknowledge any alarm and stop the dial-out.

> **NOTE:** If only one telephone number is programmed, the Model 400 will dial out a maximum of 15 times to report an alarm in accordance with FCC rules.

4.14.1 PROGRAMMING MAX CALLS

To program Max Calls:

1. Press SET.

2. Press MAX CALLS.

The Model 400 will respond: "Enter number."

3. Using the number keys, enter a value. The Model 400 will recite the digits as you press them.

4. Press ENTER. The Model 400 responds: "Okay."

4.14.2 INTERROGATING MAX CALLS

To interrogate Max Calls:

1. Press WHAT IS.

2. Press MAX CALLS.

The Model 400 will recite the value set for Max Calls.

4.15 THE CLOCK

The Model 400 has a built-in clock. The power-up time is 12 am. The clock will keep time from 12 am until you program the current time. It will then keep time from your programmed time. If the AC power fails, the clock will continue to keep time until the battery back-up fails. It will then reset to 12 am when power is restored. An incorrect time is a good indication that the power has failed and the batteries have been expended.

4.15.1 SETTING THE CLOCK

To set the clock:

1. Press SET.

2. Press CLOCK.

3. Using the number keys, enter the correct time. The Model 400 will recite the digits as they are pressed.

4. If the time is AM, press the AM key. The Model 400 will say "am" If the time is PM , press the PM key. The Model 400 will say "pm."

Example: You want to set the clock to 9:45 am. Press the following keys in the order shown:

SET + CLOCK + 9 + 4 + 5 + AM

4.15.2 INTERROGATING FOR THE CURRENT TIME

To interrogate the Model 400 for the current time:

1. Press WHAT IS.

2. Press CLOCK. The Model 400 will recite the current time.

4.16 THE SECURITY CODE

The Security Code is the last step after setting all other programming parameters for the Model 400. The code consists of a 4-digit number you select and will effectively prevent unauthorized changes to the Model 400's programming. When the Security Code is activated, all keyboard programming is locked. The Model 400 may be interrogated using the WHAT IS key, but the keyboard must be unlocked, via the Security Code, before any programming changes are possible.

4.16.1 LOCKING THE KEYPAD

To program the Security Code:

1. Press SET.

2. Press CODE.

The Model 400 will say "Enter security code."

3. Using the number keys, enter 4 digits.

4. Press ENTER.

The Model 400 says, "OK." The keyboard is now locked.

If unauthorized persons attempt to set a parameter, an error message, "Error 2," is returned. Whenever any operation except WHAT IS takes place without entering the security code first, this error message occurs.

4.16.2 UNLOCKING THE KEYPAD

To unlock the keyboard:

1. Press WHAT IS.

2. Press CODE.

The Model 400 will say "Enter Security Code."

3. Using the number keys, enter the digits for the code.

4. Press ENTER.

If the correct code is entered, the Model 400 will say "OK." If the wrong code is entered, the Model 400 will say "Error 2."

CHAPTER 5: ALARM PROGRAMMING

This chapter explains the alarm programming and monitoring capabilities of the Model 400, with specific instructions for the following features:

- Configure zones as dry contact or temperature
- Enable/disable zones
- Program alarm Recognition Time for each zone
- Program high and low temperature limits
- Disable alarm response to high or low temperature
- Program temperature in Fahrenheit or Celsius scale
- Calibrate temperature
- Obtain current temperature
- Program AC power-failure Recognition Time
- Enable/disable AC power monitoring
- Program sound level sensitivity
- Program high sound Recognition Time
- Disable alarm response to high sound
- Use Exit Delay via Status Report

5.1 ZONE CONFIGURATION

In preparing the Model 400 to sense an alert condition, the zones must be configured as dry contact (either open or closed) or as temperature zones. The default setting for zone 1 is temperature; for zones 2-4, the default is dry contact and open. To configure zone normality, sensors are first wired to the terminal strip at the back of the unit. (Refer to Chapter 2, Section 2.9–2.12, for an explanation on wiring zones.)

The configuration process directs the Model 400 to initialize the 4 zones and establish normal settings. Any change in the status of a zone (for example, from a normally open contact to a suddenly closed contact) is recognized as an alert condition. In the case of a temperature zone, an alert condition is recognized when established temperature limits are exceeded.

> **NOTE:** Before starting keyboard commands to configure zone normality on the Model 400, it is very important to check that the sensors you have wired to the unit are set in their normal, non-alarm positions. For example, if a magnetic reed switch (a normally-closed sensor used to detect unauthorized entry) has been wired to the Model 400, make sure that the door or window to be monitored is shut before configuring the zone. If a motion-detector is wired to the unit, it is advisable to block all sources of motion from the sensor before and during configuration.

5.1.1 PROGRAMMING ZONE CONFIGURATION

1. Press STANDBY to place the Model 400 in Standby mode.

2. Wire sensors to the zones to the back of the Model 400 (see Chapter 2, Section 2.10).
3. Press RUN. The red light glows when the Model 400 returns to Run mode.

4. Press SET.

5. Press CONFIG.

6. The Model 400 audibly recites the configuration for each of the four zones:

- If the zone is open, the Model 400 recites the number of the zone and says "normally open."
- If the zone is closed, the Model 400 recites the number of the zone, and says "*normally closed*."
- If the zone is configured as temperature, the Model 400 recites the number of the zone, followed by "Temperature."

5.1.2 INTERROGATING ZONE CONFIGURATION

1. Press WHAT IS.

2. Press CONFIG.

The Model 400 will audibly recite the configuration of each zone.

5.2 ENABLE/DISABLE ZONES

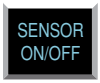
This function allows you to enable or disable a zone's response to an alert condition. An enabled zone will respond to an alert condition and allow dial-out. A disabled zone will cause dial-out to be suppressed, but any existing alert conditions will be revealed during the Status Report. Enable/disable programming is useful during wiring of zones (see Chapter 2) or when a condition needs to be monitored, but is not critical enough to be programmed for dial-out reporting. It is important to verify zone status after performing any task that requires disabling. The default setting for all zones is enabled (ON).

If an alert condition exists when zones are re-enabled, Recognition Time will restart—refer to Section 5.3.

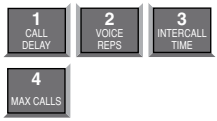
If the sensor is configured as *not used*, the unit will respond "Error the zone is off". Refer to section 5.13 to designate as used.

5.2.1 CHANGING ENABLED/DISABLED ZONE STATUS

1. Press SENSOR ON/OFF.



2. Press the number (1 to 4) of the selected zone to enable/disable. The Model 400 says "Alarm Disabled" to indicate disabled or "Alarm Enabled" to indicate enabled.



5.2.2 VERIFYING ENABLED/DISABLED ZONE STATUS

1. Press WHAT IS.

2. Press STATUS.

The Model 400 audibly recites the current status of every zone. In a Status Report, each zone is first identified by its zone number, followed by a report that specifies parameters currently affecting that zone. If a zone is disabled, the word "Alarm Disabled" immediately follows the number recited for that zone.

For example, zone 3 is configured as a normally open, dry contact zone. During the Status Report:

- If disabled, the Model 400 recites:

"Zone 3, the Alarm is Disabled" for zone 3.

- If enabled, the Model 400 recites:

"Zone 3—OK," for zone 3.

In another example, zone 2 is configured as a temperature zone. The current temperature is 76 degrees. During a Status Report:

- If disabled, the Model 400 recites:

"Zone 2, the alarm is disabled, it is now 76 degrees fahrenheit—OK"

- If enabled, the Model 400 recites:

"Zone 2—76 degrees fahrenheit—OK."

5.3 ZONE RECOGNITION TIME

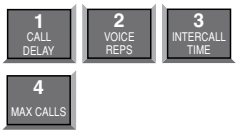
The Zone Recognition Time is the length of time an alert condition must be present before a valid alarm exists and dial-out is activated. This time period is programmable, from 0 minutes, 0 seconds (for immediate response) up to a period of 540 minutes, 0 seconds. If an alert condition begins and then clears within the established Recognition Time, no dial-out will occur. When an alert condition continues beyond the programmed Recognition Time, the Model 400 initiates dial-out. The default setting for Zone Recognition Time is 0 minutes, 3 seconds.

5.3.1 PROGRAMMING ZONE RECOGNITION TIME

1. Press SET.

2. Press RECOGNITION TIME.

3. Press the number (1 to 4) of the selected zone to be programmed.



The Model 400 responds: "Enter minutes."

4. Using the number keys, enter the minutes. For example, to set a Recognition Time of five minutes, simply press "5" on the keypad. The Model 400 recites the digits as they are pressed.

5. Press ENTER. The Model 400 responds: "Enter seconds."

6. Using the number keys, enter the seconds. The Model 400 recites the digits as they are pressed.

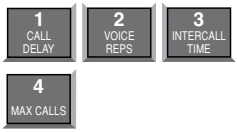
7. Press ENTER. The Model 400 responds: "Okay."

5.3.2 INTERROGATING ZONE RECOGNITION TIME

1. Press WHAT IS.

2. Press RECOGNITION TIME.

3. Press the corresponding zone key (1 to 4).



The Model 400 recites the programmed Recognition Time for that zone.

5.4 ESTABLISHING HIGH AND LOW TEMPERATURE LIMITS

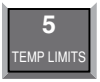
High and low temperature limits can be separately programmed for each zone configured as temperature. Limits can range from –20° to +150° Fahrenheit, or from –30° to 65° Celsius.

When temperature limits exceed high or low settings, the Model 400 will dial out with an alarm message. Default settings are: 10° F for low temperature and 100° F for high temperature.

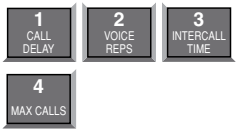
5.4.1 PROGRAMMING TEMPERATURE LIMITS FOR A SELECTED ZONE

1. Press SET.

2. Press TEMP LIMITS.



3. From the number keys, press a number (from 1 to 4) that corresponds to the temperature zone being programmed.



The Model 400 responds: "Enter low temperature limit."

4. Using the number keys, enter a value for low temperature limit. The Model 400 will recite the digits as they are pressed. If a negative number is required, first press *, then enter the number.

5. Press ENTER.

The Model 400 responds: “Enter high temperature limit.”

6. Using the number keys, enter the value for high temperature limit. The Model 400 recites the digits as they are pressed.

7. Press ENTER. The Model 400 responds: “Enter.”

NOTE: Do not set temperature limits too close to normal room temperature. Minor temperature fluctuations could result in frequent and unnecessary alarm dialouts.

5.4.2 DISABLING ALARM RESPONSE TO HIGH OR LOW TEMPERATURE

To disable alarm response to either high or low temperature settings exclusively, enter the following temperature limit when programming the selected zone. (The Model 400 will not respond to temperatures encountered at maximum settings or beyond.) Begin by following the key sequence shown in Section 5.4.1, and when prompted to enter the high or low temperature value:

- Set high temperature to either +150º F or +65º C (high temperature limit) to prevent the Model 400 from responding to a high temperature alarm.
- Set low temperature to either -20° F or -30° C to prevent the Model 400 from responding to a low temperature alarm.

5.4.3 INTERROGATING HIGH AND LOW TEMPERATURE LIMITS

1. Press WHAT IS.

2. Press TEMP LIMITS.

3. Press the number key corresponding to the selected temperature zone.

5.5 TEMPERATURE SCALE

Temperature zones may be set in either Fahrenheit or Celsius degrees. The default temperature scale is Fahrenheit. To change to Celsius:

1. Press SENSOR ON/OFF.

2. Press °F / °C. The Model 400 responds: “Degrees Celsius” indicating Celsius scale has replaced Fahrenheit scale.

3. To return to Fahrenheit scale, repeat the key sequence. The Model 400 responds: “Degrees Fahrenheit” indicating Fahrenheit scale is in effect.

NOTE: When switching from Fahrenheit to Celsius, or vice versa, the change applies to all zones configured to read temperature. When switching temperature scales it is important to reset high and low temperature limits on all temperature zones. Refer to Section 5.4.1 to reset temperature limits.

5.6 TEMPERATURE CALIBRATION

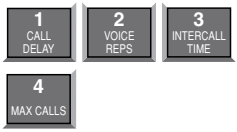
To compensate for minor variances in sensor accuracy, an offset may be programmed for each temperature zone. The amount of offset is measured in degrees Fahrenheit or degrees Celsius. Adjustments are possible within a range from -10 degrees to +10 degrees. For example, if zone 3 is sensing temperature and is reading 1 degree too high, then the calibration for zone 3 is set at -1 to obtain an accurate reading.

5.6.1 PROGRAMMING TEMPERATURE CALIBRATION

1. Press SET.

2. Press CALIBRATE.

3. Press the number (1 to 4) of the selected temperature zone to be calibrated.



4. Enter the number required to offset the current temperature reading so a correct reading is obtained.

- To program a positive offset number (up to +10 degrees), enter the number on the keypad. The Model 400 recites the digits as they are pressed.
- To program a negative offset number (up to –10 degrees), first press *. The unit responds with "negative." Next, enter the number on the keypad. The unit recites the digits as they are pressed.

5. Press ENTER. The Model 400 responds:"Okay."

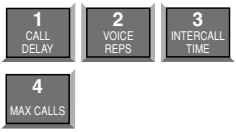
NOTE: If you find that your calibration offset exceeds more than + 5 or –5 degrees, other complicating factors could be affecting normal operation of the Model 400. Call Sensaphone for technical assistance.

5.6.2 INTERROGATING TEMPERATURE CALIBRATION

1. Press WHAT IS.

2. Press CALIBRATE.

3. Press the number key corresponding to the selected temperature zone.



5.7 OBTAINING CURRENT TEMPERATURE

Current temperature readings for each temperature zone may be accessed at any time. The Model 400 recites the zone number, and the actual temperature detected by the attached sensor, for all zones configured as temperature. To obtain current temperature:

1. Press WHAT IS.

2. Press TEST °F/°C.

5.8 AC POWER MONITORING ENABLE/DISABLE

The Model 400 monitors AC power failure. This command enables or disables the power failure detection feature.When enabled, the Model 400 will monitor power and dial out when AC power failure exceeds a programmable span of time (refer to AC Power Failure Recognition Time, Section 5.9).

The default setting for AC power monitoring is enabled (on). When disabled, the Model 400 will not dial-out to report power failure.

5.8.1 ENABLING/DISABLING THE AC POWER ALARM

1. Press SENSOR ON/OFF.

2. Press POWER.

- The Model 400 will say “Power Alarm Disabled” to indicate that the power alarm is disabled, or
- The Model 400 will say “Power Alarm Enabled” to indicate that the power alarm is enabled.

3. Repeat key sequence to change settings.

5.9 AC POWER FAILURE RECOGNITION TIME

The AC Power Failure Recognition Time is the length of time that AC electric power is off before a valid alarm is recognized and dial-out begins. The default setting is 5 minutes, 0 seconds, but is programmable from 0 seconds to a maximum of 540 minutes.

When AC power failure occurs, and throughout the programmed Recognition Time, the Model 400 steadily repeats the message "the power is off" at the unit's installation site. There is no Call Delay programming available for AC power failure. Immediately following Recognition Time, the Model 400 begins the dial-out process to report power failure.

To cancel the power-failure message locally at the keypad (during or after Recognition Time) press the ALARM CANCEL key on the Model 400 keypad. This action also cancels the dial-out process.

5.9.1 PROGRAMMING POWER FAILURE RECOGNITION TIME

1. Press SET.

2. Press RECOGNITION TIME.

3. Press POWER. The Model 400 responds: "Enter minutes."

4. Using the number keys, enter the number of minutes. The Model 400 will recite the digits as they are pressed.

5. Press ENTER. The Model 400 responds: "Enter seconds."

6. Using the number keys, enter the number of seconds. The Model 400 will recite the digits as they are pressed.

7. Press ENTER. The Model 400 responds: "OK."

5.9.2 INTERROGATING POWER FAILURE RECOGNITION TIME

1. Press WHAT IS.

2. Press RECOGNITION TIME.

3. Press POWER.

The Model 400 will recite the power Recognition Time.

5.10 SOUND ALARM MONITORING

This feature allows you to program the level and duration of sound that will cause the Model 400 to respond to an alarm and dial-out. It may be useful to desensitize the Model 400 to sound if it is installed in an area with a relatively high noise level, or where a loud noise occurs frequently but is not associated with an alarm. In some applications, it may be desirable to increase sound sensitivity to low sound levels.

5.10.1 PROGRAMMING SOUND ALARM SENSITIVITY

The sensitivity setting for sound alarm monitoring ranges from 1 to 160. A value of 1 makes the microphone the MOST sensitive to changes in sound. The value 160 makes the microphone the LEAST sensitive to sound. The default value is 32.

1. Press SET.

2. Press CALIBRATE.

3. Press SOUND. The Model 400 responds: "Enter number."

4. Using the number keys, enter a value for sound sensitivity.

The Model 400 recites the digits as you press them.

5. Press ENTER. The Model 400 responds: "Okay."

5.10.2 INTERROGATING SOUND SENSITIVITY

1. Press WHAT IS.

2. Press CALIBRATE.

3. Press SOUND. The Model 400 recites the programmed sound sensitivity level.

5.10.3 PROGRAMMING HIGH SOUND ALARM RECOGNITION TIME

The Recognition Time for sound alarm monitoring ranges from 5 seconds to 60 seconds. The default value is 8 seconds.

1. Press SET.

2. Press RECOGNITION TIME.

3. Press SOUND. The Model 400 responds: “Enter seconds.”

4. Using the number keys, enter the number of seconds. The Model 400 will recite the digits as they are pressed.

5. Press ENTER.

5.10.4 INTERROGATING HIGH SOUND ALARM RECOGNITION TIME

The Recognition Time for sound alarm monitoring ranges from 5 seconds to 60 seconds. The default value is 8 seconds.

1. Press WHAT IS.

2. Press RECOGNITION TIME.

3. Press SOUND. The Model 400 will recite the Sound Recognition Time.

5.11 HIGH SOUND ALARM ENABLE/DISABLE

The Model 400 monitors sound through the built-in microphone. When the sound level suddenly exceeds the programmed high sound limit, the Model 400 will respond with an alert condition. The increased sound level must continue throughout the programmed recognition time. The default for high sound alarm is enabled (on).

> **NOTE:** The microphone is also used for listening to on-site sounds. Refer to Chapter 4, Section 4.8. Disabling the sound alarm does not affect listen-in capability.

5.11.1 CHANGING ENABLED/DISABLED HIGH SOUND ALARM

1. Press SENSOR ON/OFF.

2. Press SOUND. The Model 400 will say "Sound Alarm Disabled" to indicate disabled or "Sound Alarm Enabled" to indicate enabled.

3. Repeat key sequence to change settings.

5.12 EXIT DELAY

When tripping an alarm is unavoidable, yet a true alert condition has not actually occurred, the alarm response, including dial-out, can be temporarily suppressed.

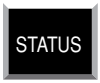
The Model 400 is able to suppress and then reset its dial-out function automatically through use of the Status Report. This is especially convenient when an alert condition is created upon exiting a monitored door, and there is no way to cancel from the local keypad.

> **Example:** You are planning to exit through a monitored door. Prior to exiting, you initiate a Status Report recitation at the Model 400 keypad by pressing WHAT IS, followed by STATUS, (key sequence shown below). This allows you approximately 40 seconds to exit without activating the Model 400's programmed response to an alarm. At the conclusion of the status report, normal alarm response is reactivated.

To use exit delay, initiate the Status Report.

1. Press WHAT IS.

2. Press STATUS. The Model 400 recites the full Status Report; during this time, you are able to exit the monitored area without tripping an alarm.

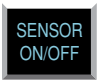


5.13 DESIGNATING A ZONE AS UNUSED

This feature allows you to mark selected Zones, Power, or Sound as unused, which will prohibit them from going into alarm and will also leave them out of the status report. Note that programming for the selected Zone will be preserved when the Zone is marked as "unusued" and will not be reconfigured if automatic Zone configuration is activated.

To designate a Zone as unused:

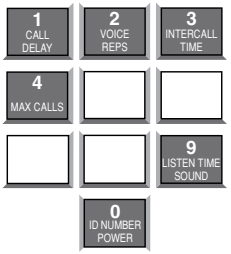
1. Press the SENSOR ON/OFF key.



2. Press the SET key.

The 400 will say "Enter Zone Number."

3. Press the corresponding number of the Zone you wish to mark as unused.



The 400 will respond by saying Zone 1–4, Power, or Sound "Off/On." Repeat the key sequence to place the Zone back in use.

CHAPTER 6: ACKNOWLEDGMENT, STATUS REPORT & REMOTE ACCESS

In addition to communication and alarm monitoring capabilities, the Model 400 will also respond to your instructions and provide you with access to information on monitored conditions at all times.

By issuing commands to the unit, either at the installation site or over standard telephone lines, the following features may be activated:

- Acknowledgment of existing alarms
- The Status Report on all monitored conditions.
- Limited programming.

6.1 ALARM ACKNOWLEDGMENT

When the Model 400 dials out with an alarm message, it will request acknowledgment before hanging up. Acknowledgment indicates to the unit that the alarm message has been received. Upon acknowledgment, the Model 400 will cancel the dial-out sequence.

There are three ways* that an alarm is acknowledged directly:

- Local Acknowledgment
- Touch-Tone™ Acknowledgment
- Callback Acknowledgment

* A fourth method of alarm acknowledgment is indirect. Refer to Max Calls, Chapter 4, Section 4.13 for an example of automatic alarm acknowledgment.

6.1.1 LOCAL ACKNOWLEDGMENT

To acknowledge an alarm locally (directly at the installation site of the Model 400), press the ALARM CANCEL Key.

6.1.2 TOUCH-TONE™ ACKNOWLEDGMENT

This method of remote alarm acknowledgment works with a Touch-Tone™ telephone.

> **Example:** You receive a call from the Model 400, reporting that an alarm exists. The message concludes: "*Enter Acknowledgement code*." Now, or at any time during this call, you may acknowledge the alarm with the code "**555**" if you are using a Touch-Tone™ telephone.

- To enter "555," press the number (5) key on the Touch-Tone™ phone keypad three times. The Model 400 will respond: "**Alarm Acknowledged**." The Model 400 will hang up and the dial-out sequence, including any further response to the alarm, will be cancelled.
- If you enter the wrong code or do not enter it within 10 seconds following the conclusion of the message, the Model 400 will respond: "**Error, Enter Acknowledgement code**." If you do not enter the acknowledgement a second time the unit will say "error" then "goodbye" and hang up. The alarm is still not acknowledged until you call back. You have a period equal to the programmed Intercall Time to call the unit back and enter the "555" acknowledgment code. If you are calling from a pulse or rotary telephone, refer to Callback Acknowledgment, Section 6.1.3, below.

6.1.3 CALLBACK ACKNOWLEDGMENT

Callback Acknowledgement is a feature that allows you to acknowledge an alarm without entering Touch-Tones™. This feature is disabled by default and must be enabled by entering the key sequence below. When Callback Acknowledgment is enabled, simply call the unit back and allow the line to ring 10 times. The unit will then answer the call, announce the alarm, then say "Alarm Acknowledged." This indicates that the alarm has been acknowledged.

To enable or disable Callback Acknowledgement:

1. Press SENSOR ON/OFF.

2. Press STATUS.

The Model 400 will say "*Callback Acknowledgement Enabled*" to indicate that Callback Acknowledgment is Enabled, or "*Callback Acknowledgement Disabled*" to indicate that Callback Acknowledgement is Disabled. This method of remote alarm acknowledgment works with any telephone: pulse, rotary, or Touch-Tone™.

Example: The Model 400 calls you with an alarm message. You answer the call with a rotary or pulse telephone, and do the following:

- You listen to the message and hang up.
- Then you call the Model 400 back on any telephone. You must wait for 10 rings—this signals the Model 400 to answer your telephone call. (Make

sure to call back within the programmed setting for Intercall Time—refer to Chapter 4, Section 4.12.)

When the Model 400 answers your return call, it announces the alarm. Then it says: "*Alarm Acknowledged*." This indicates that the alarm has been acknowledged.

> **NOTE:** If you have the TAD feature (telephone answering device) enabled, call the unit and let the phone ring once, then hang up. Wait a few seconds then call the unit back a second time. The model 400 will now answer on the first ring. If TAD is disabled, the telephone must be allowed to ring 10 times. This serves as a precaution against a random alarm acknowledgment. Refer to Chapter 4, Section 4.7, for complete information on using the TAD feature.

6.2 STATUS REPORT

The Status Report allows access to complete information on all monitored conditions either locally, from the keypad, or by telephone, from any location. The Model 400 will answer an incoming telephone call following the programmed Rings Until Answer (refer to Chapter 4, Section 4.6). Included with the Status Report are messages related to alarm conditions, AC power, battery backup and sound level. It also provides an opportunity for listening to on-site sounds (refer to Listen-in Time, Chapter 4, Section 4.8).

To initiate the Status Report:

1. Press WHAT IS.

2. Press STATUS.

Sections 6.2.1, 6.2.2, and 6.2.3 demonstrate two different Status Report recitations. The Status Report starts with:

"Hello. This is 555-1234 (or the programmed ID), (Custom ID Message)."

"It is now 12:15pm (or the current time)."

The Model 400 proceeds with a separate report for each zone. Each zone identifies itself by reciting the zone number and it's associated voice message.

6.2.1 EXAMPLE: STATUS REPORT, NO ALARMS

Zones 2, 3, and 4 are configured as dry contact and zone 1 is configured as temperature. No alarms exist. The Status Report begins by saying, "*Hello, this is 555-1234, this is building M, third floor; it is now 2:30 pm.*"

Following this introduction, the report continues:

"Zone 1, room temperature, 74 degrees, OK."

"Zone 2, door alarm, OK."

"Zone 3, ups alarm, OK."

"Zone 4, water sensor, OK."

"The sound is OK."

"The power is ON." This refers to AC power.

"The batteries are OK." Other possible responses: *"Batteries are low"* or *"Replace batteries."* (Refer to Section 6.2.4 for additional information regarding battery condition.)

"The output is off."

"Listen to the sound for 10 seconds." In this case, the programmed Listen-in Time is set at 10 seconds. (This feature is not available when obtaining the Status Report on-site, directly at the keypad.)

The Status Report repeats once more and the Model 400 concludes the call, saying: *"Goodbye."* (The Status Report will not repeat if obtained at the keypad; *"Goodbye,"* is also not recited.)

The phrase *"no number"* at the end of a Status Report indicates that no dial-out phone numbers have been programmed.

6.2.2 EXAMPLE: STATUS REPORT, EXISTING ALARMS

Zones 2, 3, and 4 are configured as dry contact and zone 1 is configured as temperature. An emergency situation is at hand: a fire in a greenhouse has tripped a smoke alarm and electrical power has been disrupted. In addition to high sound and AC power alarms, separate alarms exist on zones 1, 2, 3, and 4. You happen to call in for the Status Report, which begins with, "*Hello, this is 555-1234; "this is the Sensaphone 400 at ACME Greenhouse, 225 Oak Street"*

It is now 8:45 PM

Zone 1, "Temperature in greenhouse", 110 degrees Fahrenheit, too high, acknowledged alarm exists

Zone 2, "Door alarm in greenhouse", not OK, acknowledged alarm exists

Zone 3 "Water pressure alarm in greenhouse", not OK, acknowledged alarm exists

Zone 4 "Greenhouse control system", not OK, acknowledged alarm exists

A High Sound alarm exists, it is now too high

The Power is Off.

The Batteries are Low.

The Output is Off.

Listen to the sound for 10 seconds.

Goodbye.

6.2.3 EXAMPLE: STATUS REPORT, DISABLED ZONES

If a zone is disabled, the dial-out feature for that zone is deactivated, but all other programmed parameters remain in effect. In the example below, all 4 zones are disabled, although zones 1 and 3 are detecting alarms. AC power and Sound Level are also disabled for dial-out. When you call the Model 400 for a Status Report, you hear the following:

Hello, this is 555-1234; "this is the Sensaphone 400 at ACME Greenhouse, 225 Oak Street"

It is now 8:45 PM

Zone 1, "Temperature in greenhouse", the alarm is disabled, it is now 110 degrees Fahrenheit, too high, acknowledged alarm exists

Zone 2, "Door alarm in greenhouse", the alarm is disabled, it is not OK.

Zone 3 "Water pressure alarm in greenhouse", the alarm is disabled, it is not OK.

Zone 4 "Greenhouse control system", the alarm is disabled, it is not OK.

The Sound alarm is disabled, it is now too high

The Power alarm is disabled, it is now Off.

The Batteries are Low.

The Output is On.

Listen to the sound for 10 seconds.

Goodbye.

The Status Report repeats once more and the Model 400 concludes the call, saying: *"Goodbye."*

6.2.4 BATTERY CONDITION

During a Status Report, you may hear one of three possible messages regarding battery power. The Model 400 determines the appropriate message by measuring battery voltage. Depending upon the remaining voltage, it may respond:

- *"The batteries are OK,"* if over 8.2 Volts.
- "*The batteries are low,*" if between 7.2 and 8.2 Volts.
- *"Replace batteries,"* if below 7.2 Volts.

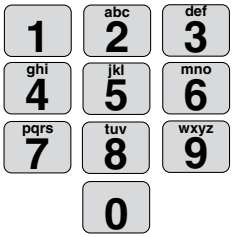
6.2.5 REMOTE ACCESS BY TOUCH-TONE™ TELEPHONE

You can issue a number of commands to the 400 remotely using a Touch-Tone™ telephone. This command mode can be entered at any time during the status report. Simply press a Touch-Tone™ and the unit will halt the report and respond with "OK." You are now in Touch-Tone™ command mode. Commands are available to perform the following functions:

- Enable and disable zones, power monitoring, and sound monitoring
- Recite/Set High and Low alarm limits
- Recite/Set telephone numbers
- Record/Play custom voice messages
- Recite/Set the relay output
- Activate the microphone for listen-in
- Recite status report

Note: If a security code is enabled, the 400 will prompt you with "Enter security code." Enter the four-digit keypad security code plus "#" to enter touch-tone command mode. If entered correctly, the 400 will respond with "OK" and you can proceed to enter the commands. If entered incorrectly, the unit will give you one more chance. If it is incorrect a second time, the unit will say "Error, goodbye" and hang up.

The commands are put together based on the letters of a touch-tone telephone. See typical telephone keypad layout below.



Many of the commands use three letters that represent an abbreviation of the selected command. For example, to Set a High limit on Zone 1 you would press S + H + 1 (or in numeric form 7 + 4 + 1)

The tables below list all of the touch-tone commands that are supported. Commands are listed in both character and numeric formats. The # key is used as an ENTER key. Use the * key to represent a negative sign or to represent the [CODE] key when programming telephone numbers.

Enable/Disable Zones

This command will toggle the selected zone between the enabled or disabled state.

Description	Touch-Tone Command
Enable/Disable Zone	* + Z(9) + (zone number)

Set and Recite High & Low Alarm Limits

The following commands are used to set or recite the Low Alarm Limit for any Zone.

Description	Touch-Tone Command
Set Zone Low Limit	S(7) + L(5) + (zone #) + (value) + #
Description	Touch-Tone Command
What Is Zone Low Limit	W(9) + L(5) + (zone #)

The following commands are used to set or recite the High Alarm Limit for any Zone.

Description	Touch-Tone Command
Set Zone High Limit	S(7) + H(4) + (zone #) + (value)+ #
Description	Touch-Tone Command
What Is Zone High Limit	W(9) + H(4) + (zone #)

Set and Recite Telephone Numbers

The following commands will allow you to program and recite dialout telephone numbers. You may need to use the Special Dialing Codes below.

Special Dialing Codes Summary

Code 1: Numeric pager type

Code 2: Wait for answer

Code 3: Change to Touch-Tone

Code 4: Pause

Code 5: Star (*)

Code 6: Pound (#)

Description	Touch-Tone Command
Setting a phone number	S(7) + T(8) + (entry 1–4) + (telephone number) + #

Description	Touch-Tone Command
Reciting a phone number	W(9) + T(8) + (entry 1–4)

Record and Play Custom Voice Messages

The following commands will allow you to record and play back custom voice messages for the ID message (0) and each zone (1–4).

Description	Touch-Tone Command
Record a Message	S(7) + M(6) + (entry 0–4)

Description	Touch-Tone Command
Play a Message	W(9) + M(6) + (entry 0–4)

Control the Relay Output

The following commands will allow you to check the status of the relay output and to toggle the Relay Output On and Off.

Description	Touch-Tone Command
Reciting the Output Status	W(9) + R(7) + O(6)

Description	Touch-Tone Command
Switching the Output	S(7) + R(7) + O(6)

Activate Microphone Listen-in

The following command will allow you to activate the microphone listen-in for the programmed duration.

Description	Touch-Tone Command
Activate Mic Listen-in	M(6) + I(4) + C(2)

Request Status Report

The following command will initiate a status report.

Description	Touch-Tone Command
Recite status report	W(9) + S(7) + R(7)

Hang-up

The following command will make the 400 hang up the telephone line.

Description	Touch-Tone Command
Hang-up the phone line	B(2) + Y(9) + E(3)

CHAPTER 7: OPERATION

After installation and programming is completed, the Model 400 is fully operational. This chapter explains the sequence of events that occur during an alarm dialout to illustrate how the Model 400 operates.

7.1 ALARM DETECTION, DIAL-OUT AND ACKNOWLEDGMENT

Generally, an alarm event is structured in the following manner:

I. The Model 400 detects an alert condition due to a change at the sensor.

II. A valid alarm is recognized.

III. Dial-out begins.

IV. The alarm is acknowledged.

Often, an alarm does not proceed through all stages: either an alert condition does not persist long enough to be considered valid, or a valid alarm is cancelled.

The table on the following pages explains the alarm detection, dial-out and acknowledgment features and lists important variable factors affecting their operation.

I. Model 400 Detects a Change at the Sensor	**Variable Factors**
Model 400 detects a change in the monitored condition (from the sensor wired to one of the zones). This is considered an alert condition, and does not qualify as a valid alarm at this point. The condition continues throughout the programmed Recognition Time. If the condition (or sensor) reverts to its normal state before the Recognition Time is reached, no alarm will occur.	*Zone Type: (1) An open circuit closes, (2) a closed circuit opens, or (3) temperature limits are exceeded.* *Recognition Time: Activated*
II. A Valid Alarm is Recognized	**Variable Factors**
The condition must persist long enough to meet or exceed the programmed Recognition Time. When Recognition Time has expired, but the alert condition continues, the Model 400 will determine that a valid alarm exists. When a valid alarm is determined, Call Delay is activated, forcing the Model 400 to wait for a programmed period of time before starting the dial-out process. Call Delay applies to the period just prior to dial-out, before the first telephone call is made. Call Delay provides the opportunity to cancel a valid alarm at the Model 400's installation site, before dial-out occurs. An audible voice message indicates which of the zones is in alarm. If on-site personnel acknowledge the alarm within the Call Delay time, the Model 400 will not dial out. (Local Voice Mute is disabled, so that alarm messages can be heard at the site.)	*Recognition Time: Expired* *Valid Alarm: Exists* *Call Delay: Activated* *Alarm Message: Audible, On-site Activated* *Local Voice Mute: Disabled*

III. Dial Out Begins	**Variable Factors**
The dial-out process is activated as soon as the Call Delay time expires (if the alarm has not been cancelled at the Model 400's installation site.) The dial-out begins with telephone number 1 and proceeds sequentially, through the remaining telephone numbers.	*Call Delay: Expired*
If the alarm is not acknowledged with the first dial-out telephone call, the Model 400 waits the duration of Intercall Time before dialing the next telephone number. Intercall Time is the programmed waiting period in between each dial-out telephone call.	*Intercall Time: Activated*
When the telephone is answered, the programmed Voice Repetitions determine the number of times per call the Model 400 recites the alarm message.	*Voice Repetitions: Activated*
Call Progress, an automatic feature, enables the Model 400 to detect whether or not the telephone call is answered. After 10 rings, or if a busy signal is encountered, the Model 400 will hang up, wait the programmed Intercall Time, and proceed to dial the next telephone number.	*Call Progress: Activated*
If no telephone calls are answered, the Model 400 dials out sequentially, through the remaining telephone numbers and continues to cycle until the programmed Maximum Number of Calls is reached.	*Max Calls: Activated*
When the telephone is answered, the Model 400 will immediately begin reciting a message that indicates which of the zones is in alarm. At the same time, the alarm message is repeating at the Model 400's installation site. The Model 400 will request acknowledgment, if it has not yet occurred.	*Alarm Messages: By Telephone and On site*

IV. The Alarm Is Acknowledged	Variable Factors
At any time after a valid alarm is determined, the alarm may be acknowledged at the Model 400's installation site, by pressing ALARM CANCEL key.	*Local, On-site Acknowledgment*
When the Model 400 dials out and the call is answered via Touch-Tone telephone, any alarm may be instantly acknowledged by pressing "555."	
If the alarm message repeats for the number of programmed Voice Repetitions, and "555" has not been entered, the Model 400 will say:	*Touch-Tone Acknowledgment: Fast Code 555*
"Enter acknowledgement code."	
The Model 400 waits 10 seconds for the Touch-Tone code "555" to be entered. If the code is entered within 10 seconds, it responds:	
"Alarm acknowledged."	*Touch-Tone Acknowledgment: Normal Code 555*
The alarm is considered acknowledged and the dialout concludes.	
If the Model 400 does not receive the Touch-Tone code within 10 seconds, it recites the following:	
"Error, enter acknowledgement code."	*Tone or Pulse Callback Acknowledgment: Within Intercall Time*
If the Model 400 does not receive the acknowledgement code a second time, it says "error, goodbye" and hangs up. The recipient of this message must call the Model 400 back within the period programmed for Intercall Time, in order to acknowledge the alarm. If Local Voice Mute is off, the unit will beep at the installation site while waiting for this call.	
Callback Acknowledgement: If enabled, the Model 400 waits 10 rings before answering to guard against random acknowledgment. If an answering device is connected to the same line as the Model 400 (and TAD is enabled), you must call the unit and let the line ring once, then hang up, wait ten seconds and call back again within 30 seconds. The Model 400 will answer on the first ring. It will recite any unacknowledged alarms, then say:	
"Alarm acknowledged, goodbye."	

	Variable Factors
When the Model 400 hangs up, the alarm is acknowledged and dial-out stops. If calls remain unanswered, or if they are received by an answering machine or FAX, the Model 400 continues the dialout sequence; it waits the Intercall Time and proceeds to dial the next telephone number. Telephone numbers are dialed sequentially, and this cycle continues for the number of Max Calls programmed. If no acknowledgment occurs, then at the completion of Max Calls, the alarm is automatically acknowledged and the dial-out process is terminated.	*Tone or Pulse* *Callback Acknowledgment: TAD Enabled* *Max Calls Acknowledgment*

NOTE: Acknowledging the alarm does not correct the situation! The alarm condition will still exist until the sensor is restored to its normal state.

7.2 EXAMPLE: A DIAL-OUT TELEPHONE CALL

The following parameters are selected for demonstration purposes:

- Model 400 Unit ID Number is set to 555-5674. It is currently installed at your place of business.
- Dial-out Telephone Number 1 is programmed to 555-1234, your home telephone number.
- Voice Repetitions are set to 4.

The Model 400 is detecting an alarm on zone 2.

The telephone rings at 555-1234, your home number.

You answer the telephone and hear the following message:

"Hello, this is 555-5674. This is the Sensaphone 400 at John's Printing Express. It is now 12:30 Am. Zone two, back door security sensor, alarm exists, it is not okay."

(4-seconds to hear on-site sound from unit's microphone.)

"Hello, this is 555-5674. This is the Sensaphone 400 at John's Printing Express. It is now 12:30 Am. Zone two, back door security sensor, alarm exists, it is not okay."

(4-seconds to hear on-site sound from unit's microphone.)

"Hello, this is 555-5674. This is the Sensaphone 400 at John's Printing Express. It is now 12:30 Am. Zone two, back door security sensor, alarm exists, it is not okay."

(4-seconds to hear on-site sound from unit's microphone.)

"Hello, this is 555-5674. This is the Sensaphone 400 at John's Printing Express. It is now 12:30 Am. Zone two, back door security sensor, alarm exists, it is not okay."

(4-seconds to hear on-site sound from unit's microphone.)

"Enter acknowledgement code."

NOTE: It is important that your dial-out telephone numbers be answered by you or other authorized personnel in order to ensure adequate response to an alarm.

CHAPTER 8: CONTROLLING THE OUTPUT

The Sensaphone 400 includes a relay output that can be used to control a light, siren, or other device. The output is a Form-C Normally Open/ Normally Closed mechanical relay and is rated for up to 30VAC/VDC 1A. A sample wiring diagram is shown below:

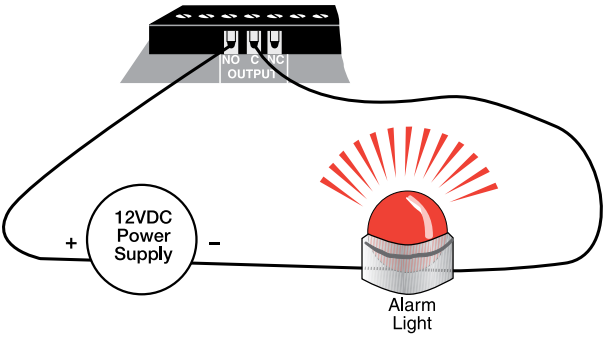


Figure 1: Relay output connected to alarm

The output can be programmed to operate in one of 9 automatic modes or it can operate in manual mode (default). The 9 automatic modes allow the output to automatically turn on and off based on individual alarms or any alarm. In manual mode the output is controlled via keypad command or remotely via touch-tone phone. A description of each mode is described below.

8.1 OUTPUT MODES

Mode	Description
1	Output on when zone 1 goes into alarm. Off when alarm is acknowledged.
2	Output on when zone 2 goes into alarm. Off when alarm is acknowledged
3	Output on when zone 3 goes into alarm. Off when alarm is acknowledged.
4	Output on when zone 4 goes into alarm. Off when alarm is acknowledged.
9	Output on when a Sound alarm occurs. Off when alarm is acknowledged.
0	Output on when a Power alarm occurs. Off when alarm is acknowledged.

Mode	Description
Phone	Output on when phone line is unplugged for more than 15 seconds. Off when a phone line is plugged in.
•	Output on when any alarm occurs. Off when all alarms are acknowledged.
#	Output controlled manually via keypad command or touch-tone.
CODE	Output on when any alarm occurs, except for when a phone line is unplugged. Off when all alarms are acknowledged.

8.1.1 TO PROGRAM THE OUTPUT MODE:

1. Press the SET key.

2. Press the OUTPUT key.

The 400 will say "Enter output mode."

3. Using the number keys, enter a value for the output mode.

4. Press the ENTER key.

The 400 will say "OK" and recite a description of the mode selected, such as "Automatic on Zone 1" or "Manual." Note that when Mode * is selected, the 400 will simply say "Automatic on Alarm," meaning that the output will automatically turn on when any alarm occurs.

8.1.2 TO PLAY BACK THE PROGRAMMED OUTPUT MODE:

1. Press WHAT IS.

2. Press OUTPUT.

The 400 will recite the programmed output mode.

8.2 SWITCHING THE OUTPUT USING THE KEYPAD

When programmed for Manual mode, the command to switch the output is:

SENSOR ON/OFF + OUTPUT.

The 400 will respond "The output is on/off" to indicate the state of the output.

> **Note:** If the 400 says "Error," the output is not programmed for manual mode.

8.2.1 SWITCHING THE OUTPUT OVER THE PHONE

The following commands will allow you to check the status of the relay output and to toggle the Relay Output On and Off.

To recite the Output Status press W(9) + R(7) + O(6)

To switch the Output press S(7) + R(7) + O(6)

8.3 TYPICAL APPLICATIONS

Heating Up Your Cottage Or Cabin Remotely

If you keep your cottage or cabin open all year around, or if you do not drain your pipes and add antifreeze to your plumbing, you likely keep your furnace active when you are away but at a very low temperature. The Sensaphone will provide an invaluable service to you by keeping you updated to any change in the status of your furnace operation. Prior to your arrival at your cottage or cabin, you can remotely use your Sensaphone 400 to raise the thermostat and increase the heat.

Most furnaces use a typical 4-wire (heat/cooling) or 3-wire (heat only) thermostat. The Sensaphone can easily control these types of thermostats. **If your heating source consists of high voltage electric baseboard heaters, you should consult a qualified electrician or heating professional for proper installation of the Sensaphone remote control facility**. Electric baseboard heaters may utilize either a low voltage (2-wire) thermostat or a direct control high voltage thermostat. Only the low voltage thermostat may be directly connected to the Sensaphone.

8.3.1 SINGLE THERMOSTAT CONTROL

There are two installation methods that can be used to remotely change the thermostat setting in your cottage or cabin; the single thermostat method and the dual thermostat method (see section 8.3.2 for details on the dual thermostat method). The single thermostat method requires you to install a model with an input to switch between two temperature settings. Sensaphone offers a 7-day programmable thermostat and power supply which has this feature (order part #'s FGD-0064 & XFR-0024). This thermostat has been carefully chosen to work with the model 400 to allow remote control between normal or vacation mode. You will need to replace your current thermostat, so if you are unsure about performing this work yourself, please contact a licensed heating/cooling professional for installation assistance. Follow the manufacturer's instructions for installing the thermostat.

The Model 400 will need to be wired to the thermostat to control it. For a visually appealing installation you may want to locate the Sensaphone close to your heater so that the cable follows the same path as the one from your heater to the thermostat. An added benefit of this location is that you can easily add a water sensor to monitor for leaks around your hot water heater or other plumbing. Typically the water heater is located near the heating and cooling system.

Step 1: Install the thermostat.

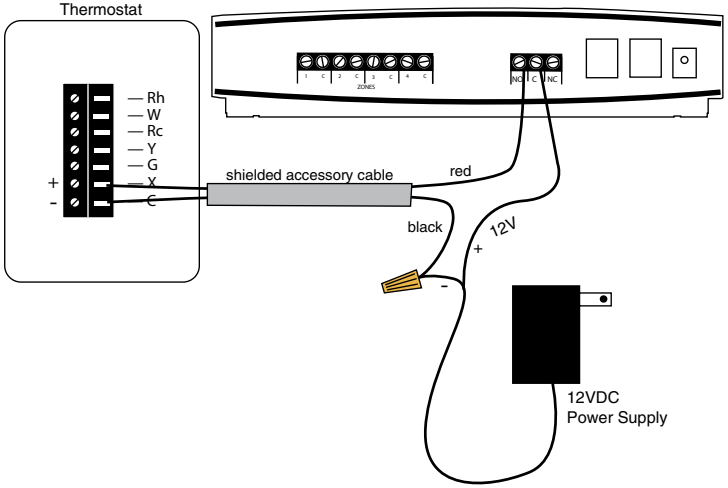
Refer to the manufacturer's instructions for installation. For installation assistance, contact Aube Technologies at 1-800-831-AUBE.

Step 2: Mount the Sensaphone 400.

Choose a location for your Sensaphone that allows for easy wiring to the thermostat, such as near your heater/air conditioning system. Mount the unit on a wall or flat on a desktop or table surface. Plug in the power supply and connect the telephone line.

Step 3: Connect cable from thermostat to Sensaphone 400.

This Sensaphone 400 has a terminal strip below the input/output wiring door that will connect to the 12VDC power supply and X & C terminals of the thermostat (See Figure 1). This connection is required to switch the thermostat between normal and vacation modes. Run a two-conductor cable from the thermostat to the Model 400. On the thermostat, connect the red wire to the X (+) terminal, and the black wire to the C (-) terminal. On the 400, connect the red wire to the NO terminal. Connect the black wire to the negative wire from the power supply. Use a wire nut to complete this connection. Connect the positive wire from the power supply to the "C" terminal on the model 400.



Step 4: Program the Thermostat.

Refer to the manufacturers instructions for programming the thermostat. Be sure to program settings for both normal and vacation modes.

Controlling the Thermostat

The operating mode of the thermostat (normal/vacation) can be controlled at the Model 400 keypad or remotely via Touch-Tone comands. Both methods are described below:

Keypad commands:

1) To enable Vacation Mode, press the [SENSOR ON/OFF] key, then the [OUTPUT] key. The unit will respond by saying "ON" to indicate that Vacation Mode is set. The Suitcase icon  will appear and blink on the thermostat LCD.

2) To enable Normal Mode, press the [SENSOR ON/OFF] key, then the [OUTPUT] key. The unit will respond by saying "OFF" to indicate that Normal Mode is set. The Sun  or Moon  icon will appear on the thermostat LCD.

TouchTone Commands:

Call the Sensaphone. When the unit answers, it will begin reciting a status report. At any time during the call, press a Touch-Tone. The unit will respond with "OK." The Sensaphone is now ready to accept Touch-Tone commands.

1) To enable Vacation Mode, press SRO (776). The unit will respond by saying "ON" to indicate that Vacation Mode is set. The Suitcase icon  will appear and blink on the thermostat LCD.

2) To enable Normal Mode, press SRO (776). The unit will respond by saying "OFF" to indicate that Normal Mode is set. The Sun  or Moon  icon will appear on the thermostat LCD.

3) To check the status of the ouput press WRO (976). The unit will respond "OFF" for Normal Mode or "ON" for Vacation Mode.

4) Hang up.

8.3.2 DUAL THERMOSTAT CONTROL

When a three or four wire low voltage thermostat is used, it is easy to connect the Sensaphone to your furnace with the addition of a secondary thermostat. One thermostat is set to your preferred "away" temperature and the other thermostat is set to your preferred "home" temperature. With your Sensaphone 400, you will be able to switch between these two thermostats using the relay output.

Ideally, the "away" thermostat would be in your pump or furnace room. Remember that your "away" thermostat will be the only thermostat that keeps your cottage or cabin at minimal heat while you are away. It should

not be located near a window or where direct sunlight might warm it, near a furnace radiator or vent, or any heat source such as a pilot light.

The second thermostat, the one pre-set for your preferred temperature when you arrive at your cottage or cabin, should be located in your normal living space. This would likely be your existing thermostat, already located in a suitable location by your heating professional at the time your furnace was installed.

By connecting these two thermostats together in a parallel fashion, and by passing the low voltage supply through the Sensaphone (See Figure 1), you can remotely or locally decide which thermostat is in control of your furnace.

It is recommended that the "away" thermostat be connected to the NC (Normally Closed) terminal while the "home" thermostat be connected to the N0 (Normally Open) terminal of the Sensaphone. This way, it's easy to understand which state your furnace is in: Output ON = Home and Output OFF = Away. The supply voltage from your furnace (typically the wire labeled R or 24VAC), should always be connected to the C (Common) terminal on the 400.

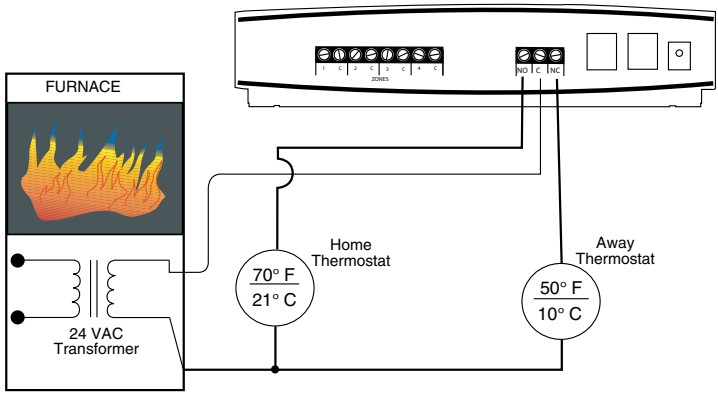


Figure 1: Dual Thermostat Setup

Note: This is a typical configuration when using standard single-zone heat/cool thermostats. For ease-of-use it is recommended that both thermostats be the same model. Note also that all thermostats may not be compatible with the dual-thermostat wiring diagram. Consult your heating/cooling professional for installation assistance.

8.3.3 CONTROLLING LIGHTS OR OTHER DEVICES

Using X10 technology, you can remotely activate any electrical device or appliance in your home through your Sensaphone. X10 technology is a suite of control modules that plug into your existing electrical outlets and transmit coded signals to lamps, lights, and appliances to turn them on or off (See Figure 2).

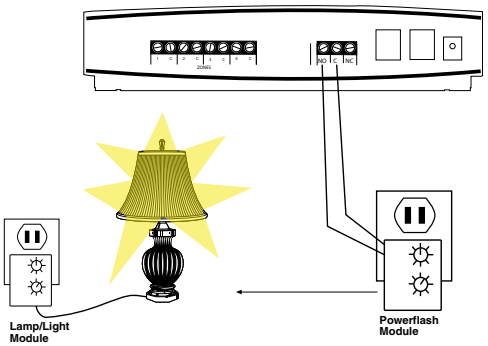


Figure 2: X10 Lighting Control Setup

Sensaphone supports these devices through use of the popular X10 Powerflash relay interface. To learn more about this technology, consult X10 products on the web at www.x10.com or visit your local electronics shop such as Radio Shack.

Such applications may include turning on a lamp or exterior lights remotely from your cellular telephone when arriving at your residence late at night. Or you can use the X10 Powerflash Module (set to momentary contact) in conjunction with the X10 Universal Module to remotely control your electric garage door opener over the telephone—an ideal way of letting in your service personnel without being on-site. You may also use the X10 technology to send the ON/OFF signal to a furnace or heater if your thermostat is not easy to wire directly.

Finally, in addition to remotely controlling devices, X10 technology lets you extend the reach of certain Sensaphone sensors such as door contacts, motion sensors, or water sensors. This is of great benefit where it is impossible to wire directly from your sensors to your Sensaphone. Consult a qualified electrician or your heating professional for assistance with locating your remote sensors or contact your Sensaphone dealer.

APPENDIX A: WEEKLY TESTING PROCEDURE

We recommend that you test your Sensaphone weekly to be sure it is functioning properly. This will ensure that when a problem arises the Sensaphone will be ready to alert the appropriate personnel.

There are several tests that can be performed:

1) Call the unit and listen to the Status Report. This will test the unit's ability to answer the phone and speak a message. It will also verify that all of the zones are reading properly, the alarm conditions are OK, the electricity is on, the microphone is functioning, and the batteries are OK.

2) Create an alarm on each zone by tripping all connected sensors.
   Temperature sensors: Heat or cool the sensor.

   Motion sensors: Have someone walk in front of the sensor.

   Door/window sensors: open the door/window.

Water sensors: Apply a small amount of water beneath the sensor or use a wet towel and touch it to the sensor probes.

Humidity sensors: Raise the humidity around the sensor by holding a cup of very hot water beneath the sensor.

Allow the unit to contact all programmed telephone numbers. This will make sure that the Sensaphone is programmed properly. It will also prepare personnel to respond appropriately when they receive a call from the Sensaphone.

3) Test the batteries by unplugging the AC adapter and making sure that the Sensaphone continues to function. Press WHAT IS, then STATUS on the keypad, and listen to the status report. Make sure the report states that "the power is off" and "batteries are OK." Keep the AC adapter unplugged so that a Power Failure alarm occurs. Allow the unit to dial all programmed telephone numbers while running on battery backup. Plug in the AC adapter after the unit has finished dialing all of the telephone numbers.

4) If you are using your Sensaphone to listen for a smoke alarm, then be sure to test the smoke alarm to make sure that the Sensaphone picks up the audible signal and triggers a high-sound-level alarm. Allow the unit to dial all programmed telephone numbers.

5) Keep a log of your tests, noting the date and whether the 400 passed in each category tested. An example of such a log is shown below. (See "Test Log" at the end of this manual.)

400 Test Log

Date	Inputs		Dialout		Call-in		Tested by
	Pass	Fail	Pass	Fail	Pass	Fail	
7/1/04	X		X		X		Bob H
7/15/04	X		X		X		Alex G.
7/22/04	X		X		X		Bob H.

If you require assistance, call Sensaphone Technical Support at 877-373-2700.

APPENDIX B: TROUBLESHOOTING

In the event that a problem is encountered, this section will assist you in determining the cause, so you can return the unit to its usual monitoring routine with minimal interruption.

Most problems with the Model 400 are easy to identify and quickly corrected, and are found under the following general headings:

- Error Messages
- Communications/dial-out functions
- Temperature monitoring
- Sound level monitoring
- Other monitoring functions

If you have tried the solutions outlined in this section and are not satisfied with the results, call Sensaphone Technical Support at 877-373-2700, or follow the guidelines for shipping the Model 400 to Sensaphone for repair (see Appendix F).

ERROR MESSAGES

Problem	Cause	Solution
The unit says "Error 1."	An invalid value has been entered or too much time has passed without entering a value.	Only enter values within the allowed programming range, and make programming changes in a timely fashion.
The unit says "Error 2."	Programming changes were attempted without unlocking the keypad.	Unlock the keypad, then make programming changes.

COMMUNICATIONS / DIAL OUT

Problem	Cause	Solution
1)The Model 400 fails to dial out.	a) The telephone number may be incorrectly programmed.	Recheck programming steps. Refer to Chapter 4, Section 4.2.1.
	b) Tone or pulse (the current dialing method) is not compatible with the telephone line on which the Model 400 is installed.	Switch from the current setting: from tone to pulse, or from pulse to tone. Refer to Chapter 4, Section 4.3.
	c) Recognition Time is too long. An alert condition does not remain in effect long enough to become a valid alarm.	Reprogram Recognition Time. Set the Recognition Time to the minimum duration required to create a valid alarm. If possible, test the new setting by deliberately creating an alert condition. Refer to Chapter 5, Section 5.3.
	d) The Model 400 is connected to an incompatible telephone line.	The Model 400 must be connected to a standard (2-wire analog) telephone line, not a digital extension to a phone system. If the unit will not dial out and the factors previously listed have been ruled out, try connecting the unit to a standard residential telephone line.

Problem	Cause	Solution
2. The Model 400 will not answer the telephone when called for a Status Report or alarm acknowledgment.	a) Rings Until Answer is incorrectly programmed.	Recheck programming of Rings Until Answer. Refer to Chapter 4, Section 4.5.1.
	b) The Model 400 is connected to an incompatible telephone line.	Some telephone systems will not allow the telephone to ring beyond 4 rings. If your Model 400's Rings Until Answer is set at more than 4 rings, you may not be able to access the unit. Try setting the Rings Until Answer to less than 4 rings. If this does not correct the problem, it may indicate telephone line incompatibility. In this case, try connecting the Model 400 to a standard, residential telephone line.
3. The Model 400 will not answer the telephone for Callback Acknowledgement.	You did not allow the telephone to ring 10 times. Note: If the TAD (telephone answering device) is disabled, the telephone rings ten times before the Model 400 answers. If the TAD is enabled, you must call the unit and let the line ring once, then hang up, wait ten seconds and call back again within 30 seconds.	When calling the Model 400, and the TAD is disabled, allow the telephone to ring 10 times. Refer to Chapter 6, Section 6.1.3, and Chapter 4, Section 4.6.3.
4. The Model 400 recites the alarm message or Status Report over the telephone, but is silent at the installation site.	The local voice mute feature is in effect.	Deactivate local voice mute. Refer to the programming steps in Chapter 4, Section 4.9.
5. The Model 400 and telephone answering device (sharing the same line) answer incoming calls simultaneously.	The Model 400's number of Rings Until Answer is set to equal the number of rings set for the telephone answering device.	Change the number of Rings Until Answer for the Model 400. Refer to Chapter 4, Section 4.5.

TEMPERATURE MONITORING

Problem	Cause	Solution
1. Can't program temperature limits; or the unit won't read the temperature sensor.	The zone isn't configured to read a temperature sensor.	Press SET and CONFIGURE to program the zone. (See Section 5.1.1 for more information on configuring zones.)
2. The temperature reading is -20° F or -30° C.	The temperature sensor has been disconnected or has broken wires.	Examine the wires to temperature sensor and connect or replace wiring.
3. Temperature reads 150° F or 65° C.	Temperature sensor wires are touching or have shorted.	Verify and correct wiring.
4. Temperature reading is inaccurate.	a) Temperature sensing may be affected by a source of ambient heat (ie., direct sunlight, or heat duct proximity). b) Temperature may require calibration. c) The unit is using the wrong temperature scale (Fahrenheit vs. Celsius).	Try moving the unit to a different location. After moving or placing the unit away from ambient heat sources, the temperature may be calibrated to offset inaccurate normal reading by several degrees. Refer to Chapter 5, Section 5.6. Verify temperature scale. Refer to Chapter 5, Section 5.5.
5. False high temperature alarms from freezer.	Most freezers have a defrost cycle during which the temperature will rise considerably, thus causing an alarm to occur.	Program an zone recognition time longer than the defrost cycle.
6. The Sensaphone calls with a high/low temperature alarm but recites a temperature that's within the programmed limits.	The Sensaphone recites the "current" temperature when it calls you, not the temperature at the time the alarm occurred. It is likely that the temperature has changed since the time the alarm was detected and has since returned to normal operating conditions.	Shorten the Call Delay or lengthen the Zone Recognition Time.

SOUND LEVEL MONITORING

Problem	Cause	Solution
1. False high sound alarms occur frequently.	The programmed sound sensitivity results in over-sensitivity to non-alarm sound as well as alarm sound. Sound Recognition Time is too short.	Reprogram the sound sensitivity. Refer to Chapter 5, Section 5.10. Lengthen the sound Recognition Time. Refer to Chapter 5, Section 5.10.
2. High sound does not cause an alarm.	The unit is not close enough to the high sound source, or the programmed sound setting results in a lack of sensitivity to high sound.	Move the unit closer or reprogram the sound sensitivity. Refer to Chapter 5, Section 5.10.

OTHER MONITORING

Problem	Cause	Solution
1. Alarm status of an alert zone is incorrect.	Incorrect zone normality.	Reconfigure the zone. Refer to Chapter 5, Section 5.1.
2. False power out alarms	Programmed Recognition Time is too short.	AC power is often subject to brief interruptions. To avoid frequent, false alarms, increase the power Recognition Time. Refer to Chapter 5, Section 5.9.
3. The Model 400 does not recognize power failure.	a) Batteries are either incorrectly installed or drained.	To verify proper battery function, unplug the unit and verify continued operation using batteries only. If unit ceases to function, first try reinstalling the batteries. If this is not successful, replace the batteries. Refer to Chapter 2, Section 2.4 for complete instructions.
	b) Recognition time setting is too long.	Reprogram Recognition Time. Set the Recognition Time to the minimum required before a valid alarm occurs. If possible, test the condition by deliberately creating an alert condition. Refer to Chapter 5, Section 5.9.

4. The Model 400 does not recognize any alarm.	a) Zones for alarm are disabled.	Enable the zones for alarm. Refer to Chapter 5, Section 5.2.
	b) Programmed Recognition Time is too long.	Reprogram Recognition Time. Set the Recognition Time to the minimum required for a monitored condition to become a valid alarm. If possible, test the condition by deliberately creating an alert condition. Refer to Chapter 5, Section 5.3.
5. The batteries drain prematurely.	The unit's AC transformer is unplugged or for some other reason, full AC power is not available to the unit.	The batteries will take over powering the unit when the AC transformer is unplugged from the 120 VAC outlet. When storing the unit, be sure to remove the batteries. Refer to Chapter 2, Section 2.4. *Be sure to use alkaline batteries—do not use rechargeable batteries.*

If the solutions offered above do not appear to correct the problem, apply the following steps, in the order shown.

- Remove the batteries.
- Unplug the unit.
- Wait one minute for the Model 400 to completely power down.
- Plug in the unit's AC adaptor into a standard 120 VAC outlet.
- Replace the batteries.

Refer to Chapter 2, Installation, for additional information on batteries and installation procedures.

APPENDIX C: 400 QUICK REFERENCE

Parameter	Description	Key Sequence*	Range	Default
Call Delay	Time delay until first call is made	[SET] or [WHAT IS] + [CALL DELAY]	Min: 00:00 Max 60:00 (min:sec)	00:30 (min:sec)
Voice Reps	Number of times alarm message is repeated over the phone	[SET] or [WHAT IS] + [VOICE REPS]	Min: 1 rep Max: 10 reps	3 reps
Intercall Time	Time delay between phone calls	[SET] or [WHAT IS] + [INTERCALL TIME]	Min: 00:10 Max: 60:00 (min:sec)	01:00 (min:sec)
Max Calls	Number of calls until unit self-acknowledges	[SET] or [WHAT IS] + [MAX CALLS]	Min: 1 call Max: 255 calls	100 calls
Temp Limits	High and low temperature alarm limits	[SET] or [WHAT IS] + [TEMP LIMITS] + [zone #]	Min: -20°F/-30°C Max: 150°F/65°C	Low: 10°F High:100°F
Calibrate	Temperature Correction factor	[SET] or [WHAT IS] + [CALIBRATE] + [zone #]	Min: -10° Max: 10°	0°
Recognition Time: zones 1–4	Length of time a fault condition must exist to trip an alarm	[SET] or [WHAT IS]+ [RECOGNITION TIME]	Min: 00:00 Max: 540:00 (min:sec)	00:03 (min:sec)
Recognition Time: Power Failure	Length of time the power must be off to trip an alarm	[SET] or [WHAT IS] +[RECOGNITION TIME]+[POWER]	Min: 0:00 Max: 540:00 (min:sec)	05:00 (min:sec)
Recognition Time: High Sound Level	Length of time the sound must be high to trip an alarm	[SET] or [WHAT IS] +[RECOGNITION TIME] + [SOUND]	Min: 5 Max: 60 (sec)	00:08 (min:sec)
Clock	Real time clock	[SET] or [WHAT IS] + [CLOCK] + [time] + [AM] or [PM]		12:00 AM
High Sound Level Alarm Sensitivity	Microphone sensitivity for high sound level alarm	[SET] or [WHAT IS] + [CALIBRATE] + [SOUND]	Min: 1 unit Max: 160 units	32 units
Listen Time	Length of listen-in time during call-in status report	[SET] or [WHAT IS] + [LISTEN TIME]	Min: 0 sec Max: 255 sec	15 sec
Rings Until Answer	Number of rings until unit answers an incoming call	[SET] or [WHAT IS] + [RING]	Min: 1 ring Max: 15 rings	4 rings

* press [ENTER] after all Key Sequences starting with [SET]

Parameter	Description	Key Sequence*	Range/ Response	Default
TAD	Telephone Answering Device Compatibility	[SENSOR ON/OFF] + [TAD]	Enable / Disable	Disabled
ID Number	Sets the unit's telephone number	[SET] + [ID NUMBER]	0-16	
Dialout Test	Permits testing of dialout Telephone numbers	[SET] + [TEST]+ [1-4]	1-4	
Output Mode	Sets the relay output Mode	[SET] + [OUTPUT]	1-4, *, #, PHONE	Manual
Output Control	Switches the relay output On or Off (manual mode)	[SENSOR ON/ OFF] + [OUTPUT]		Off
Voice Message	Program or recite voice messages	[SET] or [WHAT IS] + [MESSAGE]+ [RECOGNITION TiME] + [zone#]	0-4	
Zone Configuration	Program or recite zone configuration	[SET] or [WHAT IS] +[CONFIG]	temp, NO, NC	No
Call Progress	Turns call progress Detection on or off	[SENSOR ON/ OFF] + [CONFIG]	Enable / Disable	Enabled
Telephone Number	Program or recite dialout telephone numbers	[SET] + [PHONE NUMBER] + [1-4]		
Status Report	Recites a Status Report	[WHAT IS] + [STATUS]		
Run/Standby Mode	Changes the operating mode between run and standby	[RUN/STANDBY]		Run

Parameter	Description	Key Sequence	Response	Default
Speaker Mute	Turns off the speaker during alarm conditions	[SENSOR ON/OFF] + [MUTE]	On or Off	off
Designating A Zone Unused	Removes zone from status and alarm reports	[SENSOR ON/OFF] + [SET] + [zone #]	On or Off	On
Zone Enable/ Disable	Turns zone alarm detection on or off	[SENSOR ON/OFF] + [zone#]	Enabled / Disabled	Enabled
Power Alarm Enable/Disable	Turns power alarm detection on or off	[SENSOR ON/OFF] + [POWER]	Enabled / Disabled	Enabled
Sound Alarm Enable/Disable	Turns high sound level alarm detection on or off	[SENSOR ON/OFF] + [SOUND]	Enabled / Disabled	Enabled
Temperature Scale	Selects between Fahrenheit and Celsius	[SENSOR ON/OFF] + [F/C]	Fahrenheit or Celsius	Fahrenheit
Security Code	Prohibits programming changes	[SET] or [WHAT IS] + [CODE] + [4 digit code]		none
Callback Acknowledgment	Turns Callback Acknowledgment on or off	[SENSOR ON/OFF] + [PHONE]	Enabled / Disabled	Disabled

APPENDIX D: ACCESSORIES

The sensors listed below are available from Sensaphone and represent the most commonly used zone devices. Other dry contact sensors, designed for more specialized applications, may also be used. Commercial or industrial electrical supply houses can provide devices to monitor virtually any condition. For further information, contact Sensaphone Customer Service at 877-373-2700.

PART #	SENSOR / SWITCH
FGD-0006	Magnetic Reed Door and Window Switch
FGD-0007	Infrared Motion Detection Sensor
FGD-0010	50’ two-conductor #22AWG Shielded Cable
FGD-0013	Spot Water Detection Sensor
FGD-0022	Temp Alert Temperature Switch
FGD-0064	Dual Setback Thermostat
FGD-0027	Humidistat Humidity Switch
FGD-0049	Smoke Detection Sensor for 110VAC
FGD-0054	PowerOut Alert Power Failure Switch
FGD-0056	Zone Water Detection Sensor
FGD-0063	Additional 10’ Water Rope for FGD-0056
XFR-0024	12VDC Power Supply for Thermostat
FGD-0100	Room Temperature Sensor
FGD-0101	Weatherproof Temperature Sensor
FGD-0205	Multi-Point Wireless I/O System

APPENDIX E: SPECIFICATIONS

ALERT ZONES

Number of Zones: 4 (thermistor installed on zone #1 for local temperature monitoring)

Zone Connector: terminal block

Zone Types: N.O./N.C. contact, 2.8K thermistor (-20° F to 150° F or -30° C to 65° C)

Zone Characteristics: 5.11K to 2.85V (Short circuit current: 1mA max.)

A/D Converter Resolution: 10 bits ±2 LSB

Zone Protection: 5.5VDC Metal Oxide Varistor with fast acting diode clamps.

MICROPHONE

Internal Electret Condenser: For listening in to on-site sounds and detecting high sound levels.

PHONE INTERFACE

Line RJ11 Jack: For connection to a two-wire analog telephone line. (6' modular cord included)

Extension RJ11 Jack w/ Line Seizure: For connecting other devices on the same telephone line, devices connected to this jack are disconnected in the event that the 400 must dial out for an alarm.

Phone Line Protection: Metal Oxide Varistor & self-resetting fuse

LED INDICATOR

System On: On steady when the unit is in RUN mode. LED blinks once every few seconds while in STANDBY mode.

Phone In Use: On steady when the telephone line is being used. LED blinks when no dial tone is detected. Off when telephone line is not in use.

Alarm: Off when no alarm exists. Blinks when an unacknowleged alarm exists. On steady when an acknowledged alarm exists

Battery Ok: On steady when the battery is in good condition. Blinks when the battery is low. Off when the battery must be replaced.

RELAY OUTPUT

Rated for 1A 30VAC/1A 30VDC maximum.

POWER SUPPLY

Power Supply: 120VAC/12VDC 60Hz 6W wall plug-in transformer w/6' cord.

Power Consumption: 1.5 Watts

Power Protection: Metal Oxide Varistor

Battery Backup: Six size-C alkaline batteries (not included), providing up to 24 hours of back-up time.

ENVIRONMENTAL

Operating Temperature: 32–122° F (0–50° C)

Operating Humidity: 0–90% RH non-condensing

Storage Temperature: 32°–140° F (0–60° C)

PHYSICAL

Dimensions: 2.1"h x 7.8"w x 8.8"d

Weight: 2 lbs.

Enclosure: Indoor-rated plastic housing suitable for wall or desktop installation.

Alarm: Off when no alarm exists. Blinks when an unacknowleged alarm exists. On steady when an acknowledged alarm exists

Battery Ok: On steady when the battery is in good condition. Blinks when the battery is low. Off when the battery must be replaced.

STANDARDS

- FCC Part 15 Class B, USA Emission Standards

- FCC Part 68 (47 C.F.R. Part 68), USA Telecommunications Standards

- ICES-003 Issue 4 Class B, Canadian Emission Standards

- Complies with CS-03 Issue 8, Canadian Telecommunications Standards

- NRTL Listed for compliance to UL60950-1, USA Safety Standards

- NRTL Listed for compliance to CSA C22.2 No. 60950-1, Canadian Safety Standards

APPENDIX F: RETURNING THE UNIT FOR REPAIR

In the event that the Model 400 does not function properly, we suggest that you do the following:

1) Record your observations regarding the Model 400's malfunction.

2) Call the Technical Service Department at 877-373-2700 prior to sending the unit to Sensaphone for repair.

If the unit must be sent to Sensaphone for Servicing, please do the following:

1) Unplug the AC power supply from the wall outlet, remove the batteries, and disconnect all sensors from the alert zones.

2) Carefully pack the unit to avoid damage in transit. Use the original container (if available) or a sturdy shipping box.

3) You must include the following information to avoid shipping delays:

a) Your name, address and telephone number.

b) A note explaining the problem.

4) Ship your package to the address below:

SERVICE DEPARTMENT

SENSAPHONE

901 Tryens Road

Aston, PA 19014

5) Ship prepaid and insured via UPS or US Mail to ensure a traceable shipment with recourse for damage or replacement.

APPENDIX G: TEST LOG

Date	Inputs		Dialout		Call-In		Battery				Tested By
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	
	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	Pass ☐	Fail ☐	

Date	Inputs	Dialout	Call-In	Battery		Tested By
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	
	Pass ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	*Pass* ☐ *Fail* ☐	

Enclosure Specification
Modular System

R&M equipment co.
501 South Main Street
Spring City, PA 19475
1-800-962-0670

APPLIED ACOUSTICAL GROUP

▪Enclosure shall be designed to fit just around the equipment to keep cost down. A 4" clearance is the standard dimension provided between the enclosure and the equipment on all sides and the top.

▪Each sound enclosure should be factory assembled and skidded or shipped knocked down. The enclosure shall be designed to incorporate: forced air ventilation with acoustically treated air intake and exhaust. Fan will be sized to maintain a temperature outside/inside variation no greater than 15°F.

▪The enclosure frame shall be made of a heavy-duty aluminum square-tubing frame that allows each wall and roof panel to be removable. A three directional slip fit aluminum corner fitting piece shall be provided at each of the eight corners to connect all aluminum frame pieces together.

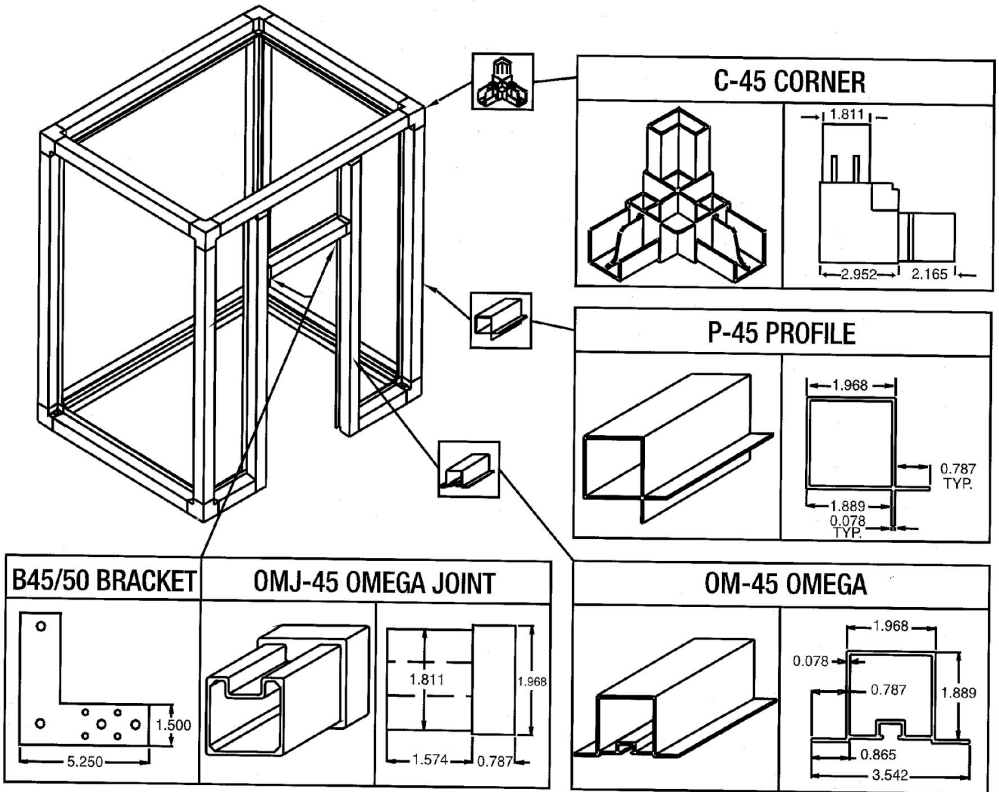
▪Acoustic panels shall have 18 gauge aluminized steel channel provided for bottom caps, top caps, and openings.

▪Acoustic panels:
- ▪Wall and roof panels shall have exterior skin of 18-gauge aluminized steel. Skin shall be 2.5#/ft^2
- ▪2" absorption material, sound absorbing embossed densified polyurethane foam.

▪All doors will be provided with acoustic seals on all four sides with stainless steel or nylon handles and hinges.

▪All side panels to be easily removable via a quick release clamp.

▪Panel acoustical performances have been tested by an independent laboratory and achieve a NRC = 1.0. Expected 20-25 dba reduction when measured at 1 meter in a free field.



See a complete listing of our noise reduction products online at www.acousticalgroup.com

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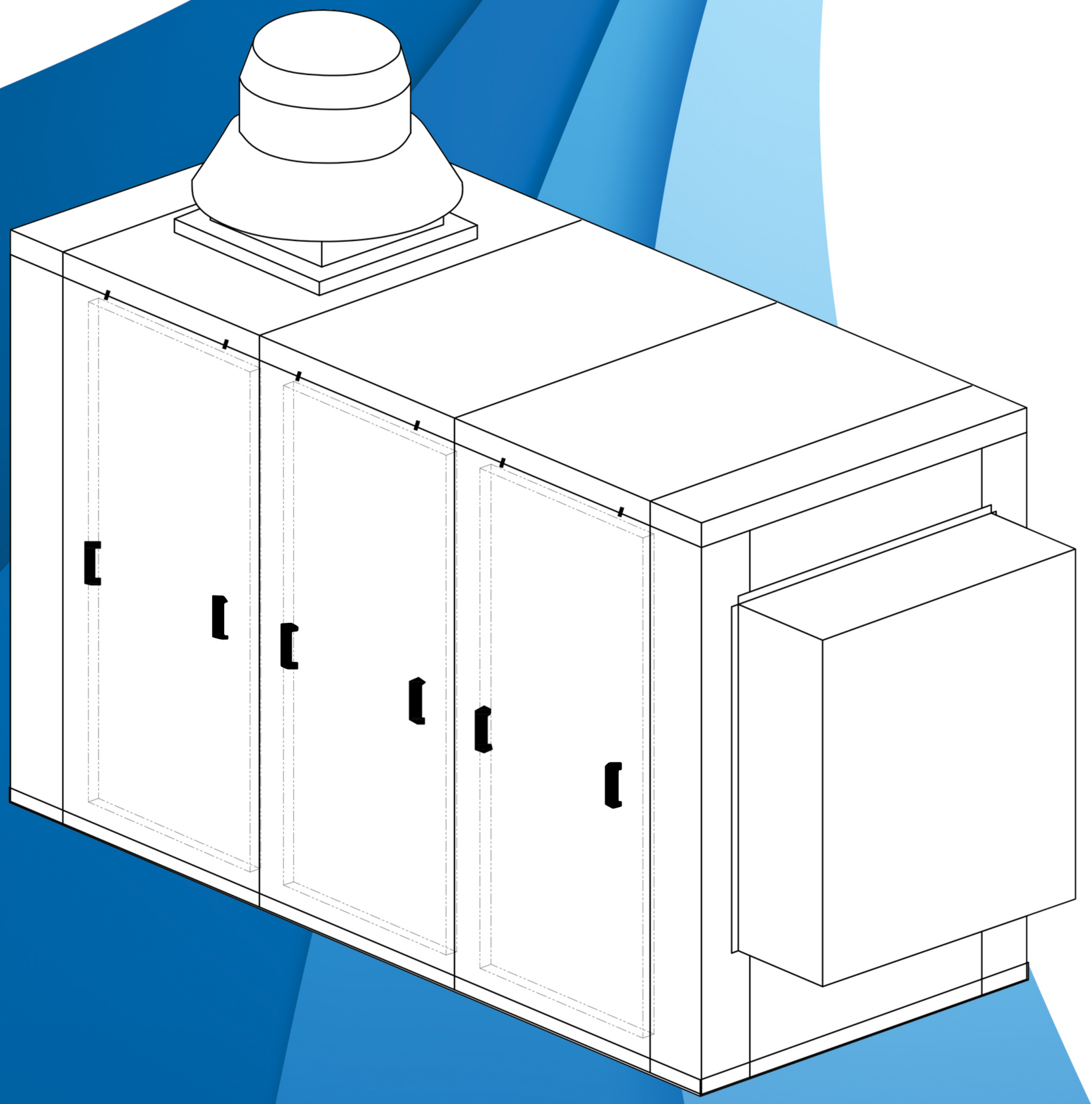
GROUP



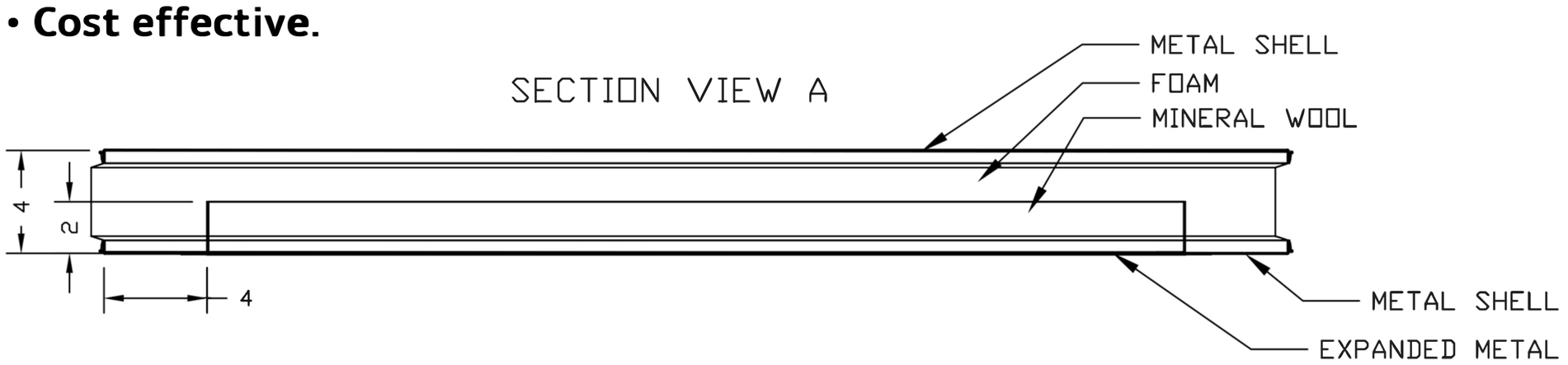
ACOUSTICAL ENCLOSURE PRODUCT GUIDE

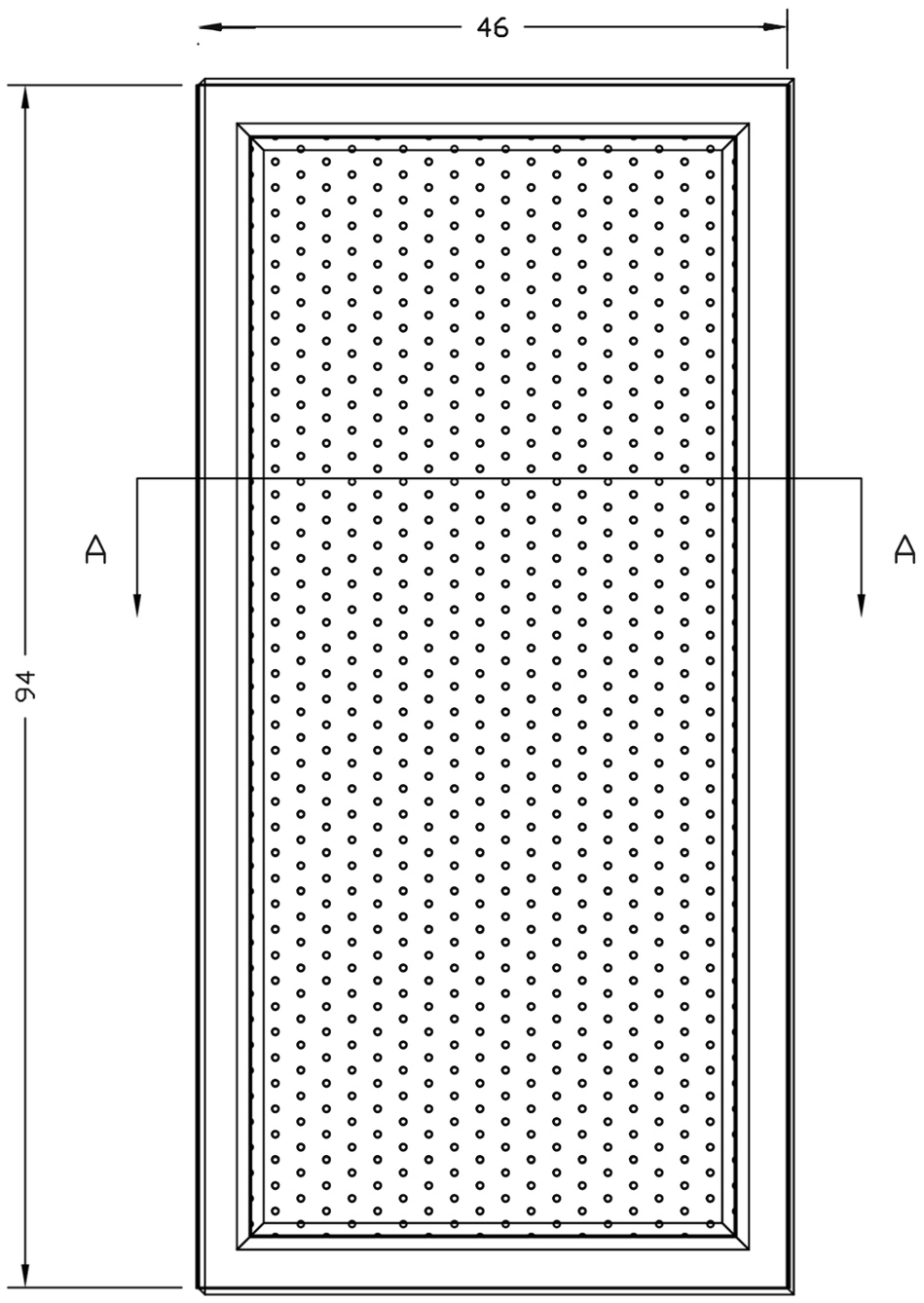
-PATENT PENDING-

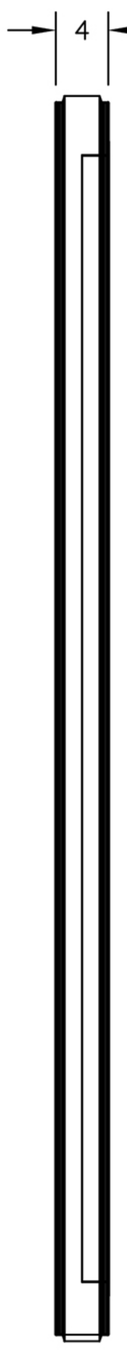
“Controlling your environment so you can control your process”

Benefits:

- **AAG enclosures are the easiest sound enclosures to install on the market.**
- **Lead time is 4-6 weeks from drawings approval.**
- **Our standard galvalume outer shell lasts almost 9.3x longer than the industry standard galvanized panel construction.**
- **“Screwless assembly”- Due to our formed-in-place panel locking system, our panels do not need hundreds of screws to assemble, making these units even more appealing to a customer that may need to move or take down the units multiple times.**
- **Manufactured in the USA in an ISO certified facility.**
- **Cost effective.**

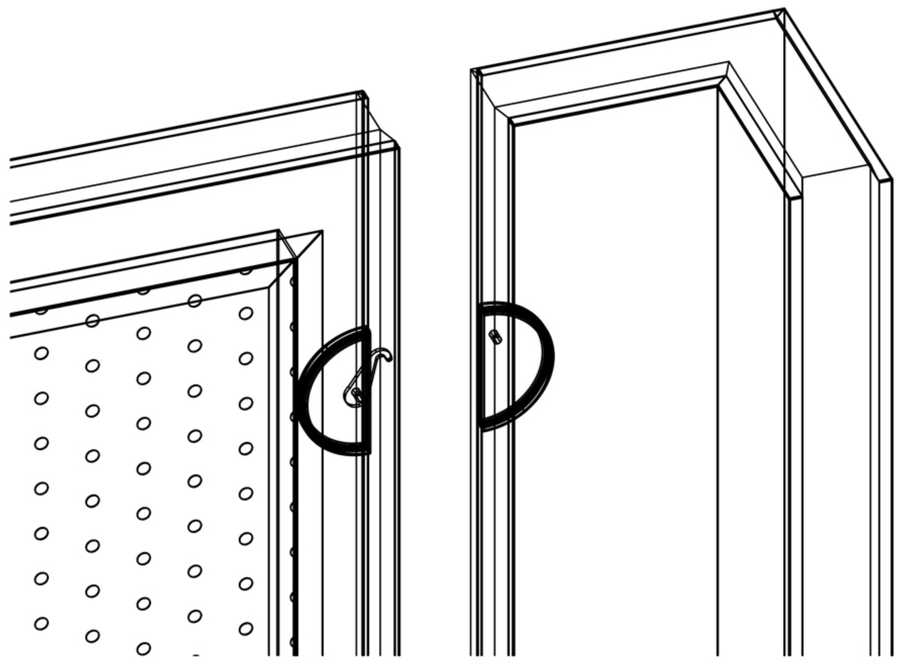


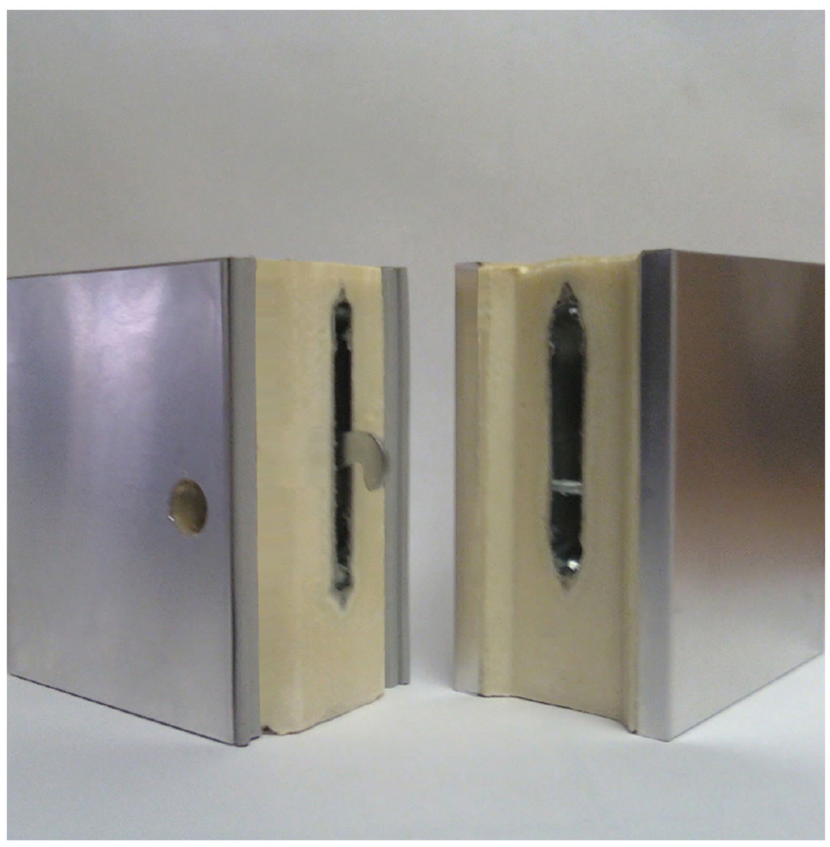




PATENT PENDING

APPLIED ACOUSTICAL GROUP - ACOUSTICALGROUP.COM - (610) 495-9702

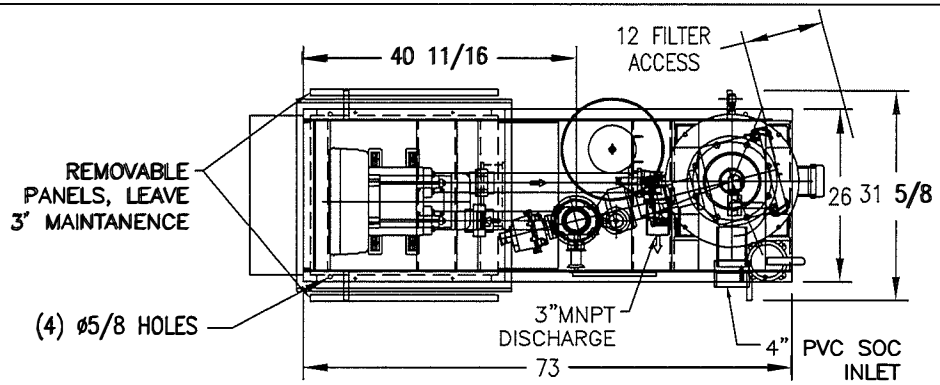


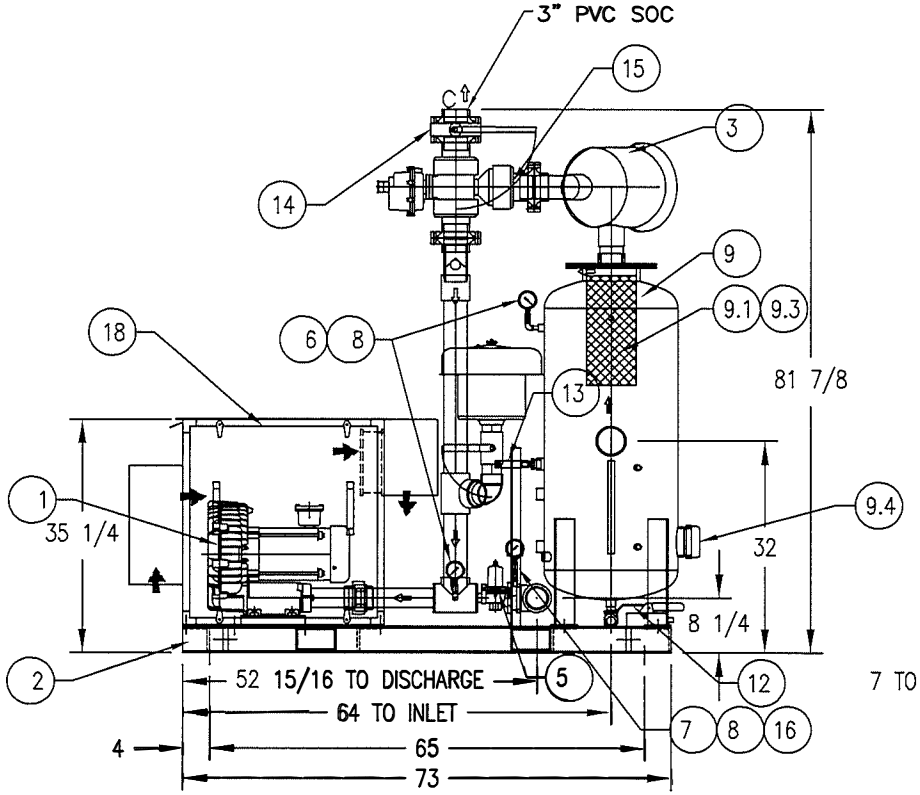


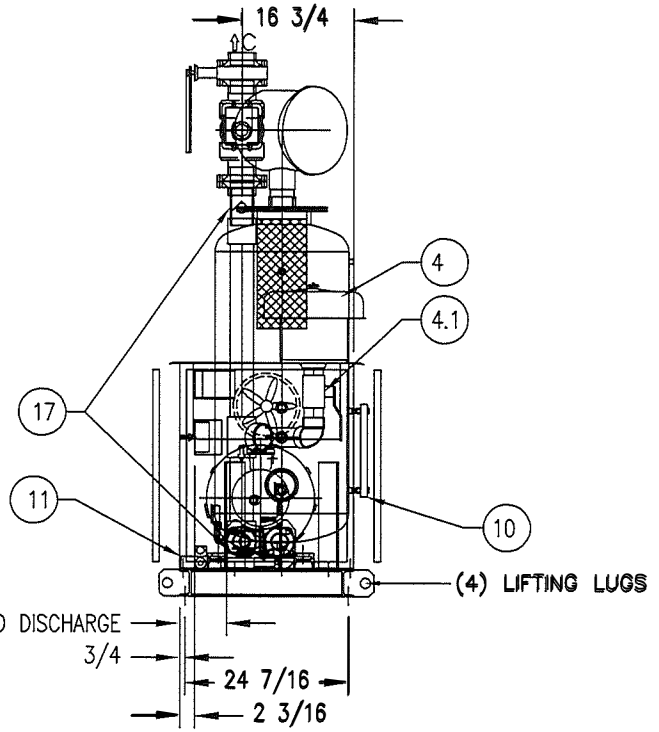
Base Model Features:

- STC rating of 30.
- NRC rating of .90.
- 2.54 lbs psf.
- Removable panels.
- Closed cell urethane foam combined with a layer of 4lb/psf density mineral wool.
- 10 year panel warranty.
- Embossed Galvalume finish. On average lasts 9.3x longer than galvanized.
- 20 year rust-through warranty on galvalume finish.
- Forced air ventilation system.
- Installation drawings.
- “Formed-in-place” panel locking mechanism.
- The prefabricated urethane foamed panels shall be supplied with Class 1 fire hazard classification according to UL 723 (ASTM-E-84), as tested by Underwriters Laboratories Inc. Panels shall have a flame spread rating of 25 or less.
- The panels are provided with PVC gaskets which are “formed-in-place” on both interior and exterior sides of the panels. The gaskets are impervious to all stains, greases, mildews, etc. They ensure an airtight seal and also eliminate the need for seam caulking.

Other Finish Options: Powder coated, Stainless Steel, aluminum, embossed galvalume (standard). 16-26 guage steel thickness.







NOTES:
1. CUSTOMER PIPING TO BE INDEPENDENTLY SUPPORTED
2. TOLERANCE ± 1/2"
3. MOTORS NOT RATED FOR VFD USE
4. SPREADER BARS ARE REQUIRED WHEN LIFTING PACKAGE WITH A CRANE TO AVOID DAMAGE.

REV.	DATE	DESCRIPTION
A	6/17/2015	81-7/8 DIM WAS 71-7/8

DRAWN BY: JJH — DATE: 5/15/15
APPROVED BY: — DATE:
DIMENSIONS IN INCHES
SCALE: NA
TOLERANCE: ±1/2" — ANGULAR TOLERANCE:
MATERIAL: — WEIGHT: 1000
SHEET 3 OF 3

J.E.GASHO & Assoc., Inc.
460 W. GAY ST.
WEST CHESTER, PENNSYLVANIA 19380

SVE BLOWER PKG= C
ROTRON 757
GX 60 MS, SE

JG15-D-2974-1 | A

APPENDIX E

Sub-Slab Depressurization System Operations and Maintenance Log

WEST BLOWER SUB-SLAB DEPRESSURIZATION SYSTEM OPERATIONS AND MAINTENANCE FORM

Site Name:	Morton Village	Inspection Date:	
Street Address:	1022 Old Country Road		
Location:	Plainview, NY	Inspection Personnel:	
System:	Active Sub-Slab Depressurization System		
Blower:	Rotron EN757, 5.5 Hp (West Blower)		
Blower Range:	80 IWG pressure, 78 IWG vac, 310 cfm		

INSPECTION ITEM DESCRIPTION	Yes	No	Comments/ Actions Taken (list actions taken if "No" is checked)
Is the system operating normally?	___	___	_____
Are any warning lights on? (Please list those that are on)	___	___	_____
If there is an alarm condition, was it fixed and the system restarted?	___	___	_____
Is the blower enclosure in good condition?	___	___	_____
Are the valves (at blower and aboveground piping) in good condition?	___	___	_____
Is the vacuum filter in good condition?	___	___	_____
Does the knock-out tank need to be drained? (Record amount drained)	___	___	_____
Are aboveground piping free of cracks, leaks, and support issues?	___	___	_____
Are vacuum/pressure gauges at blower operating properly?	___	___	_____
Are interior piping free of cracks, leaks, and support issues?	___	___	_____

List maintenance activities that were performed or other comments about the system: _____

Blower Influent	Vacuum (in. w.c.)	Comments
INF-W1 (after knock-out tank)		
Knock-out Tank-W		

Blower Effluent	Pressure (in. w.c.)	Comments
EFF-W1		

Soil Vapor Monitoring Point*	Vacuum (in. w.c.)	Comments
OSV-1		
MP-1		
OSV-6		
OSV-7		

PERFORM THE FOLLOWING ONLY IF A VACUUM READING AT THE SVMPS IS LESS THAN 0.004 IN. W.C.

INSPECTION ITEM DESCRIPTION	Yes	No	Comments/ Actions Taken (list actions taken if "No" is checked)
Are interior vacuum gauges operating properly?	___	___	_____

Suction Point*	Vacuum (in. w.c.)	Comments
SP-1		
SP-2		
SP-3		
SP-4		
SSDS-1		
SSDS-2		

in. w.c. - inches of water

* Refer to figure for locations of Soil Vapor Monitoring Points and Suction Points

EAST BLOWER SUB-SLAB DEPRESSURIZATION SYSTEM OPERATIONS AND MAINTENANCE FORM

Site Name:	Morton Village	Inspection Date:	
Street Address:	1022 Old Country Road		
Location:	Plainview, NY	Inspection Personnel:	
System:	Active Sub-Slab Depressurization System		
Blower:	Rotron EN757, 5.5 Hp (East Blower)		
Blower Range:	80 IWG pressure, 78 IWG vac, 310 cfm		

INSPECTION ITEM DESCRIPTION	Yes	No	Comments/ Actions Taken (list actions taken if "No" is checked)
Is the system operating normally?	___	___	
Are any warning lights on? (Please list those that are on)	___	___	
If there is an alarm condition, was it fixed and the system restarted?	___	___	
Is the blower enclosure in good condition?	___	___	
Are the valves (at blower and aboveground piping) in good condition?	___	___	
Is the vacuum filter in good condition?	___	___	
Does the knock-out tank need to be drained? (Record amount drained)	___	___	
Are aboveground piping free of cracks, leaks, and support issues?	___	___	
Are vacuum/pressure gauges at blower operating properly?	___	___	
Are interior piping free of cracks, leaks, and support issues?	___	___	

List maintenance activities that were performed or other comments about the system: _____

Blower Influent	Vacuum (in. w.c.)	Comments
INF-E1 (after knock-out tank)		
Knock-out Tank-E		
Blower Effluent	**Pressure (in. w.c.)**	**Comments**
EFF-E1		
Soil Vapor Monitoring Point*	**Vacuum (in. w.c.)**	**Comments**
OSV-2		
MP-2		
SV-2		
OSV-4		
MP-3		
MP-4		
OSV-8		

PERFORM THE FOLLOWING ONLY IF A VACUUM READING AT THE SVMPS IS LESS THAN 0.004 IN. W.C.

INSPECTION ITEM DESCRIPTION	Yes	No	Comments/ Actions Taken (list actions taken if "No" is checked)
Are interior vacuum gauges operating properly?	___	___	

Suction Point*	Vacuum (in. w.c.)	Comments
SP-5		
SP-6		
SP-7		
SP-8		
SP-9		
SP-10		

in. w.c. - inches of water

* Refer to figure for locations of Soil Vapor Monitoring Points and Suction Points

APPENDIX F

Health and Safety Plan

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APPENDICES

1.0 INTRODUCTION

This Site-specific Health and Safety Plan (HASP) has been prepared in accordance with 29 CFR 1910.120 Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) and Roux Environmental Engineering and Geology, D.P.C. (Roux) Standard Operating Procedures (SOPs) and other OSHA requirements for job safety and health protection (Appendix A). It addresses all activities described below that are associated with the property located at 1022 Old Country Road, in the Hamlet of Plainview, New York (Site). The location of the Site is presented in Figure 1. The HASP will be implemented by the designated Site Health and Safety Officer (SSO) during work at the Site. The HASP attempts to identify all potential hazards at the Site; however, Site conditions are dynamic and new hazards may appear constantly. Personnel must remain alert to existing and potential hazards as Site conditions change and protect themselves accordingly.

Compliance with this HASP is required of all persons and subcontractors who perform fieldwork at the Site. The contents of this HASP may change or undergo revision based upon additional information made available to health and safety personnel, monitoring results, or changes in the technical scope of work. Any changes proposed must be reviewed and approved by the Office Health and Safety Manager (OHSM), with the SSO implementing the changes to the HASP.

Prior to performing work each task should be evaluated to determine the appropriate procedures that need to be followed.

1.1 Scope of Work

In general, the tasks will include the following:

- Implementation of Remedial Investigation (RI) activities consisting of monitoring well installation, groundwater sampling, soil borings/sampling, installation of soil vapor and sub-slab monitoring points, and soil vapor sampling (including sub-slab and indoor air sampling)

- Implementation of Interim Remedial Measure (IRM) activities consisting of sub-slab depressurization system (SSDS) installation.

Any change in scope will require a revision of this HASP to address any new hazards.

2.0 EMERGENCY INFORMATION AND NOTIFICATION

Multiple emergency services may be obtained by calling 911. More specific numbers for local services are listed below.

Emergency Medical Service	911
Police: Nassau County Police Department	911
Fire: Plainview Fire Department	911
Hospital: North Shore University Hospital	516-719-3000
National Response Center	800-424-8802
Poison Control Center	800-222-1222
CHEMTREC	800-262-8200
Center for Disease Control	800-311-3435
USEPA (Region II)	212-637-5000
NYSDEC Emergency Spill Response	800-457-7362
Urgent Care Center (For non-emergency medical services)	631-435-0110

Directions and maps to the Hospital and the Urgent Care Center are provided in Figures 2 and 3, respectively.

2.1 Notification

As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone: (Direct contact, no phone messages).

			Office:	**Cell:**
1.	Project Principal:	Joseph Duminuco	(631) 232-2600	(631) 921-6279
2.	Project Manager/SSO:	Jeff Wills	(631) 232-2600	(516) 637-0213
3.	Office Health and Safety Manager:	Tally Sodre	(631) 232-2600	(516) 509-9332
4.	Corporate Health & Safety Manager:	Brian Hobbs	(631) 232-2600	(631) 807-0193
5.	Office Manager:	Michael Ritorto	(631) 232-2600	(631) 445-4576

Accident reporting guidelines are outlined in section 13.5 of this HASP.

3.0 HEALTH AND SAFETY PERSONNEL

This section briefly describes all Site personnel and their health and safety responsibilities for the RI work to be implemented at the Site. All personnel are responsible for ensuring compliance with the HASP.

Project Principal (PP) – Joseph Duminuco – Roux

- Has the overall responsibility for the health and safety of Site personnel.
- Ensures that adequate resources are provided to the field health and safety staff to carry out their responsibilities as outlined below.

Office Health and Safety Manager (OHSM) – Tally Sodre – Roux

- Implements the HASP.
- Performs or oversees site-specific training and approves revised or new safety protocols or field operations.
- Coordinates revisions of this HASP with Project Principal.
- Responsible for the development of new task safety protocols and procedures and resolution of any outstanding safety issues which may arise during the performance of site work.
- Review and approve all health and safety training and medical surveillance records for personnel and subcontractors.

Project Manager/Site Safety and Health Officer (PM/SSO) – Jeff Wills – Roux

- Directs and coordinates health and safety monitoring activities.
- Ensures that field teams utilize proper personal protective equipment.
- Conducts initial onsite specific training prior to personnel and/or subcontractors commencing work.
- Conducts and documents daily pre-job safety briefings.
- Ensures that field team members comply with this HASP.
- Completes and maintains all accident investigation and reporting forms.
- Notifies PP and OHSM of all accidents/incidents.
- Notifies PP of daily field operations and work progress, who will then communicate at the end of the day to the designated representative the following:
    1. End of day tasks completed
    2. Next day's planned activities
    3. Third party issues
    4. Change of Plans – approvals

- Determines upgrade or downgrade of personal protective equipment (PPE) based on Site conditions and/or real time monitoring results.

- Ensures that monitoring instruments are calibrated daily or as manufacturers suggested instructions determine.

- Submits and maintains health and safety field log books, daily safety logs, training logs, air monitoring result reports, weekly safety report.

Field Personnel and Subcontractors

- Report any unsafe or potentially hazardous conditions to the PM/SSO.

- Maintain knowledge of the information, instructions, and emergency response actions contained in the HASP.

- Comply with rules, regulations, and procedures as set forth in this HASP and any revisions, which are instituted.

- Prevent admittance to work Site by unauthorized personnel.

In the case that there is a change in any of the above personnel, all onsite personnel will be notified of the change. The new responsible party shall review and sign that they have been given a documented verbal full HASP review by Roux and are aware of their responsibilities as outlined in this HASP.

4.0 SITE LOCATION, DESCRIPTION, AND HISTORY

Descriptions of the Site and surrounding property usage are included in the following sections. The location of the Site is presented in Figure 1.

4.1 Property Location and Description

The Site is identified as Block 555, Lots 10, 86/89 and 88 on the Nassau County tax maps. The Site is located on the north side of Old Country Road between the corners of Rex Place and Lester Place. The Site consists of one two-story building and three one-story buildings and paved parking lot encompassing a total of 9.936 acres and is bordered by Knowles Street to the north, Old Country Road to the south, Lester Place to the east and Rex Place to the west. The surface elevation of the property is approximately 145 feet. Topography of the property slopes slightly to the south.

The surrounding properties to the north, east, and west are all residential properties. To the south of the Site, there are both residential properties as well as the Plainview-Old Bethpage Public Library.

The Site was previously used for agricultural use until developed as a shopping center in 1956. The Site has been improved with commercial developments since the late 1950s. Past commercial uses included a dry cleaning facility (former Morton Village Cleaners) from the late 1950s to 2007. Based on previous environmental investigations, the following Areas of Concern (AOCs) were identified at the Site:

- Former Morton Village Cleaners operations that were conducted between late 1950's and 2007.
- One historical Gas Station occupied the property adjacent to the southeast corner of the Site (Section 12, Block 555, Lot 6).
- Significant staining and standing oil observed in an elevator pit for the freight elevator in one of the existing Buildings (Building C) during a September 2008 site visit.

5.0 WASTE DESCRIPTION/CHARACTERIZATION

5.1 General

The following information is presented in order to identify the types of materials that may be encountered at the Site. The detailed information on these materials was obtained from:

- Sax's Dangerous Properties of Industrial Materials – Lewis Eight Edition
- Chemical Hazards of the Workplace – Proctor/Hughes
- Condensed Chemical Dictionary – Hawley
- Rapid Guide to Hazardous Chemical in the Workplace – Lewis 1990
- NIOSH Pocket Guide to Chemical Hazards – 2005
- ACGIH TLV Values and Biological Exposure Indices
- OSHA 29 CFR 1910.1000

5.2 Chemical Data Sheets

Several chemicals that may potentially be present in soils and groundwater at the Site, based on previous soil, soil vapor and groundwater sampling results and historic operations conducted at the Site that have been identified. The Summary of Toxicological Data is found in Table 1 and is provided for review of chemicals that may be encountered. The Summary of Toxicological Data Sheets provides information such as the chemicals characteristics, health hazards, protection, and exposure limits. Material Safety Data Sheets (MSDSs) for products that have been identified at the Site are available for review by project personnel (Appendix B).

5.2.1 Contaminants of Concern

Soil and groundwater contaminants that may be encountered during drilling and sampling activities include both organic and inorganic compounds. Prior investigations at the Site have indicated detection of VOCs, Polycyclic Aromatic Hydrocarbons (PAHs) and metals in soil. Tetrachloroethene and trichloroethene were detected in groundwater and soil vapor samples. The toxicological, physical, and chemical properties of potential contaminants are presented in Table 1, and identified contaminants are presented in Appendix B.

6.0 HAZARD ASSESSMENT

The potential to encounter chemical hazards is dependent upon the work activity performed (intrusive versus non-intrusive) and the duration and location of the work activity. Such hazards could include inhalation and/or skin contact with chemicals/gases that could cause: dermatitis, skin burns, being overcome by vapors or asphyxiation.

Physical hazards that may be encountered during Site work include heat and cold stress, being crushed, head injuries, punctures, cuts, falls, electrocution, bruises and other physical hazards due to motor vehicle operation, equipment use and power tools

Biological hazards may exist during Site activities. These hazards include exposure to insect bites/stings, animals and animal wastes, mold and blood borne pathogens.

Prior to the beginning of each new phase of work, a job safety analysis (JSA) (Appendix C) will be prepared by the PM/SSO with assistance from the OHSM. The analysis will address the hazards for each activity performed in the phase and will present the procedures and safeguards necessary to eliminate the hazards or reduce the risk. JSAs for each task will be reviewed with onsite personnel at each morning tailgate meeting and as tasks change throughout the day.

6.1 Chemical Hazards

The potential for personnel and subcontractors to come in contact with chemical hazards may occur during the following tasks:

- Installation and sampling of soil borings, and
- Installation, gauging, purging and sampling of temporary monitoring wells.

For chronic and acute toxicity data, refer to Summary of Toxicological Data Sheets (Table 1) and MSDSs (Appendix B) for further details on compound characteristics.

6.1.1 Carbon Monoxide Hazards

Carbon monoxide (CO) is a colorless, odorless, and toxic gas, which is predominately produced by incomplete combustion of carbon-containing materials. Incomplete combustion occurs when insufficient oxygen is used in the fuel (hydrocarbon) burning process. Common sources of CO may include: motor vehicle exhausts, fuel burning[1], furnaces, coal burning power plants, small gasoline engines including electric

1 Fuel burning may include natural gas, propane, fuel oil, kerosene, gasoline, coal, or other carbon-based items.

generators, demolition equipment, chain saws, lawn mowers and power washers, marine engines, fuel powered forklifts, propane or kerosene-powered heaters, and fuel burning water heaters.

Exposure to CO impedes the blood's ability to carry oxygen to body tissues and vital organs. When CO is inhaled, it combines with hemoglobin (an iron-protein component of red blood cells), producing carboxyhemoglobin, which greatly diminishes hemoglobin's oxygen-carrying capacity. **Hemoglobin's binding affinity for CO is 300 times greater than its affinity for oxygen.** As a result, small amounts of CO can dramatically reduce hemoglobin's ability to transport oxygen.

Common symptoms of CO exposure are headache, nausea, rapid breathing (i.e., shortness of breath), weakness, exhaustion, dizziness, and confusion (i.e., light headedness). Hypoxia (severe oxygen deficiency) due to acute CO poisoning may result in reversible neurological effects, or it may result in long-term (and possibly delayed) irreversible neurological (brain damage) or cardiological (heart damage) effects.

CO exposure can be dangerous during pregnancy for both the mother and the developing fetus. Please contact CDC-INFO (800-232-4636) if you have any questions regarding CO exposure during pregnancy.

At work sites where carbon-containing fuels are used, such as in internal combustion engines and generators, the exhausts from these units can contain significant concentrations of CO. In situations where the exhausts create exposure to CO, the exhausts of these units should be extended via appropriate hoses/piping to well ventilated exterior areas (i.e., outside and downwind of structures). Where the concentrations of CO exceed the following "action levels", notify the Project Manager and immediately implement the corresponding actions to mitigate exposure.

Action Levels Table (CO)

Carbon Monoxide (CO) Action Levels[2]	
Concentration of CO in air	**Action**
< 25 ppm	Inspect exhaust system for leaks or other sources of CO. Monitor initially and every 15 minutes during use of CO-generating equipment.

2 Based upon The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) of 25 ppm as an 8-hour time-weighted average (TWA) [ACGIH 2014 TLVs® and BEIs®] and OSHA's Permissible Exposure Limit (PEL) of 50 ppm as an 8-hour TWA concentration [29 CFR Table Z-1].

25 – 50 ppm	Ventilate area. Monitor continuously and record measurements. Contact PM.
> 50 ppm	Stop work activities. Ventilate area.

6.1.2 Exposure Pathways

Exposure to these compounds during ongoing activities may occur through inhalation of contaminated dust particles, inhalation of VOCs and SVOCs, dermal absorption, and accidental ingestion of the contaminant by either direct or indirect cross-contamination activities.

6.1.3 Operational Action Levels

A decision-making protocol for an upgrade in levels of protection and/or withdrawal of personnel from an area based on exposure levels is outlined in Table 2.

6.1.4 Additional Precautions

Dermal absorption or skin contact with chemical compounds is possible during intrusive activities and while gauging, purging or sampling a monitoring well at the Site. The use of PPE in accordance with Section 8.2 and strict adherence to proper decontamination procedures should significantly reduce the risk of skin contact.

The potential for accidental ingestion of potentially hazardous chemicals is expected to be remote, when good hygiene practices are used.

6.2 Physical Hazards

A variety of physical hazards may be present during Site activities. These hazards are similar to those associated with any investigation-type project and include equipment operation and hazardous walking and working surfaces. The referenced hazards are not unique and are generally familiar to most hazardous waste site workers at environmental sites. Task-specific safety requirements for each phase will be covered during safety briefings.

6.2.1 Heat Stress

Heat stress is a significant potential hazard, associated with the use of protective equipment in a hot weather environment. The human body is designed to function at a certain internal temperature. When metabolism or external sources (fire or hot summer day) cause the body temperature to rise, the body seeks to protect itself by triggering cooling mechanisms. The PM/SSO will monitor the air temperature (as described later in this section) to determine potential adverse effects the weather can cause onsite personnel. Excess heat is dissipated by two means:

- Changes in blood flow to dissipate heat by convection, which can be seen as "flushing" or reddening of the skin in extreme cases.

- Perspiration, the release of water through skin and sweat glands. While working in hot environments, evaporation of perspiration is the primary cooling mechanism.

Protective clothing worn to guard against chemical contact effectively stops the evaporation of perspiration. Thus the use of protective clothing increases heat stress problems.

The major disorders due to heat stress are heat cramps, heat exhaustion, and heat stroke. Heat cramps are painful spasms, which occur in the skeletal muscles of workers who sweat profusely in the heat and drink large quantities of water, but fail to replace the bodies lost salts or electrolytes. Drinking water while continuing to lose salt tends to dilute the body's extracellular fluids. Soon water seeps by osmosis into active muscles and causes pain. Muscles fatigued from work are usually most susceptible to cramps.

Extreme weakness or fatigue, dizziness, nausea, and headache characterize heat exhaustion. In serious cases, a person may vomit or lose consciousness. The skin is clammy and moist, complexion pale or flushed, and body temperature normal or slightly higher than normal. Treatment is rest in a cool place and replacement of body water lost by perspiration. Mild cases may recover spontaneously with this treatment; severe cases may require care for several days. There are no permanent effects. As first aid treatment, the person shall be moved to a cool place. Body heat should be reduced artificially, but not too rapidly, by soaking the person's clothes in water and fanning them.

Heat stroke is considered a medical emergency and is caused by the breakdown of the body's regulating mechanisms. The skin is very dry and hot with red mottled or bluish appearance. Unconsciousness, mental confusion, or convulsions may occur. Without quick and adequate treatment, the result can be death or permanent brain damage.

Steps that can be taken to reduce heat stress are:

- Acclimate the body. Allow a period of adjustment to make further heat exposure endurable.

- Drink more liquids to replace the body water lost during sweating.

- Rest is necessary and should be conducted under the direction of the PM/SSO.

- Wear personal cooling devices. These are two basic designs; units with pockets for holding frozen packets and units that circulate fluid from a reservoir through tubes to different parts of the body. Both designs can be in the form of a vest, jacket, or coverall. Some circulating units also have a cap for cooling the head.

Heat stress is a significant hazard associated with using protective equipment in hot weather environments. Local weather conditions may produce conditions, which will require restricted work schedules in order to protect employees.

Appendix D contains procedures for heat stress; these will be used as a guideline and to provide additional information.

6.2.2 Cold Stress

Cold temperatures are a significant potential hazard. Examples of cold temperature hazards are frostbite and hypothermia.

Frostbite is the most common injury resulting from exposure to cold. The extremities of the body are most often affected. The signs of frostbite are:

- The skin turns white or grayish-yellow.
- Pain is sometimes felt early but subsides later. Often there is no pain.
- The affected parts feel intensely cold and numb.

Hypothermia is characterized by shivering, numbness, drowsiness, muscular weakness, and a low internal body temperature when the body feels extremely warm. This can lead to unconsciousness and death. With both frostbite and hypothermia, the affected areas need to be warmed quickly. Immersion in warm water is an effective means of warming the affected areas quickly. In such cases, medical assistance will be sought.

To prevent these effects from occurring, persons working in the cold shall wear adequate clothing and reduce the time spent in the cold area. The field PM/SSO is responsible for determining appropriate time personnel shall spend in adverse weather conditions and will monitor this.

Appendix D, which contains the Heat and Cold Stress Guidelines, provides additional information.

6.3 Biological Hazards

The biological hazards, which have the potential to cause adverse health effects, are from exposure to domestic flies, mosquitoes, insects, animals and animal wastes, mold and bloodborne pathogens.

6.3.1 Insect Stings

Stings from insects are often painful, cause swelling and can be fatal if a severe allergic reaction such as anaphylactic shock occurs. If a sting occurs, the stinger should be scraped out of the skin, opposite of the sting direction. The area should be washed with soap and water followed by application of an ice pack.

If the victim has a history of allergic reaction, he shall be taken to the nearest medical facility. If the victim has medication to reverse the effects of the sting, it should be taken immediately.

If the victim experiences a severe reaction, a constricting band should be placed between the sting and the heart. The bitten area should be kept below the heart if possible. A physician shall be contacted immediately for further instructions.

6.3.2 Animals and Animal Wastes

Due to the site location within a Suburban area, there lies the potential for various wildlife at the site, including, but not limited to, pigeons, bats, mice, rats, squirrels, raccoons, and feral cats. Certain animals can represent significant sources (vectors) of disease transmission. Precautions to avoid or minimize potential contact with (biting) animals (such as some of the above listed) or animal waste and/or deceased animals should be considered prior to all field activities. Rats, squirrels, raccoons, feral cats, and other wild animals can inflict painful bites which can also cause disease (as in the case of rabid animals). Site personnel should avoid contact with any of the above.

If contact occurs, be sure to clean the area thoroughly with soap and water as soon as possible. If a bite occurs, the area shall be cleaned thoroughly immediately with soap and water and medical attention shall be sought.

6.3.3 Bloodborne Pathogens

The majority of the occupational tasks onsite will not involve a significant risk of exposure to blood, blood components, or body fluids. The highest risk of acquiring any bloodborne pathogen for onsite employees will be following an injury. When administering first aid care, there are potential hazards associated with bloodborne pathogens that cause diseases such as Human Immunodeficiency Virus (HIV), Hepatitis B (HBV), Hepatitis A (HAV), Hepatitis C (HCV), or the Herpes Simplex Virus (HSV). An employee who has not received the appropriate certification should never execute first aid and/or CPR.

In order to minimize any potential pathogen exposure, all employees should use the hand washing facilities on a regular basis. Additionally, the following universal precautions shall be followed to prevent further potential risk:

- Direct skin or mucous membrane contact with blood shall be avoided.
- Open skin cuts or sores shall be covered to prevent contamination from infectious agents.
- Body parts shall be washed immediately after contact with blood or body fluids that might contain blood, even when gloves or other barriers have been used.
- Gloves and disposable materials used to clean spilled blood shall be properly disposed of in an approved hazardous waste container.

- First aid responders shall wear latex or thin mil nitrile gloves when performing any procedure risking contact with blood or body substances.
- Safety glasses with attached side shields will be worn to protect the eyes from splashing or aerosolization of body fluids.
- A CPR mask will be worn when performing CPR to avoid mouth-to-mouth contact.
- Appropriate work gloves will be worn to minimize the risk of injury to the hands and fingers when working on all equipment with sharp or rough edges.
- Never pick up broken glass or possible contaminated material with your unprotected hands.
- Never handle wildlife (living or deceased) encountered onsite.

6.4 Hazard Assessment

Task	Hazards	Risk of Exposure
Installation, gauging, purging and sampling of Groundwater Monitoring Wells	Inhalation/Skin Contact	Moderate/High
	Heat Stress/Cold Stress	Moderate
	Physical Injury	Moderate
Installation and sampling of Soil Borings	Inhalation/Skin Contact	Moderate/High
	Heat Stress/Cold Stress	Moderate
	Physical Injury	Moderate
Installation and sampling of soil vapor and sub-slab points and sampling of indoor air and SSDS piping	Inhalation/Skin Contact	Moderate/High
	Heat Stress/Cold Stress	Moderate
	Physical Injury	Moderate

7.0 TRAINING

7.1 General Health and Safety Training

In accordance with Roux's corporate policies, and pursuant to 29 CFR 1910.120, hazardous waste site workers shall, at the time of the job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations. As a minimum, the training shall have consisted of instruction in the topics outlined in the above reference. Personnel who have not met the requirements for initial training will not be allowed to work in any Site activities in which they may be exposed to hazards (chemical or physical).

Completion of a 40-hour Health and Safety Training Course for Hazardous Waste Operations or an approved equivalent will fulfill the requirements of this section.

Roux's PM/SSO has the responsibility of ensuring that personnel assigned to this project comply with these requirements.

7.2 Annual Eight-Hour Refresher Training

Current, annual 8-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualifications for fieldwork. The following topics will be reviewed; toxicology, respiratory protection, medical surveillance, decontamination procedures, and personal protective clothing. In addition, topics deemed necessary by Roux's Health and Safety Director may be added to the above list.

7.3 Site-Specific Training

Site personnel will receive documented training that will specifically address the activities, procedures, monitoring and equipment for Site operations. It will include Site and facility layout, hazards, first aid equipment locations and emergency services at the Site, and will highlight all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

7.4 Onsite Safety Meetings

Daily-documented (Appendix E) pre-work safety meetings will be presented each morning to discuss the scope-of-work for that day, potential safety concerns and control measures for those identified safety hazards as per the JSAs (Appendix C) for the upcoming activities.

The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety audits by Roux or other involved parties.

7.5 First Aid and CPR

The PM/SSO will identify those individuals having first aid and CPR training in order to ensure that emergency medical treatment is available during field activities. The training will be consistent with the requirements of the American Red Cross Association and, as applicable, the American Heart Association. Certification and appropriate training documentation will be kept with the Site personnel records.

7.6 Additional Training / Procedures

The OHSM may require additional or specialized training throughout the project. Such training shall be in the safe operation of heavy or power tool equipment or hazard communication training or other topic deemed Site appropriate.

8.0 MEDICAL SURVEILLANCE PROCEDURES

8.1 General

A Medical Surveillance Program has been established as part of this plan and is included in Appendix F. Roux and subcontractor personnel performing field work at the Site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120(f). A physician's medical release for work will be confirmed by the PM/SSO before an employee can begin Site activities. Such examinations shall include a statement as to the worker's present health status, the ability to work in a hazardous environment (including any required PPE, which may be used during temperature extremes), and the worker's ability to wear respiratory protection.

In the event that personal medical information is needed for emergency treatment, information will be made available to the treating health care professional through Roux's Human Resources Department and the OHSM.

9.0 SITE CONTROL, PERSONAL PROTECTIVE EQUIPMENT, AND COMMUNICATIONS

A modified Site control approach may be utilized since activities will be limited to site inspection and groundwater sampling. If additional work is necessary, the following four-zone approach will be used in order to prevent the spread of contamination from the disturbed areas onsite.

9.1 Site Control

If remedial activities are necessary, a four-zone approach will be employed. The four zones include: the Exclusion Zone (EZ), the Contamination Reduction Zone (CRZ), Contamination Reduction Corridor (CRC) and the Support Zone (SZ). A stepped remedial approach will be managed and the zones modified as the work progresses. Each of the areas will be defined through the use of control barricades and/or construction/hazard fencing. A clearly marked delineation between the SZ and the remaining three zones, the CRZ, CRC and EZ, will be maintained. The preferred method will utilize high visibility orange fencing and hand-driven metal posts, or orange cones. Signage will be posted to further identify and delineate these areas.

9.1.1 Support Zone

The Support Zone (SZ) is an uncontaminated area that will be the field support area for the Site operations. The SZ will contain the temporary project trailers and provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel or materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples. Meteorological conditions will be observed and noted from this zone, as well as those factors pertinent to heat and cold stress.

9.1.2 Contamination Reduction Zone

A Contamination Reduction Zone (CRZ) is established between the exclusion zone and the support zone. The CRZ contains the Contamination Reduction Corridor (CRC) and provides an area for decontamination of personnel and equipment. The CRZ will be used for general Site entry and egress in addition to access for heavy equipment and emergency support services. Personnel are not allowed in the CRZ without:

- A buddy (co-worker);
- Appropriate PPE;
- Medical authorization;
- Training certification; and
- A need to be in the zone.

9.1.3 Exclusion Zone

The area where contamination exists is considered to be the Exclusion Zone (EZ). All areas where excavation and handling of contaminated materials take place are considered the EZ. This zone will be clearly delineated by orange high visibility fencing. Safety tape may be used as a secondary delineation within the EZ. The zone delineation markings may be opened in areas for varying lengths of time to accommodate equipment operation or specific construction activities. The PM/SSO may establish more than one EZ where different levels of protection may be employed or where different hazards exist. Personnel are not allowed in the EZ without:

- A buddy (co-worker);
- Required minimum-level PPE;
- Medical authorization;
- Training certification; and
- A need to be in the zone.

9.2 Personal Protective Equipment

The level of protection worn by field personnel will be enforced by the PM/SSO. Levels of protection for general operations are provided below and are defined in this section. Levels of protection may be upgraded at the discretion of the PM/SSO. All decisions on the level of protection will be based upon a conservative interpretation by the PM/SSO of the information provided by air monitoring results, environmental results and other appropriate information. Any changes in the level of protection shall be recorded in the health and safety field logbook.

9.2.1 Personal Protective Equipment Specifications

The initial level of personal protective equipment is Level D. It is not anticipated that either Level B or Level C protection will be necessary.

The Minimum level of PPE for entry onto the Site is Level D PPE. The following equipment shall be used:

- Work uniform (long pants, sleeved shirt)
- Hard hat
- Steel toe work boots
- Safety glasses with attached side shields
- Boot covers (as needed)
- Hearing protection (as needed)
- High visibility clothing (shirt or vest)

Modified Level D PPE consists of the following:

- Regular Tyvek coveralls (Poly-coated Tyvek as required)
- Outer gloves: cut-resistant, leather, cotton (as required)
- Inner gloves: latex or nitrile (doubled) as required
- Chemical resistant boots over work boots (as required)
- Steel toe work boots
- Hard hat Safety glasses with attached side shields
- Hearing protection as needed

High visibility clothing (shirt or vest). Although not anticipated, any tasks requiring Level B personal protective equipment (PPE) will utilize the following equipment:

- Positive pressure, full facepiece, self-contained breathing apparatus (SCBA) or positive pressure, supplied air respirator with escape SCBA (NIOSH approved)
- Disposable coveralls (Tyvek, Poly-coated Tyvek, or Saranex)
- Gloves, inner: latex or nitrile
- Gloves, outer: cut-resistant
- Chemical resistant boots over the work boots
- Steel toe work boots
- Hard hat
- Hearing protection (as needed)
- Boot cover (as needed)

High visibility clothing (shirt or vest). For tasks requiring Level C PPE, the following equipment may be used in any combination:

- Full-face, air purifying, canister-equipped respirators (NIOSH approved) utilizing Organic Vapor/Acid Gas and P-100 filters (half-face if approved by PM/SSO)
- Disposable coveralls (Tyvek) as required
- Gloves, inner: latex or nitrile as required
- Gloves, outer: cut-resistant
- Chemical resistant boots over the work boots as required
- Steel toe work boots

- Hard hat
- Hearing protection (as needed)
- Safety glasses with attached side shields (if half-mask is utilized)
- Boot covers (as needed)
- High visibility clothing (shirt or vest)

9.2.2 Site Specific Levels of Protection

Levels of protection for the proposed scope of work may be upgraded or downgraded depending on direct-reading instruments or personnel monitoring. The following are the initial levels of protection that shall be used for each planned field activity:

Activity	**Initial Level of PPE**
Installation, Gauging, Purging and Sampling of Temporary Monitoring Wells	D
Installation and sampling of Soil Borings	D

9.3 Communications

If working in level C/B respiratory protection is required, personnel may find that communication becomes a more difficult task and process to accomplish. Distance and space further complicate this. In order to address this problem, electronic instruments, mechanical devices, or hand signals will be used as follows:

Telephones – Mobile telephones will be carried by designated personnel for communication with emergency support services/facilities.

Radios – Two-way radios will be utilized onsite for communications between field personnel in areas where visual contact cannot be maintained and where hand signals cannot be employed.

Hand Signals – This communication method will be employed by members of the field team along with use of the buddy system. Signals become especially important when in the vicinity of heavy moving equipment and when using Level B respiratory equipment. The signals shall become familiar to the entire field team before Site operations commence, and will be reinforced and reviewed during site-specific training.

Signal	**Meaning**
Hand gripping throat	Out of air; can't breathe
Grip partner's wrist	Leave area immediately; no debate
Hands on top of head	Need assistance
Thumbs up	OK; I'm all right; I understand
Thumbs down	No; unable to understand you, I'm not all right

10.0 MONITORING PROCEDURES

10.1 General

Monitoring will be performed as necessary to verify the adequacy of respiratory protection, to aid in Site layout, and to document worker exposure. If real-time breathing zone air monitoring in these areas indicates the presence of potentially hazardous materials in exceedances of the Action Levels for Worker Breathing Zone (Table 2), the OHSM will be contacted and a plan for implementing appropriate control measures will be developed. A documented safety briefing to communicate the new procedures to onsite personnel will be conducted. All monitoring instruments shall be operated by qualified personnel only and will be calibrated daily prior to use or, more often, as necessary. Additional monitoring may be required if exclusion zones are employed for specific site activities. General air monitoring will be performed in accordance with the Generic Community Air Monitoring Plan included in Appendix G during intrusive Site activities.

10.2 Instrumentation

The following monitoring instruments will be available for use during field operations as necessary. There will be a minimum of one of each piece of equipment on the Site at all times during intrusive activities:

- Photoionization Detector (PID) with 10.6 EV probe or Flame Ionization Detector (FID) or equivalent.
- Dust/Particulate Monitor (DM), MIE Miniram, or equivalent.

A PID will be used to monitor VOCs in active work areas during intrusive activities. VOCs shall also be measured upwind of the work areas to determine background concentrations.

A particulate monitor shall be used to measure concentrations of dust and particulate matter.

When deemed necessary, a CGI/O_2/CO (or equivalent) meter shall be used to monitor for combustible gases, oxygen content and/ or carbon monoxide during confined space entry or when operating in areas with poor ventilation as the HSO deems necessary.

Calibration records shall be documented and recorded daily and included in the daily air monitoring report. This report will be specific to work area monitoring. All instruments shall be calibrated before and after each daily use in accordance with manufacturer's procedures.

10.3 Action Levels

Action levels for the upgrading of PPE requirements in the HASP will apply to all Site work during investigation and remediation activities at the Site. Action levels are for known contaminants using direct reading instruments in the Breathing Zone (BZ) for VOCs and particulates, and at the source for combustible gases. The BZ will be determined by the PM/SSO, but is typically 4 to 5 feet above the work area surface or elevation. The action levels to be utilized for the Site are found in Table 2.

11.0 SAFETY CONSIDERATIONS

11.1 General

In addition to the specific requirements of this HASP, common sense should be used at all times. The following general safety rules and practices will be in effect at the site.

- Ignition sources within 35 feet of potentially flammable or contaminated material are strictly prohibited.
- Movement of vehicles and equipment, and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures, including signs; lights; canopies; buildings and other structures and construction; and natural features such as trees, boulders, bodies of water, and terrain.
- Approved and appropriate safety equipment (as specified in this HASP), such as eye protection, hard hats, hand protection (nitrile, leather and/or cut resistant gloves as necessary), foot protection, and respirators, must be worn in areas where required.
- No eating, chewing tobacco, gum chewing or drinking will be allowed outside the SZ.
- Contaminated tools and hands must be kept away from the face.
- Personnel must use personal hygiene safe guards (washing up via hand towelettes or potable water) at the end of the shift.
- Each sample must be treated and handled as though it were contaminated.
- Persons with long hair and/or loose-fitting clothing that could become entangled in equipment (e.g., pumps, etc.) must take adequate precautions.
- Horseplay is prohibited in the work area.
- Work while under the influence of intoxicants, narcotics, or controlled substances is strictly prohibited.

11.2 Sample Handling

Personnel responsible for handling of samples will wear the prescribed modified Level D protection. Samples are to be identified as to their hazard and packaged as to prevent spillage or breakage. Any unusual sample conditions shall be noted. Laboratory personnel and all field personnel shall be advised of sample hazard levels and the potential contaminants present. This can be accomplished by a phone call to the lab coordinator and/or including a written statement with the samples reviewing lab safety procedures in handling in order to assure that the practices are appropriate for the suspected contaminants in the sample.

12.0 DECONTAMINATION AND DISPOSAL PROCEDURES

12.1 Contamination Prevention

Contamination prevention should minimize worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include:

Personnel

- Do not walk through areas of obvious or known contamination.
- Do not directly handle or touch contaminated materials.
- Make sure that there are no cuts or tears on PPE.
- Fasten all closures in suits; cover with tape, if necessary.
- Particular care should be taken to protect any skin injuries.
- Stay upwind of airborne contaminants.
- Do not carry cigarettes, cosmetics, gum, etc., into contaminated areas.

Sampling/Monitoring

- When required by the PM/SSO, cover instruments with clear plastic, leaving openings for sampling ports and air exhaust.

12.2 Personnel Decontamination

If an exclusion zone (EZ) is employed at the Site, a field wash for equipment and PPE shall be set up and maintained for all persons exiting the EZ. The system will include a gross wash and rinse for all disposable clothing and boots worn in the EZ. As necessary, equipment and facilities will be available for personnel to wash their hands, arms, neck, and face.

12.3 Equipment Decontamination

All potentially contaminated equipment used at the Site will be decontaminated to prevent contaminants from leaving the Site. The decontamination area will provide for the containment of all wastewater from the decontamination process. Respirators and any other PPE that comes in contact with contaminated materials shall pass through a field wash in the decontamination area, and a thorough decontamination at the end of the day. All decontamination rinse water will be collected and managed in accordance with all applicable regulations.

12.4 Decontamination during Medical Emergencies

If emergency life-saving first aid and/or medical treatment are required, normal decontamination procedures may need to be abbreviated or omitted. The Site PM/SSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments

can be removed if they do not cause delays, interfere with treatment, or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed, a plastic barrier between the individual and clean surfaces should be used to help prevent contaminating the inside of ambulances and/or medical personnel. Outer garments are then removed at the medical facility. Attempt to wash or rinse the victim if it is known that the individual has been contaminated with an extremely toxic or corrosive material, which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems (ambulatory) or injuries, the normal decontamination procedures will be followed. Note that heat stroke requires prompt treatment to prevent irreversible damage or death. Protective clothing must be promptly removed. Less serious forms of heat stress also require prompt attention and removal of protective clothing immediately. Unless the victim is obviously contaminated, decontamination should be omitted or minimized, and treatment begun immediately.

12.5 Disposal Procedures

A system of segregating all waste will be developed by the PM/SSO.

All discarded materials, waste materials, or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left onsite. All potentially contaminated materials (e.g., clothing, gloves, etc.,) will be bagged or drummed as necessary, labeled and segregated for disposal. All non-contaminated materials shall be collected, bagged and labeled for appropriate disposal as domestic waste. All waste materials will be staged at the site.

13.0 EMERGENCY PLAN

As a result of the hazards onsite and the conditions under which operations are conducted, the possibility of an emergency exists. An emergency plan is required by OSHA (29 CFR 1910.120) to be available for use and is included below. A copy of this plan shall be available in the Support zone at each work site.

In the event of an emergency situation, such as fire, explosion, significant release of particulates, etc., all persons in both the restricted and non-restricted areas will evacuate and assemble near the Support Zone or other safe area as identified by the Site Emergency Coordinator(s). The Site Emergency Coordinator(s) will have authority to initiate proper action if outside services are required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The SHSO or SM must see that access for emergency equipment is provided and that all spark-producing apparatus has been shut down once the alarm has been sounded. Once the safety of all personnel is established, the fire department and other emergency response groups will be notified by telephone of the emergency. Then, other personnel listed in Section 12.4 shall be notified.

Note: This plan does NOT address post-emergency response operations since a specific HASP will be developed at that time as appropriate.

13.1 Site Emergency Coordinator(s)

The Site Emergency Coordinator(s) are:

Site Manager;

Site Health and Safety Officer;

Project Engineer; and

Facility Manager.

The Site Emergency Coordinator(s) shall implement this emergency plan whenever conditions at the site warrant such action. The coordinator(s) will be responsible for assuring the evacuation, emergency treatment, emergency transport of site personnel as necessary, and notification of emergency response units and the appropriate management staff.

13.2 Evacuation

Withdrawal Upwind

The work party will continually note general wind directions while onsite. Upon noting the conditions warranting movement away from the work site, the crew will move upwind a distance of approximately 100 feet or farther, as indicated by the site monitoring instruments. Donning SCBA and a lifeline, SHSO will return to the work site to determine if the condition noted was transient or persistent. If persistent, on-site

personnel will be notified of the situation and the need to leave the site or don SCBA. When access to the site is restricted and escape possibly hindered, the crew may be instructed to evacuate the site rather than move upwind, especially if withdrawal upwind moves the crew away from escape routes.

Site Evacuation

Upon determination of conditions warranting site evacuation, the work party will proceed upwind of the work site and notify the SHSO and the Client's Project Engineer of site conditions. If the hazard is toxic gas, respirators will be donned. The crew will proceed to the field office to assess the situation. The advisability and type of further response action will be coordinated and carried out by the SHSO, the PM and the Client's Project Engineer. Site evacuation routes are illustrated in Figure 7.

13.3 Potential or Actual Fire or Explosion

If the potential for a fire exists or if an actual fire or explosion occurs, the following procedure will be implemented:

Immediately evacuate the site as described above (Section 12.2);

Notify Client's Project Engineer, SHSO and PM; and

Notify fire and security. Call **911**

Fire Department – _____

Police Department – _____

13.4 Environmental Incident (Release or Spread of Contamination)

If possible, the spread of contamination should be controlled or stopped. The Facility Manager must be informed of the need to contact police and fire authorities to inform them of the possible or immediate need for nearby evacuation. If a significant release has occurred, the National Response Center and other appropriate groups should be contacted by the Facility Manager or his designee. Those groups will alert National or Regional Response Teams as necessary. Following these emergency calls, the remaining personnel listed in the table below shall be notified:

Emergency Telephone Numbers

Type	Name	Telephone #
Fire Department	Fire Department	911
HazMat Emergency Response		911
Law Enforcement	Police Department	911
Hospital	North Shore University Hospital	(516) 719-3000
Ambulance		911
Urgent Care Center	Health Care Medical Services PLLC	(631) 435-0110
National Response Center (Release or Spill)		(800) 424-8802
Facility Manager	Ray Sohmer	(212) 951-3816
Client Project Manager	John-Patrick Curran	(646) 378-7215
Project Manager/SSO	Jeff Wills	(631) 232-2600 (Office) (516) 637-0213 (Cell)
Corporate H&S Manager	Brian Hobbs	(631) 232-2600 (Office) (631) 807-0193 (Cell)

These contacts and phone numbers will be posted in the SZ.

13.5 Personal Injury

If on-site personnel require emergency medical treatment, the following steps will be taken:

1) Notify the Project Manager, Principal, and OHSM to initiate Illness or Injury Case Management protocol (**See Appendix K for incident notification flow chart**).

2) Notify the Fire Department or Ambulance service and request an ambulance or transport the victim to the hospital, as appropriate.

3) Decontaminate to the extent possible prior to administration of first aid or movement to emergency facilities.

4) First aid will be provided by emergency medical services (EMS) or by on-site personnel trained in first aid, CPR, and blood borne pathogens, if available.

5) The OHSM will supply medical data sheets on the victim (if a Roux employee) to appropriate medical personnel.

Accident Report Forms and Medical Services Form are provided in Appendices F, G, and H. Incident Notification Flow Chart is provided in Appendix K. AllOne Health form is provided in Appendix L.

13.6 Overt Personnel Exposure

If an overt exposure to toxic materials should occur, the exposed person shall be treated onsite as follows:

Skin Contact:	Wash/rinse affected area thoroughly with copious amounts of soap and water, then provide appropriate medical attention. An emergency shower or drench system shall be accessible at the Site at all times. Utilizing eyewash, eyes should be rinsed for at least fifteen (15) minutes upon chemical contamination.
Inhalation:	Move to fresh air and/or, if necessary, decontaminate, and transport to the hospital.
Ingestion:	Decontaminate and transport to emergency medical facility.
Puncture Wound or Laceration:	Decontaminate and transport to emergency medical facility. SHSO will coordinate with the CHSM and the HR Director to obtain medical information on the injured if necessary.

13.7 Adverse Weather Conditions

In the event of adverse weather conditions, the SHSO will determine if work can continue without sacrificing the health and safety of field workers. Some of the items to be considered prior to determining if work should continue are:

Heavy rainfall;

High wind;

Potential for heat stress;

Potential for cold stress and cold-related injuries;

Limited visibility;

Potential for electrical storms – stop work for a minimum of 15 minutes after observing a lightning strike and for at least 15 minutes after the storm has passed;

Potential for malfunction of H&S monitoring equipment or gear; and

Potential for accidents.

13.8 Reportable Incidents at the Site

Since submission of the revised HASP, there has been no reportable incident(s) at the Site. Any incident where Roux's or Roux employees' vehicles are involved in a collision with structures, equipment, other vehicles, or pedestrians will result in the notification of Roux personnel and Client Managers and completion of an *ACORD*® Automobile Loss Notice Form (attached as Appendix J).

14.0 FIELD TEAM REVIEW

Each Roux employee or subcontractor shall sign this section after site-specific training is completed and before being permitted to work at the Site.

I have read and had Roux verbally review this Health and Safety Plan prepared for this Site with me. I understand and will comply with the provisions contained therein.

Site/Project: 1022 Old Country Road, Plainview, New York

Date	Name	Signature	Company

15.0 APPROVALS

By their signature, the undersigned certify that this HASP is approved and will be utilized at the Morton Village Site (1022 Old Country Road, Plainview, New York)

Tally Sodre – Office Health and Safety Officer	Date
Brian Hobbs – Corporate Health and Safety Manager	Date
Jeff Wills – Project Manager	Date

PLATE

1. Air and Soil Vapor Results

IA-CVS-3	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**43.7**
Benzene	**0.661**
Carbon Tetrachloride	**0.428**
Chloromethane	**1.15**
Dichlorodifluoromethane	**1.57**
Ethanol	**191**
Ethyl Acetate	**2.28**
Isopropanol	**11.6**
Tert-Butyl Alcohol	**15**
Tetrachloroethene (PCE)	**3.47**
Toluene	**1.53**
Trichloroethene (TCE)	**0.167**
Trichlorofluoromethane	**3.59**

OSV-5	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**12.7**
Cis-1,2-Dichloroethylene	**6.03**
Ethanol	**45.4**
Isopropanol	**2.73**
m,p-Xylene	**3.85**
O-Xylene (1,2-Dimethylbenzene)	**2.01**
Tetrachloroethene (PCE)	**60.8**
Toluene	**10.1**
Trichloroethene (TCE)	**6.16**
Trichlorofluoromethane	**8.99**

IA-CVS-1	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**61.5**
Benzene	**0.754**
Carbon Tetrachloride	**0.459**
Chloroform	**1.03**
Chloromethane	**1.63**
Cis-1,2-Dichloroethylene	**3.45**
Dichlorodifluoromethane	**1.25**
Ethanol	**390**
Ethyl Acetate	**22.5**
Isopropanol	**20.3**
Methylene Chloride	**2.29**
Tert-Butyl Alcohol	**10.8**
Tetrachloroethene (PCE)	**160**
Toluene	**2.76**
Trichloroethene (TCE)	**6.56**
Trichlorofluoromethane	**3.02**

SV-11	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**29.5**
Dichlorodifluoromethane	**1.28**
m,p-Xylene	**2.47**
Methyl Ethyl Ketone (2-Butanone)	**4.48**
O-Xylene (1,2-Dimethylbenzene)	**1.28**
Tert-Butyl Alcohol	**5.7**
Tetrachloroethene (PCE)	**11.7**
Toluene	**3.18**
Trichloroethene (TCE)	**1.32**

OSV-3	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Cis-1,2-Dichloroethylene	**674**
Tetrachloroethene (PCE)	**12900**
Trichloroethene (TCE)	**1210**

OSV-9	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
1,4-Dichlorobenzene	**2.14**
Acetone	**166**
Chloromethane	**0.676**
Cyclohexane	**1.22**
Dichlorodifluoromethane	**2.33**
Ethanol	**228**
Isopropanol	**39.1**
Methyl Ethyl Ketone (2-Butanone)	**5.4**
N-Hexane	**1.4**
Tert-Butyl Alcohol	**8.58**
Tetrachloroethene (PCE)	**1.51**
Tetrahydrofuran	**2.98**
Toluene	**1.42**
Trichlorofluoromethane	**3.39**

IA-DS-1	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**17 JV**
Carbon Tetrachloride	**0.612 JV**
Chloromethane	**1.15 JV**
Dichlorodifluoromethane	**2.48 JV**
Ethanol	**187 JV**
Isopropanol	**5.9 JV**
Tetrachloroethene (PCE)	**0.834 JV**
Trichloroethene (TCE)	**0.302 JV**
Trichlorofluoromethane	**3.87 JV**

OSV-10	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
1,1,1-Trichloroethane (TCA)	**7.58**
1,4-Dichlorobenzene	**2.4**
Acetone	**7.96**
Chloromethane	**0.555**
Dichlorodifluoromethane	**2.25**
Ethanol	**161**
Isopropanol	**1.73**
N-Hexane	**1.21**
Tetrachloroethene (PCE)	**26**
Toluene	**0.935**
Trichloroethene (TCE)	**9.4**
Trichlorofluoromethane	**2.93**

IA-LQ-1	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**9.69**
Carbon Tetrachloride	**0.547**
Chloromethane	**1.08**
Dichlorodifluoromethane	**2.53**
Ethanol	**458**
Ethyl Acetate	**2.28**
Isopropanol	**3.29**
Tetrachloroethene (PCE)	**1.66**
Trichloroethene (TCE)	**0.161**
Trichlorofluoromethane	**1.92**

OSV-11	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
1,1,1-Trichloroethane (TCA)	**2.32**
1,4-Dichlorobenzene	**1.23**
Acetone	**4.49**
Dichlorodifluoromethane	**2.29**
N-Hexane	**1.33**
Tetrachloroethene (PCE)	**145**
Toluene	**1.12**
Trichloroethene (TCE)	**4.12**
Trichlorofluoromethane	**37.1**

IA-CS-1	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	**1.03**
1,2-Dichloroethane	**0.89**
Acetone	**17.2**
Carbon Tetrachloride	**0.535**
Chloromethane	**1.04**
Dichlorodifluoromethane	**2.48**
Ethanol	**16.6**
Isopropanol	**1.71**
Methyl Ethyl Ketone (2-Butanone)	**1.93**
Tetrachloroethene (PCE)	**0.650**
Toluene	**5.77**
Trichloroethene (TCE)	**0.231**

SV-7	11/04/2016
Normal or Duplicate:	N
Volatile Organic Compounds	
Cis-1,2-Dichloroethylene	**1130**
Cyclohexane	**60.9**
Tetrachloroethene (PCE)	**30700**
Trichloroethene (TCE)	**2600**

AA-1	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**4.99**
Benzene	ND
Carbon Tetrachloride	**0.454**
Chloromethane	**1.1**
Dichlorodifluoromethane	**2.47**
Ethanol	ND
Isopropanol	ND
Methyl Ethyl Ketone (2-Butanone)	ND
Methylene Chloride	ND
Tetrachloroethene (PCE)	ND
Toluene	ND
Trichloroethene (TCE)	**0.177**

AA-1	3/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**9.93**
Benzene	**0.799**
Carbon Tetrachloride	**0.409**
Chloromethane	**0.987**
Dichlorodifluoromethane	**1.58**
Ethanol	**18.6**
Isopropanol	**1.39**
Methyl Ethyl Ketone (2-Butanone)	**1.52**
Methylene Chloride	**5.32**
Tetrachloroethene (PCE)	**0.258**
Toluene	**4.07**
Trichloroethene (TCE)	ND

OSV-12	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**15.6**
Chloromethane	**1.03**
Dichlorodifluoromethane	**2.52**
Ethanol	**14.6**
Isopropanol	**1.32**
N-Hexane	**1.27**
Tetrachloroethene (PCE)	**3.72**
Toluene	**5.28**

OSV-4	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Cis-1,2-Dichloroethylene	**1590**
Tetrachloroethene (PCE)	**12700**
Trans-1,2-Dichloroethene	**19.7**
Trichloroethene (TCE)	**1300**

IA-CS-2	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**14.6**
Carbon Tetrachloride	**0.51**
Chloromethane	**1.09**
Dichlorodifluoromethane	**2.46**
Ethanol	**12.9**
Isopropanol	**1.36**
Methyl Ethyl Ketone (2-Butanone)	**1.58**
Tetrachloroethene (PCE)	**0.80**
Toluene	**4.26**
Trichloroethene (TCE)	**0.199**

IA-CVS-2	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**35.9**
Benzene	**0.706**
Carbon Tetrachloride	**0.447**
Chloromethane	**1.15**
Cis-1,2-Dichloroethylene	**2.01**
Dichlorodifluoromethane	**1.5**
Ethanol	**496**
Ethyl Acetate	**6.05**
Isopropanol	**10.4**
Tert-Butyl Alcohol	**10.1**
Tetrachloroethene (PCE)	**66.8**
Toluene	**6.67**
Trichloroethene (TCE)	**3.12**
Trichlorofluoromethane	**1.98**

OSV-8	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
1,1,1-Trichloroethane (TCA)	**8.54 JV**
Chloroform	**6.54 JV**
Cis-1,2-Dichloroethylene	**26.2 JV**
Tetrachloroethene (PCE)	**2470 JV**
Trichloroethene (TCE)	**178 JV**
Trichlorofluoromethane	**6.01 JV**

SV-6	11/02/2016
Normal or Duplicate:	N
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	**20.2**
1,3,5-Trimethylbenzene (Mesitylene)	**4.87**
1,4-Dichlorobenzene	**1.39**
2,2,4-Trimethylpentane	**1.49**
4-Ethyltoluene	**3.46**
Acetone	**30.4**
Benzene	**1.48**
Chloroform	**1.41**
Cis-1,2-Dichloroethylene	**78.5**
Dichlorodifluoromethane	**1.77**
Ethylbenzene	**3.61**
Isopropanol	**4.99**
m,p-Xylene	**16.4**
Methyl Ethyl Ketone (2-Butanone)	**2.63**
N-Heptane	**1.33**
O-Xylene (1,2-Dimethylbenzene)	**9.51**
Tert-Butyl Alcohol	**8.79**
Tetrachloroethene (PCE)	**314**
Toluene	**6.48**
Trans-1,2-Dichloroethene	**0.987**
Trichloroethene (TCE)	**114**
Trichlorofluoromethane	**1.28**

IA-CVS-4	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**35.6**
Carbon Tetrachloride	**1.06**
Chloromethane	**1.31**
Cis-1,2-Dichloroethylene	**2.35**
Dichlorodifluoromethane	**2.56**
Ethanol	**388**
Ethyl Acetate	**6.83**
Isopropanol	**77.2**
Methyl Ethyl Ketone (2-Butanone)	**1.74**
Methylene Chloride	**1.84**
Styrene	**1.22**
Tetrachloroethene (PCE)	**113**
Toluene	**3.3**
Trichloroethene (TCE)	**4.22**
Trichlorofluoromethane	**3**

SV-8	11/02/2016	11/02/2016
Normal or Duplicate:	N	FD
Volatile Organic Compounds		
1,2,4-Trimethylbenzene	**42.8**	**42.9**
1,3,5-Trimethylbenzene (Mesitylene)	**11.1**	**10.7**
1,4-Dichlorobenzene	**2.86**	**3.31**
2,2,4-Trimethylpentane	**4.14 JV**	ND
4-Ethyltoluene	**7.67**	**6.78**
Acetone	**32.3**	**22**
Benzene	**1.8**	ND
Carbon Disulfide	**4.76**	**4.48**
Dichlorodifluoromethane	**2.23**	ND
Ethylbenzene	**8.12**	**5.52**
Isopropanol	**7.55 JV**	**3.07 JV**
m,p-Xylene	**35.6**	**26.1**
Methyl Ethyl Ketone (2-Butanone)	**4.01 JV**	ND
N-Heptane	**5.12 JV**	ND
O-Xylene (1,2-Dimethylbenzene)	**21.6**	**15.2**
Tert-Butyl Alcohol	**10.8**	**6.94**
Tetrachloroethene (PCE)	**649 JV**	**1150 JV**
Toluene	**13.9**	**10.4**
Trichloroethene (TCE)	**5.75**	**6.99**

SV-1	03/22/2016
Normal or Duplicate:	N
Volatile Organic Compounds	
Cis-1,2-Dichloroethylene	**603**
Ethanol	**977**
Tetrachloroethene (PCE)	**10800**
Trichloroethene (TCE)	**1280**

SV-2	03/22/2016
Normal or Duplicate:	N
Volatile Organic Compounds	
Cis-1,2-Dichloroethylene	**338**
Tetrachloroethene (PCE)	**14200**
Trichloroethene (TCE)	**763**

IA-1_BASEMENT	03/22/2016	03/22/2016
Normal or Duplicate:	N	FD
Volatile Organic Compounds		
Acetone	**28**	**29.7**
Carbon Tetrachloride	**0.459**	**0.459**
Chloromethane	**1.22**	**1.18**
Cis-1,2-Dichloroethylene	**0.329**	**0.317**
Dichlorodifluoromethane	**2.56**	**1.97**
Ethanol	**5600**	**5350**
Ethyl Acetate	**6.56**	**6.63**
Isopropanol	**7.99**	**7.57**
Methylene Chloride	**1.9**	**14**
Tetrachloroethene (PCE)	**24.8**	**23.3**
Toluene	**2.14**	**3.1**
Trichloroethene (TCE)	**0.79**	**0.763**
Trichlorofluoromethane	**1.29**	**1.39**

SV-4	03/22/2016
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**7.89**
Chloroform	**3.57**
Cis-1,2-Dichloroethylene	**16.2**
Ethanol	**74.1**
m,p-Xylene	**5.78**
Tetrachloroethene (PCE)	**1170**
Toluene	**3.54**
Trichloroethene (TCE)	**67.7**

SV-5	11/02/2016
Normal or Duplicate:	N
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	**36.8**
1,3,5-Trimethylbenzene (Mesitylene)	**9.69**
1,4-Dichlorobenzene	**2.04**
2,2,4-Trimethylpentane	**3.36**
4-Ethyltoluene	**6.54**
Acetone	**53.9**
Benzene	**1.91**
Carbon Disulfide	**8.1**
Chloroform	**3.59**
Cis-1,2-Dichloroethylene	**2.94**
Cyclohexane	**0.73**
Dichlorodifluoromethane	**1.62**
Ethanol	**12.7**
Ethyl Acetate	**1.99**
Ethylbenzene	**6.21**
Isopropanol	**4.92**
m,p-Xylene	**29.3**
Methyl Ethyl Ketone (2-Butanone)	**4.39**
N-Heptane	**2.66**
N-Hexane	**4.86**
O-Xylene (1,2-Dimethylbenzene)	**16.9**
Tert-Butyl Alcohol	**13.6**
Tetrachloroethene (PCE)	**4.23**
Toluene	**10.4**
Trichloroethene (TCE)	**12.5**
Trichlorofluoromethane	**1.47**

SV-3	03/22/2016	03/22/2016
Normal or Duplicate:	N	FD
Volatile Organic Compounds		
Acetone	**22.8**	**16**
Chloroform	**2.68 JV**	ND
Cis-1,2-Dichloroethylene	**11.4**	**11.9**
Cyclohexane	ND	**4.44 JV**
Ethanol	**153**	**125**
Isopropanol	**6.75 JV**	ND
m,p-Xylene	**4.95 JV**	ND
Tetrachloroethene (PCE)	**1000**	**1500**
Toluene	**3.25 JV**	ND
Trichloroethene (TCE)	**59.1**	**66.6**

OSV-2	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Chloroform	**10.2**
Cis-1,2-Dichloroethylene	**301**
Tetrachloroethene (PCE)	**9760**
Trans-1,2-Dichloroethene	**30.4**
Trichloroethene (TCE)	**519**

IA-BG	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**38.7**
Benzene	**0.712**
Carbon Tetrachloride	**0.428**
Chloromethane	**1.53**
Cis-1,2-Dichloroethylene	**0.706**
Dichlorodifluoromethane	**1.74**
Ethanol	**1260**
Ethyl Acetate	**3.93**
Isopropanol	**10.5**
Tert-Butyl Alcohol	**4.55**
Tetrachloroethene (PCE)	**26.4**
Toluene	**1.86**
Trichloroethene (TCE)	**1.3**
Trichlorofluoromethane	**1.55**

IA-VW	03/21/2017	03/21/2017
Normal or Duplicate:	N	FD
Volatile Organic Compounds		
Acetone	**786**	**784**
Benzene	**0.706 JV**	ND
Carbon Tetrachloride	**0.396 JV**	**0.66 JV**
Chloromethane	**1.21**	**1.12**
Cis-1,2-Dichloroethylene	**0.159**	**0.198**
Dichlorodifluoromethane	**1.4**	**1.8**
Ethanol	**563**	**650**
Ethyl Acetate	**92.3**	**115**
Isopropanol	**242**	**246**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**11.3**	**16.2**
Tetrachloroethene (PCE)	**7.53**	**9.49**
Toluene	**7.27**	**7.65**
Trichloroethene (TCE)	**0.355**	**0.484**
Trichlorofluoromethane	**1.01 JV**	ND

OSV-1	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**14.3**
Dichlorodifluoromethane	**1.26**
Ethanol	**9.69**
Isopropanol	**1.49**
Tetrachloroethene (PCE)	**21.6**
Toluene	**1.47**
Trichlorofluoromethane	**1.21**

OSV-6	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
1,4-Dichlorobenzene	**5.77**
Acetone	**6.75**
Chloroform	**4.84**
Dichlorodifluoromethane	**1.64**
m,p-Xylene	**2.14**
Methyl Ethyl Ketone (2-Butanone)	**1.65**
N-Hexane	**1.98**
Tetrachloroethene (PCE)	**104**
Tetrahydrofuran	**3.92**
Toluene	**1.37**
Trichloroethene (TCE)	**4.77**
Trichlorofluoromethane	**1.65**

IA-NS-1	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**218**
Carbon Tetrachloride	**0.816**
Chloromethane	**1.11**
Cis-1,2-Dichloroethylene	**0.25**
Dichlorodifluoromethane	**2.52**
Ethanol	**292**
Ethyl Acetate	**5.87**
Isopropanol	**66.4**
Tetrachloroethene (PCE)	**13.4**
Toluene	**16.6**
Trichloroethene (TCE)	**0.564**
Trichlorofluoromethane	**1.82**

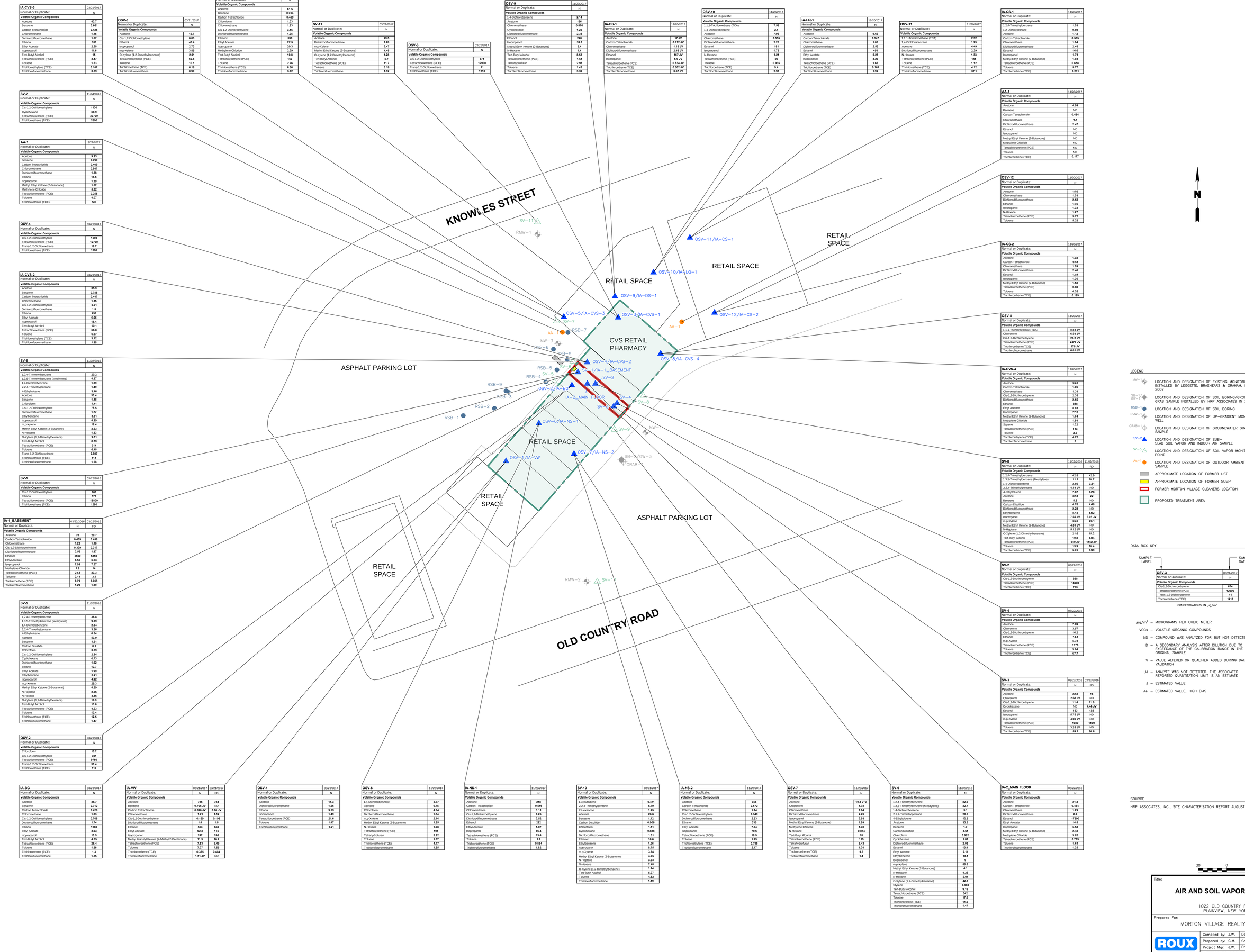
SV-10	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
1,3-Butadiene	**0.471**
2,2,4-Trimethylpentane	**0.79**
2-Hexanone	**1.25**
Acetone	**26.6**
Benzene	**1.12**
Carbon Disulfide	**0.906**
Chloroform	**1.51**
Cyclohexane	**0.888**
Dichlorodifluoromethane	**1.51**
Ethanol	**16.6**
Ethylbenzene	**1.26**
Isopropanol	**8.75**
m,p-Xylene	**3.64**
Methyl Ethyl Ketone (2-Butanone)	**4.95**
N-Heptane	**3.93**
N-Hexane	**2.48**
O-Xylene (1,2-Dimethylbenzene)	**1.24**
Tert-Butyl Alcohol	**5.27**
Toluene	**4.52**
Trichlorofluoromethane	**1.19**

IA-NS-2	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**356**
Carbon Tetrachloride	**0.672**
Chloromethane	**1.14**
Cis-1,2-Dichloroethylene	**0.349**
Dichlorodifluoromethane	**2.63**
Ethanol	**335**
Ethyl Acetate	**7.64**
Isopropanol	**79.6**
Tetrachloroethene (PCE)	**18.9**
Toluene	**1.99**
Trichloroethene (TCE)	**0.755**
Trichlorofluoromethane	**2.17**

OSV-7	11/20/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**10.3 JVV**
Chloroform	**1.78**
Chloromethane	**1.04**
Dichlorodifluoromethane	**2.25**
Isopropanol	**2.93**
Methyl Ethyl Ketone (2-Butanone)	**1.99**
Methylene Chloride	**1.78**
N-Hexane	**0.874**
Tert-Butyl Alcohol	**18**
Tetrachloroethene (PCE)	**115**
Tetrahydrofuran	**6.43**
Toluene	**1.24**
Trichloroethene (TCE)	**9.3**
Trichlorofluoromethane	**1.4**

SV-9	11/02/2016
Normal or Duplicate:	N
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	**82.6**
1,3,5-Trimethylbenzene (Mesitylene)	**22.7**
1,4-Dichlorobenzene	**3.1**
2,2,4-Trimethylpentane	**20.6**
4-Ethyltoluene	**12.5**
Acetone	**33.3**
Benzene	**1.9**
Carbon Disulfide	**3.61**
Chloroform	**0.982**
Cyclohexane	**1.01**
Dichlorodifluoromethane	**2.03**
Ethanol	**13.4**
Ethyl Acetate	**2.11**
Ethylbenzene	**13.1**
Isopropanol	**9**
m,p-Xylene	**50.6**
Methyl Ethyl Ketone (2-Butanone)	**4.1**
N-Heptane	**4.26**
N-Hexane	**2.01**
O-Xylene (1,2-Dimethylbenzene)	**42.8**
Styrene	**0.903**
Tert-Butyl Alcohol	**9.19**
Tetrachloroethene (PCE)	**342**
Toluene	**17.8**
Trichloroethene (TCE)	**11.2**
Trichlorofluoromethane	**1.47**

IA-2_MAIN FLOOR	03/22/2016
Normal or Duplicate:	N
Volatile Organic Compounds	
Acetone	**21.3**
Carbon Tetrachloride	**0.434**
Chloromethane	**1.29**
Dichlorodifluoromethane	**2.4**
Ethanol	**17800**
Ethyl Acetate	**14.5**
Isopropanol	**5.53**
Methyl Ethyl Ketone (2-Butanone)	**2.42**
Methylene Chloride	**3.82**
Tetrachloroethene (PCE)	**0.719**
Toluene	**1.61**
Trichlorofluoromethane	**1.25**



LEGEND

- MW-1 — LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY LEGGETTE, BRASHEARS & GRAHAM, INC IN 2007
- SB-1/OW-1 — LOCATION AND DESIGNATION OF SOIL BORING/GROUNDWATER GRAB SAMPLE INSTALLED BY HRP ASSOCIATES IN 2010
- RSB-1 — LOCATION AND DESIGNATION OF SOIL BORING
- RMW-1 — LOCATION AND DESIGNATION OF UP-GRADIENT MONITORING WELL
- GRAB-1 — LOCATION AND DESIGNATION OF GROUNDWATER GRAB SAMPLE
- SV-1 — LOCATION AND DESIGNATION OF SUB-SLAB SOIL VAPOR AND INDOOR AIR SAMPLE
- SV-1 — LOCATION AND DESIGNATION OF SOIL VAPOR MONITORING POINT
- AA-1 — LOCATION AND DESIGNATION OF OUTDOOR AMBIENT AIR SAMPLE
- APPROXIMATE LOCATION OF FORMER UST
- APPROXIMATE LOCATION OF FORMER SUMP
- FORMER MORTON VILLAGE CLEANERS LOCATION
- PROPOSED TREATMENT AREA

DATA BOX KEY

SAMPLE LABEL — SAMPLE DATE

OSV-3	03/21/2017
Normal or Duplicate:	N
Volatile Organic Compounds	
Cis-1,2-Dichloroethylene	**674**
Tetrachloroethene (PCE)	**12900**
Trans-1,2-Dichloroethene	**11**
Trichloroethene (TCE)	**1210**

CONCENTRATIONS IN µg/m³

µg/m³ – MICROGRAMS PER CUBIC METER

VOCs – VOLATILE ORGANIC COMPOUNDS

ND – COMPOUND WAS ANALYZED FOR BUT NOT DETECTED

D – A SECONDARY ANALYSIS AFTER DILUTION DUE TO EXCEEDANCE OF THE CALIBRATION RANGE IN THE ORIGINAL SAMPLE

V – VALUE ALTERED OR QUALIFIER ADDED DURING DATA VALIDATION

UJ – ANALYTE WAS NOT DETECTED. THE ASSOCIATED REPORTED QUANTITATION LIMIT IS AN ESTIMATE

J – ESTIMATED VALUE

J+ – ESTIMATED VALUE, HIGH BIAS

SOURCE

HRP ASSOCIATES, INC., SITE CHARACTERIZATION REPORT AUGUST 2011.

30' 0 30'

Title:

AIR AND SOIL VAPOR RESULTS

1022 OLD COUNTRY ROAD
PLAINVIEW, NEW YORK

Prepared For:

MORTON VILLAGE REALTY CO., INC.

ROUX

Compiled by: J.W.	Date: 24MAY18	PLATE
Prepared by: G.M.	Scale: AS SHOWN	1
Project Mgr: J.W.	Project: 2517.0001Y000	
File: 2517.0001Y118.01.DWG		

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