MAKO PROPERTIES, LLC - BUILDING #3

48-50 ENTER LANE
SUFFOLK COUNTY
ISLANDIA, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: 152230
Prepared for:
Mako Properties, LLC
931B Conklin Street
Farmingdale, NY 11735

Prepared by:
CA RICH CONSULTANTS, INC.
17 Dupont Street
Plainview, NY 11803-1614
&
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Commack, New York 11725

Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

MARCH 2018

CERTIFICATION STATEMENT

I, Karen Tyll, Certify that I am currently a NYS registered professional engineer as in defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

079520	4/26/18	
NYS Professional Engineer #	Date	Signature

SEAL

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SITE MANAGEMENT PLAN

MAKO PROPERTIES, LLC - BUILDING #3

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APPENDICES

List of Acronyms

AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
EWP	Excavation Work Plan
GHG	Green House Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines

SCO	Soil Cleanup Objective
SMP	Site Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSD	Sub-slab Depressurization
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program

ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the required inspections, monitoring, maintenance and reporting activities:

Site Identification: NYSDEC Site Number: 152230
MAKO PROPERTIES, LLC - BUILDING #3
48-50 ENTER LANE, ISLANDIA, NEW YORK

Institutional Controls:	1. The property may be used for commercial and industrial uses;	
	2. Prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination;	
	3. All ECs must be implemented, maintained and monitored at a frequency and in a manner defined in the SMP.	
Engineering Controls:	1. Air Sparging/ Soil Vapor Extraction System	
Inspections:		Frequency
1. Site Inspection		Annually
2. System Inspection		Weekly/Monthly
Monitoring:		
1. SVE System Raw Air		Semi-Annually
2. Groundwater Monitoring Well Network		Semi-Annually
3. Indoor Air		Semi-Annually
Maintenance:		
2. Blowers and Compressor Maintenance		As Needed
Reporting:		
1. Groundwater Monitoring & Indoor Air		Semi-Annually
2. Periodic Review Report		Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the MAKO PROPERTIES, LLC - BUILDING #3 located in Islandia, New York (hereinafter referred to as the "Site"). See Figure 1. The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, (Site No. **152230)** which is administered by New York State Department of Environmental Conservation (NYSDEC).

Mako Properties, LLC (formerly known as Mako Properties Limited Partnership, hereinafter "Mako Properties") entered into an Order on Consent, with the New York State Department of Environmental Conservation (NYSDEC) in August 2010, to investigate and remediate a 2.1 acre property located in Islandia, Suffolk County, New York. (See Figure 1). The site is currently undergoing remediation in the form of in-situ groundwater treatment to achieve commercial use standards. A Site Contact List is included as Appendix A.

The site is located in the County of Suffolk, New York and is identified as Section 6, Block 01.00 and Lot 18 on the Suffolk County Tax Map. The site is situated on an approximately 2.1-acre area bounded by commercial/industrial buildings to the north, commercial/industrial buildings to the south, Enter Lane to the east, and a parking lot to the west (see Figure 2). The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix B.

After completion of the remedial work, some contamination was left at this site, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An

Environmental Easement granted to the NYSDEC, and recorded with the Suffolk County Clerk, requires compliance with this SMP and all ECs and ICs placed on the site.

This SMP was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the Order on Consent (Index #A1-0649-08-10; Site #152-20-30) for the site, and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix A of this SMP.

This SMP was prepared by CA RICH Consultants, Inc. and Tyll Engineering and Consulting, PC on behalf of Mako Properties, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's Project Manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent, 6NYCRR Part 375 and/or Environmental Conservation Law.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the Order on Consent, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 (below) includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix A.

Table 1: Notifications*

Name	**Contact Information**
NYSDEC Project Manager Jahan Reza	(631) 444-0246 jahan.reza@dec.ny.gov
NYSDEC Regional Engineer Walter J. Parish	(631) 444-0241 walter.parish@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The site is located in the County of Suffolk, New York and is identified as Section 6, Block 01.00 and Lot 18 on the Suffolk County Tax Map. The site is situated on an approximately 2.1-acre area bounded by commercial/industrial buildings to the north, commercial/industrial buildings to the south, Enter Lane to the east, and a parking lot to the west (see Figure 2). The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix B. –Environmental Easement. The owner(s) of the site parcel(s) at the time of issuance of this SMP is/are:

Mako Properties, LLC
931B Conklin Street
Farmingdale, NY 11735

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: a building, parking area and small unpaved lawn. The Site is zoned commercial/industrial and is currently utilized for commercial uses. Site occupants include a woodworking business (50 Enter Lane) and a pools, landscaping and masonry company (48 Enter Lane).

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial, industrial properties. The properties immediately south of the Site include commercial, industrial properties; the properties immediately north of the Site include commercial, industrial properties; the properties immediately east of the Site include commercial, industrial properties; and the properties to the west of the Site include commercial, industrial properties.

2.2.2 Geology

Mako Building #3 is situated upon unconsolidated glacial outwash sand deposits at an elevation of approximately 115 feet above mean sea level. Based upon the subsurface geologic conditions encountered during previous investigations, localized subsurface earth materials generally consist of fairly uniform and permeable tan medium-grained sand grading occasionally to a light- brown fine sand. Site specific boring logs are provided in Appendix C.

2.2.3 Hydrogeology

Regional USGS and Suffolk County groundwater mapping information indicates that the horizontal rate of shallow groundwater flow is approximately 0.5 to 1 foot per day under natural conditions. The vertical depth to the underlying water table (top of the aquifer) occurs directly beneath this Site at 71 to 74 feet below land surface. Locally, the horizontal direction of uppermost groundwater flow at the water table depth beneath the Site was determined to be to the southeast.

A groundwater contour map is shown in Figure 7. Groundwater elevation data is provided in Table 2. Groundwater monitoring well construction logs are provided in Appendix C.

2.3 Investigation and Remedial History

2.3.1 Tenant Inspection and Groundwater Monitoring Program

In 1994, Mako Properties initiated a voluntary tenant inspection program at the Site which was designed and implemented by CA RICH and still exists today. The program includes the annual inspection of current tenant spaces and an assessment, screening and testing of the soils in on-site drainage structures (i.e. storm water drains and septic leaching pools). Since 1994 and up until the most recent round of testing of the drainage structures (spring

of 2017), volatile organic compounds (VOCs) have not been detected during the screening of the soils in the storm water drains and VOCs have not been reported in the samples collected and laboratory analyzed from the Site's sanitary leaching pools.

Beginning in June 2003, Mako Properties voluntarily established a Ground Water Monitoring Program (GWMP) for the purpose of documenting site-specific groundwater quality conditions beneath the Site, which was also designed and implemented by CA RICH. The GWMP included the design and installation of three groundwater monitoring wells at the Site (MW-1, MW-2 and MW-3). In December 2008, two additional groundwater monitoring wells (MW-8 & MW-9) were installed at the Site as part of the GWMP.

The goal of the GWMP is to provide the means to annually test and monitor uppermost groundwater quality conditions occurring at specific locations beneath the Site and augments the tenant inspection program. This groundwater monitoring well network was voluntarily sampled in 2003, 2004, 2006, 2008, and 2009. All of the samples were analyzed by a New York State Accredited laboratory for VOCs and the Suffolk County Department of Health Services (SCDHS) regulatory list for metals. Subsequent groundwater testing has been performed as discussed below. The most recent sampling event occurred in June 2016 as part of the remedial system monitoring.

Overall, the uppermost groundwater quality underlying the property has remained virtually free of contaminants during each and every sampling event with the exception of low level detections of PCE in the groundwater tested at Site monitoring well MW-2. The concentrations of PCE in MW-2 were reported at 16 parts per billion (ppb), 13 ppb, and 6 ppb in 2003, 2004 and 2006, respectively. Subsequent testing in 2008 found a gradually diminishing and low level detection of PCE in MW-2 at 4.2 ppb, and a low level detection of 1.8 ppb at monitoring well MW-8. PCE was not detected in MW-9.

In October 2009, CA RICH conducted another annual round of groundwater sampling in accordance with the voluntary GWMP at the Site. Laboratory analytical data from this

sampling round indicated that there were no detections of concern in groundwater beneath the Site and that PCE levels at both the MW-2 and MW-8 locations were found at only trace-level detections. However, the October 2009 groundwater sampling results revealed for the first time, the presence of TCA at a concentration of 400 ppb which is above the NYSDEC drinking water standard of 5 ppb, at monitoring well location MW-2. Detections of TCA were also reported at MW-8 (1.5 ppb) and MW-9 (17 ppb).

Based upon the October 2009 groundwater sampling results, CA RICH immediately initiated a targeted follow-up study in December 2009 around Mako Building #3. This follow-up investigation was designed to confirm the detection of TCA in the underlying shallow groundwater at the MW-2 location and in the vicinity of wells MW-8 and MW-9. The investigation also evaluated the potential for any immediately apparent on-site conditions or historical source(s) of TCA that may have been released onto or into the ground from any existing building or Site facilities.

The investigation included re-sampling of monitoring wells MW-2, MW-8, and MW-9; as well as the collection of soil and sediment samples from the on-site storm water drains, septic tank and sanitary leaching pool. The repeat testing at MW-2, MW-8 and MW-9 confirmed elevated levels of TCA ranging from 120 ppb at MW-9, situated along the northwest property boundary, up to 12,000 ppb at MW-2. Historical testing results of TCA in Site monitoring wells for the years 2008 and 2009 are summarized in the following table below:

TCA Concentrations in Site Monitoring Wells

Monitoring Well	Dec. 2008	Oct. 2009	Dec. 2009
MW-2	Non-detect	400 ppb	12,000 ppb
MW-8	Non-detect	1.5 ppb	69 ppb
MW-9	Non-detect	17 ppb	120 ppb

The bottom sediment collected from the on-site sanitary leaching pool and the soil from the storm water drains did not contain levels of VOCs that exceeded SCDHS cleanup action

values. Sampling of the septic tank connected to Building #3 identified the presence of 1,1-DCA at 52 ppb and TCA at 22 ppb. Based on these findings, further testing and investigation into suspected on-site or off-site source(s) and definition of the lateral extent of the TCA in the groundwater at Building #3 was initiated.

2.3.2 Site Investigation Activities and Findings - Winter 2010

In February 2010, a geophysical survey utilizing ground-penetrating radar (GPR) was conducted across the entire Site to determine the location of potentially buried underground storage tanks (USTs) or other subsurface features including, but not limited to, the potential presence of buried structures, foundations, utilities, drywells, etc. The findings of the GPR survey did not identify any buried anomalies indicative of suspect USTs or leaching structures beneath the Site.

CA RICH also performed a dye test to confirm the outfall of a small diameter floor drain located inside Building #3. The dye was immediately observed flowing into the septic tank. A thorough inspection of the septic tank and its overflow leaching pool confirmed a connection to the leaching pool and that there were no other overflow pools connected to the system. The GPR survey also confirmed that there were no additional buried leaching pools in the vicinity of the sanitary system.

Also in February 2010, a total of twelve uppermost groundwater samples were collected using the Geoprobe® sample collection methodology. The depth to groundwater at each sample location ranged from 71 to 74 feet below grade. No chemical odors or sheens were observed during the collection of the groundwater samples. During the groundwater sampling activities, CA RICH inspected and screened the subsurface soil using a photo-ionization detector (PID) from the top 10 feet of each sample location for any evidence of possible VOC contamination. The screening activities did not identify any evidence of VOCs in the upper ten feet of soil.

In general, the results of the February 2010 groundwater sampling event indicated the following:

- Elevated concentrations of 1,1-DCE above the NYSDEC drinking water standard at groundwater sample locations GWB-01, GWB-02, GWB-08, GWB-09, GWB-10, GWB-11, GWB-12, and at monitoring well MW-2; and

- Elevated concentrations of TCA above the NYSDEC drinking water standard at groundwater sample locations GWB-01 through GWB-12, and MW-2. TCA concentrations ranged from 80.9 ppb at GWB-05 up to 114,000 ppb at GWB-09.

2.3.3 Historical Environmental Reports

The following list summarizes investigations and remedial action performed at the Site. Copies of these reports were previously submitted to NYSDEC.

Document	**Date**
Groundwater Monitoring Plan – Well Network Installation and Baseline Sampling, CA RICH.	November 2003
Annual Environmental Summary Report, CA RICH.	December 2004
Groundwater Quality Sampling Plan, CA RICH.	May 2005
Annual Environmental Summary Report, CA RICH.	March 2006
Subsurface Soil Boring Results, CA RICH.	September 2007
Groundwater Well Installation and Sampling Report, CA RICH.	January 2009
Annual Environmental Summary Report, CA RICH.	December 2009
Phase II Environmental Site Investigation, CA RICH.	March 2010
Site Characterization Work Plan, CA RICH	March 2011
Site Characterization Report, CA RICH	November 2012
Interim Remedial Measures Work Plan, CA RICH	October 2013
Pilot Test and Design Report, CA RICH	July 2014
Construction Completion Report, CA RICH/Tyll Engineering	March 2018

2.3.4 Site Characterization Investigation

On March 30, 2010, CA RICH and principals of Mako Properties attended a meeting with NYSDEC representatives Mr. Jamie Ascher and Mr. Walter Parish. As follow-up to that meeting, Mako Properties executed an Order-on-Consent with NYSDEC on August 16, 2010 (Agreement Index # A1-0649-08-10) that sets the framework for Site Characterization.

2.3.4.1 Scope of Work

The general scope of the Site Characterization Investigation included:

- the installation and sampling of temporary vertical profiling groundwater wells;
- the installation of permanent multi-depth monitoring wells; and
- the performance of a soil vapor intrusion study at the Site.

The overall objective of the approved investigative scope of work was to:

1) Gather reasonably attainable public information regarding environmental matters at the Site and the surrounding area that may be attributable to the presence of TCA in the underlying groundwater;
2) Determine the nature and extent of groundwater contamination at the Site; and
3) Determine the potential for soil vapor intrusion at Site Buildings #2 and #3.

2.3.4.2 Information Gathering

CA RICH obtained and reviewed available government environmental database records on Mako Building #3, as well as, the surrounding area to identify any nearby sites known to have used TCA. Freedom of Information Law (FOIL) requests were submitted to the United States Environmental Protection Agency (USEPA), NYSDEC, New York State Department of Health (NYSDOH) and the Suffolk County Department of Health services (SCDHS) for properties of interest identified during the database review. A freedom of information request was submitted to the Suffolk County Water Authority (SCWA) to obtain information regarding the nearby well field. The request to SCWA also specifically requested information pertaining to the reported treatment of the well water for TCA.

The USEPA, NYSDEC, NYSDOH, and SCDHS each reported that after diligent searches, each did not find any environmental records regarding Mako Building #3. The USEPA, NYSDEC, and NYSDOH each reported that after diligent searches, each did not find any environmental records regarding nearby sites. However, after reviewing files at the SCDHS, CA RICH identified two sites within the extent of the study area that contained environmental records. The sites are identified as Crescent Chemical located at 1324 Motor Parkway and Hi-Temp Wires located at 1320 Motor Parkway in Hauppauge, New York. Both of these sites are located hydrogeologically upgradient from the Site.

- The Crescent Chemical environmental records document that in 1985 this site was connected to a cesspool and may have needed a SCDHS Article 12 permit as a result of chemical storage.

- The Hi-Temp Wires environmental records document that in 1980 the site used chemicals for parts degreasing. After sampling the teflon coating solution from a cooling water tub at this site, TCA was identified at 3 ppb in the liquid.

CA RICH received information regarding the nearby public water supply well field located approximately ¼-mile south of the Site. This information includes complete well log

reports of the pumping wells. Additionally, analytical data was provided pertaining to the test wells and well water quality from 2000 to 2003 and 2004 to 2010.

2.3.4.3 Sensitive Receptor Survey

CA RICH conducted a survey of sensitive receptors in the area of the Site. The purpose of the survey was to identify any receptors that could be potentially impacted (i.e. human health and/or the environment) by Site conditions. The survey included nearby schools, daycare centers, hospitals, medical centers, and nursing homes, as well as, municipal groundwater supply wells used for drinking water, groundwater recharge basins, surface water bodies, wetlands, or other ecologically sensitive resources. The survey also included the identification of any on-site utility vaults or building foundation basements and storm water drains.

Results of the sensitive receptor survey indicated that there were no schools, daycare centers, hospitals, medical centers, or nursing homes in the extent of the study area. There are no surface water bodies, wetlands, or other ecologically sensitive resources located within the extent of study area. The Site does not contain any on-site utility vaults or building foundation basements.

There is a SCWA well field located on Oval Drive. This well field is not within the extent of the study area, but is located within the Islandia Industrial Park. Routine analytical testing conducted by SCWA indicates that the well water meets the applicable drinking water standard for TCA.

There is a groundwater recharge basin located within the extent of study area. This basin is identified as NYS Catch Basin No.106 and is located approximately 400 feet north of the Site and is located hydrogeologically upgradient from the Site.

There are currently seventeen storm water drains utilized for parking lot runoff purposes, two septic holding tanks, and four septic overflow leaching pools located within property

boundaries of the Site. Mako Properties has been voluntarily monitoring these potential sources for environmental impact since 1994.

2.3.4.4 Vertical Profiling of Groundwater

The vertical profiling of the groundwater beneath the Site was accomplished through the collection of groundwater samples from temporary sampling points. In accordance with the approved Work Plan, a total of two locations at the Site were used to profile underlying groundwater quality conditions. These vertical profiling points are designated "VP-1 and VP-2". Initially, a pilot soil boring was advanced in the vicinity of monitoring well MW-2 using a hollow stem auger drill rig to explore the terminal depth of the bottom of the Upper Glacial Aquifer formation. Split spoon soil samples were collected beginning at a depth of 150 feet below the surface and continued to a terminal depth of 212 feet. Geologic logging and gamma logging of the pilot boring did not identify a discernable recognition of the transition from the bottom depth of the Upper Glacial Aquifer and the underlying Magothy Aquifer.

The pilot borehole was then gamma logged for the purposes of selecting discrete groundwater samples planned for collection from VP-1 within the Upper Glacial Aquifer. Discrete groundwater samples were collected between 85 feet and 208 feet below the ground surface at the VP-1 location. A groundwater sample was also collected from monitoring well MW-2 during the same time period for data gathering purposes. Based upon the geological and Site field conditions, the second groundwater vertical profiling point VP-2 was installed with sample collection points similar to profiling point VP-1.

Vertical Groundwater Profiling Point VP-1

The groundwater data collected from VP-1 found TCA at a concentration of 37 ppb from the shallow depth between approximately 85 and 90 feet below grade. The reported concentrations of TCA decreased to levels below drinking water standards at deeper sample depths from VP-1. No other VOCs were detected at profiling point VP-1. Groundwater collected from shallow monitoring well MW-2 reported a concentration of TCA at 6,700 ppb from an approximate depth of 82 feet below grade. Other VOCs detected in MW-2 included PCE at 25 ppb and 1,1-DCE at 78 ppb.

Vertical Groundwater Profiling Point VP-2

The groundwater data collected from VP-2 did not contain detectable concentrations of TCA or other chlorinated VOCs. However, detections of the following aromatic hydrocarbons which are typically associated with gasoline, were detected. These included; benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl-tertiary-butyl-ether (MTBE). The reported concentrations of BTEX compounds were consistent throughout the vertical groundwater profiling depths and MTBE was only reported at the deepest sample depth of 203 to 209 feet below the surface. These detected chemicals are considered to be unrelated to operations at the Site.

The findings of the groundwater samples collected from VP-2 were discussed with NYSDEC. Since neither TCA, nor other chlorinated VOCs were detected in the VP-2 profile samples, a decision was made and approved by NYSDEC to install the proposed intermediate and deep groundwater monitoring wells limited to the area adjacent to monitoring well MW-2, which is closest to Building #3. These wells were designated MW-2I (intermediate depth of 130 feet) and MW-2D (deep depth of 186 feet). These profiling wells were installed and developed between August 18 th and August 30th of 2011.

2.3.4.5 Installation and Sampling of Permanent Groundwater Monitoring Wells

Based upon the information obtained during the vertical profiling drilling activities, two permanent monitoring wells were installed adjacent to existing monitoring well MW-2 (see Figure 2). After the installation of these wells, the elevations of the top of the PVC well casings were surveyed by a NYS-Licensed Surveyor to the nearest 0.01 of a foot. In accordance with the approved Work Plan, baseline groundwater samples were collected from all of the monitoring wells at the Site on September 20, 2011. Laboratory analysis included the full NYSDEC Target Compound List (TCL) utilizing the USEPA Methodologies outlined in the Work Plan with NYSDEC ASP Category B deliverables. Analytical parameters included Volatile Organic Compounds, Semi-Volatile Organic Compounds (SVOCs), pesticides, PCBs and metals.

Site-wide Groundwater Sampling Results

The groundwater results from the September 2011 sampling event reported elevated concentrations of TCA (3,700 ppb), 1,1-DCE (50 ppb) and PCE (18 ppb) collected from monitoring well MW-2. Groundwater collected from well MW-8 reported elevated concentrations of TCA (480 ppb), 1,1-DCE (8 ppb) and PCE (16 ppb). Monitoring well MW-9 reported a concentration of TCA at 31 ppb. Groundwater collected from the intermediate depth well MW-2I did not report any detections of TCA, 1,1-DCE or PCE. Groundwater collected from the deep well MW-2D reported TCA at 4 ppb.

There were no detections of SVOCs, pesticides or PCBs in any of the Site monitoring wells. Detections of some metals were reported in the groundwater samples collected, however, all reported detections were well below applicable NYSDEC drinking water standards.

2.3.4.6 Soil Vapor Intrusion Study

A soil vapor intrusion study was conducted in accordance with the approved Work Plan as part of the Site Characterization and involved the installation of six interior sub-slab soil vapor points, two exterior soil gas points, four indoor air samples, and one outdoor ambient air sample. The purpose of the soil vapor intrusion study was to collect samples of exterior soil gas and indoor/outdoor air, as well as, sub-slab soil vapor to assess the potential for soil vapor intrusion at Building #3 (unit #48 and #50) and nearby Building #2 (unit #52 and #54) at the property.

Prior to conducting the soil vapor intrusion study, an inspection of each tenant unit space was conducted to establish the usage and to inventory any chemicals contained in the unit spaces that may have an impact on the findings of the soil vapor study. The following summarizes the results of the tenant unit inspections and chemical inventory.

Inspection of the on-site buildings did not identify chemicals that would be a concern related to the soil vapor intrusion study. Although the tenant inspections did find small quantities of household cleaners and detergents stored in the bathrooms and office spaces, based upon the nature and quantity of the cleaners and detergents, they are considered to be commonly used for disinfecting and general cleaning purposes and do not contain any chemicals that would be a concern related to the soil vapor intrusion study.

Ambient Outdoor Air – The ambient outdoor air sample designated AO-1, which was collected behind Building #3, detected TCA at 3.93 ug/M^3 and PCE at 0.81 ug/M^3. 1,1-DCE was not detected in the outdoor ambient air sample.

Exterior Soil Gas – The exterior soil gas samples were designated SV-01 and SV-02. The concentration of TCA at location SV-01 was reported at 191,065 ug/M^3. PCE was detected at 27.14 ug/M^3 and DCE was detected at 2,302 ug/M^3. The concentration of TCA at

location SV-02 was reported at 114.64 ug/M^3. PCE and 1,1-DCE were not detected at sample location SV-02.

Indoor Air Samples – The indoor air samples AI-01 and AI-02 collected inside Building #3 (tenant units #48 and #50) reported concentrations of TCA at 294.79 ug/M^3 and 141.93 ug/M^3, respectively. The concentration of PCE in these samples were reported at 1.90 ug/M^3 and 1.49 ug/M^3. Detections of 1,1-DCE in these samples were reported at 1.43 ug/M^3 and 0.67 ug/M^3. The reported values for indoor air for TCA fall within the mitigate range of the NYSDOH guidelines in Building #3.

The indoor air sample designated AI-03 collected inside Building #2 (unit #52) did not detect TCA, PCE or DCE. The indoor air sample AI-04 collected inside Building #2 (unit #54) detected TCA at a concentration of 1.15 ug/M^3. PCE and 1,1-DCE were not detected in the indoor air sample of unit #54. These values are all within the no further action limits found in the NYSDOH guidelines.

Sub-Slab Soil Vapor – The sub-slab soil vapor samples were designated SS-01 through SS-06. Performance of a helium test confirmed no leakage from interior air at each sub-slab sampling point. Sub-slab soil vapor samples collected inside Building #3 (Units #48 and #50) were designated SS-01 through SS-04, and samples collected inside Building #2 (Units #52 and #54) were designated SS-5 and SS-6, respectively.

- Building #3 (units #48 and #50) - Concentrations of TCA reported in the sub-slab soil vapor sampling points inside Building #3, samples SS-01 through SS-04, ranged from 256,573 ug/M^3 to 3,329,990 ug/M^3. The concentration of PCE ranged from 1,357 ug/M^3 to 6,717 ug/M^3. The concentration of 1,1-DCE ranged from 202 ug/M^3 to 6,352 ug/M^3. Based on these reported concentrations and comparison to NYSDOH guidance values, mitigation of soil vapor intrusion for these VOCs for both units within Building #3 is warranted.

- Building #2 - Concentrations of TCA reported in the sub-slab soil vapor sampling points inside Building #2, sample SS-05 (tenant unit #52) detected TCA at 70.97 ug/M^3 and PCE at 1.36 ug/M^3. 1,1-DCE was not detected in the sub-slab soil vapor sample collected. Based on these reported concentrations and comparison to NYSDOH guidance values, no further action is warranted regarding soil vapor intrusion for unit #52 of Building #2.

  Concentrations of TCA reported in the sub-slab soil vapor sampling points inside Building #2, sample SS-06 (tenant unit #54) detected TCA at 103.72 ug/M^3. PCE or DCE were not detected. Based on the reported concentration of TCA and comparison to NYSDOH guidance values, monitoring is warranted regarding soil vapor intrusion for unit #54 of Building #2.

2.3.5 Summary of Findings

2.3.5.1 General Background Information

In 1994, Mako Properties initiated a tenant inspection program at the Site which consisted of inspections of the tenant spaces and screening/sampling of storm water drains and septic leaching pools. This program was followed-up with a GWMP established in 2003. Both of these programs continue to exist today. In October 2009, the GWMP revealed for the first time the presence of TCA at a concentration level above the NYSDEC drinking water standard at monitoring well location MW-2 (400 ppb) and MW-9 (17 ppb). These findings prompted Mako Properties to initiate a follow-up investigation to confirm this detection of TCA in the underlying shallow groundwater at the MW-2 location and in the vicinity of MW-8 and MW-9. The investigation also evaluated the potential for any immediately apparent on-site conditions or historical source(s) of TCA that may have been released onto or into the ground from any existing building or Site facilities. The findings of the investigation did not identify a specific source of the TCA found in the shallow groundwater.

2.3.5.2 Surrounding Land Uses and Hydrogeologic Setting

The Site is situated within the area commonly referred to as the Islandia Industrial Park. Surrounding property environs consist mostly of occupied industrial and commercial buildings. The Site is situated upon unconsolidated glacial outwash sand deposits. The subsurface geologic conditions generally consist of fairly uniform and permeable tan medium-grained sand, pebbles and cobbles grading to a light-brown, fine to very fine sand. The site specific work conducted to date indicates that the Upper Glacial Aquifer is encountered at a depth of approximately 72 feet below land surface and shallow groundwater has been mapped to flow in a southeast direction. Recent drilling activities into the Upper Glacial Aquifer down to 210 feet did not identify geologic conditions associated with the underlying Magothy Aquifer.

2.3.5.3 Sensitive Receptor Survey

The results of the sensitive receptor survey indicated that there were no schools, daycare centers, hospitals, medical centers, or nursing homes in the extent of study. There are no surface water bodies, wetlands, or other ecologically sensitive resources located within the extent of study area. The Site does not contain any on-site utility vaults or building foundation basements.

There is a SCWA well field located on Oval Drive. This well field is not within the extent of the study area, but is located within the Islandia Industrial Park. Routine analytical testing conducted by SCWA indicates that the well water meets the applicable drinking water standard for TCA. There is a groundwater recharge basin located within the extent of study area. This basin is identified as NYS Catch Basin No.106 and is located approximately 400 feet north of the Site and is hydrogeologically upgradient from the Site. There are currently seventeen storm water drains utilized for parking lot runoff purposes, two septic holding tanks, and four septic overflow leaching pools located within property boundaries of the Site. Mako Properties has been voluntarily monitoring these potential sources for environmental impact since 1994.

2.3.5.4 Vertical Profiling of Groundwater

Geologic logging and gamma logging completed as part of the vertical profiling down to 212 feet below the surface did not identify a discernible recognition of the transition from the bottom depth of the Upper Glacial Aquifer and the underlying Magothy Aquifer. The water table surface is approximately 72 feet below grade. TCA-impacted groundwater was identified in the upper 20 feet of the Upper Glacial Aquifer with the highest concentration recorded in the area of Site well MW-2. Vertical profiling of the groundwater in close proximity to monitoring well MW-2 found TCA at a concentration of 37 ppb at a depth of approximately 85 to 90 feet below grade.

The reported concentrations of TCA decreased to levels below drinking water standards at deeper sample depths from the profiling point VP-1. No other VOCs were detected at profiling point VP-1. Groundwater collected from the adjacent monitoring well MW-2 reported a concentration of TCA at 6,700 ppb from an approximate depth of 82 feet. Other VOCs detected in MW-2 included PCE at 25 ppb and DCE at 78 ppb.

The groundwater data collected from the second profiling point located approximately 100 feet southeast of VP-1 and at similar depths, did not contain detectable concentrations of TCA. However, detections of aromatic hydrocarbons including BTEX and MTBE were reported. The detection of these VOCs are considered to be unrelated to operations at the Site.

The findings of the groundwater samples collected from VP-2 were discussed with NYSDEC. Since neither TCA, nor other chlorinated VOCs were detected in the VP-2 profile samples, a decision to install the proposed intermediate and deep groundwater monitoring wells was limited to the area adjacent to monitoring well MW-2, which is closest to Building #3. These wells were designated MW-2I (intermediate depth of 130 feet) and MW-2D (deep depth of 186 feet).

2.3.5.5 Monitoring Wells and Groundwater Sampling

The installation of intermediate and deep groundwater monitoring wells was limited to the area adjacent to monitoring well MW-2, which is closest to Building #3. These wells were designated MW-2I and MW-2D. Sampling of the Site-wide groundwater monitoring wells did not detect SVOCs, pesticides or PCBs in any of the Site monitoring wells. Detections of some metals were reported in the groundwater samples collected, however, all detections were well below applicable NYSDEC drinking water standards.

The groundwater sampling results reported elevated concentrations of TCA, PCE and 1,1-DCE at monitoring well locations MW-2 and upgradient well MW-8. Upgradient monitoring well MW-9 reported an elevated concentration of TCA. Groundwater collected from the intermediate depth well MW-2I did not report any detections of TCA, 1,1-DCE or PCE. Groundwater collected from the deep well MW-2D reported TCA at a concentration of 4 ppb.

2.3.5.6 Soil Vapor

The results of the soil vapor intrusion study found levels of the target VOCs at Building #3 (units #48 and #50) which fall within the mitigate range found in the NYSDOH guidelines. The findings of the soil vapor intrusion study within unit #54 of Building #2 fell within the monitoring range found in the NYSDOH guidelines. The study indicated that the indoor air and subsurface soil vapor associated with unit #52 within Building #2 is not impacted by VOCs and no further action is necessary.

Based upon the findings of the Site Characterization Investigation, CA RICH recommended that an Interim Remedial Measure (IRM) be conducted to address the soil vapor intrusion at Building #3. An IRM Work Plan was prepared and submitted for review by NYSDEC and approved prior to its implementation. The IRM also addressed the presence of TCA found in the shallow groundwater beneath Site Building #3.

The IRM included pilot tests for treatment of groundwater in the vicinity of MW-2 using an AS/SVE system and the installation of an SVE system beneath Building #3 (Units #48 and #50). The implementation of the IRM Work Plan includes monitoring of the efficiency of the groundwater treatment through periodic sampling of on-site and off-site groundwater for VOCs. Also, periodic monitoring of the efficiency of the SVE system installed in Building #3 is accomplished through periodic effluent monitoring during the operation of the SVE system. The IRM is summarized in the 7/16 Construction Completion Report.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site are as follows:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

2.5 Remaining Contamination

2.5.1 Groundwater

1. A site-specific source of the 1,1,1-trichloroethane (TCA) found in the shallow groundwater and the soil vapor beneath Building #3 was not identified. Groundwater analysis of upgradient monitoring wells located behind Building #3 indicates that there may be an up-gradient off-site source for these chemicals.
2. Elevated levels of TCA in groundwater were limited to the immediate vicinity of Building #3, most notably in the shallow water table at MW-2.

Tables 3, 4, 5 & 6 summarize the results of previous groundwater sampling. Well Locations are illustrated on Figure 7.

2.5.2 Soil Vapor and Indoor Air

1. Prior to implementation of remediation, sub-slab soil vapor and indoor air samples from Building #3 contained levels of TCA that fell within the mitigation range as set forth in the October 2006 New York State Department Of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH Guidance). Indoor air monitoring has been performed within the ground-floor units at 48, 50, 52 and 54 Enter Lane. Most recently, indoor air samples were collected from these locations in June 2016. In addition, an exterior ambient air sample was collected. The results of the indoor air monitoring are included on Tables 7, 8, & 9. In general, air quality inside the buildings has remained below NYSDOH action levels. With respect to Building #2 (52 and 54 Enter Lane), the results of the latest round of indoor air sampling, coupled with the prior results from indoor and sub-slab testing, shows that the levels associated with this building are in the no further action range of the NYSDOH Guidance. Indoor air testing results are presented on Table 7. Sampling locations are detailed on Figure 8

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the Site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all IC/ECs on the site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs was required by the IRM Work Plan to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the site to commercial uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be

discontinued without an amendment to or extinguishment of the Environmental Easement. The area of IC's bounded by the Environmental easement is illustrated in Appendix B. These ICs are:

- The property may be used for: commercial and industrial uses;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Suffolk County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted in Appendix B, and any potential impacts that are identified must be monitored or mitigated; and
- Vegetable gardens and farming on the site are prohibited;

3.2.1 Soil Management Plan

The site has been remediated for commercial and industrial use. Any future intrusive work that will encounter or disturb any potential remaining soil contamination will be performed in compliance with the Soil Management Plan that is attached as Appendix H to this SMP. Any work conducted pursuant to the Soil Management Plan must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. A HASP is attached as Appendix G to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and resubmitted with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 7).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

3.2.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination, a soil vapor intrusion (SVI) evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure

to vapors in the existing and/or proposed structure. Alternatively, an SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH "Guidance for Evaluating Vapor Intrusion in the State of New York". Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation.

3.3 Engineering Controls

3.3.1 Air Sparging/Soil Vapor Extraction System

Procedures for operating and maintaining the Air Sparging / Soil Vapor Extraction (AS/SVE) system are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). As-built drawings of the AS/SVE system are presented as Figures 3, 4, 5 & 6. Figure 3 shows the location of the ECs for the site.

3.3.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision

document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

3.3.2.1 - Air Sparging/Soil Vapor Extraction System (AS/SVE) System

A combined AS/SVE System was developed and installed at Building #3 for this project. The details of this system are outlined below and in the As-Built Drawings which are included as Figures 3, 4, 5 and 6 of this report. Appendix C of this document provides a summary of the construction details of the SVE wells and AS points.

Soil Vapor Extraction (SVE)

The SVE system includes SVE wells in 8 locations (four beneath the interior portions of Building #3 and four in exterior locations around Building #3). The location of each of these SVE wells is presented on Figure 3.

The interior SVE wells consist of five feet of four-inch diameter 20-slot schedule 40 PVC screen installed to a depth of seven feet below grade with two feet of riser above, extending to just below the slab of Building #3. The screen and riser are surrounded by pea gravel and grouted in place with cement. The SVE wells are flush-mounted with bolt-down curb boxes. A schematic profile of the interior SVE wells is presented in Figure 4.

The four exterior SVE wells were installed using a hollow stem auger drill rig in one common borehole along with the four associated AS points discussed below. A section of 2-inch diameter, Schedule 40, 0.020-inch slotted (20 slot) PVC well screen was installed from a depth of 52 to 62 feet below grade. This was followed by PVC pipe to the ground surface. Morie number 2 sand was placed around the well screens followed by a bentonite seal. Native sand and gravel from the borehole was used as backfill above the seal and a concrete seal was placed at the surface. A schematic profile of the exterior AS points/SVE wells is presented in Figure 5.

The soil vapor is extracted from the exterior SVE wells using a seven-horsepower regenerative blower capable of producing approximately 250 cfm at 5 inches of water vacuum and is located in a secured equipment shed at the rear of Building #3. The vacuum to the interior SVE wells is supplied by a separate one-horsepower regenerative blower capable of producing approximately 80 cfm at 5 inches of water vacuum and is also located in the equipment shed. The soil vapor collected from each SVE system passes through a moisture knock-out drum, into the blower and flows through a series of vapor-phase carbon units located inside of the shed. The raw air from the interior SVE passes through two 85-

gallon air pollution control barrels (300-pounds each) connected in series. The extracted air from the exterior SVE passes through two 110-gallon air pollution control barrels (400-pounds each) connected in series. These four air pollution carbon barrels are provided by General Carbon. A 4-inch PVC discharge stack was attached to the side of the shed with the discharge point above the shed roof. The electrical connection to the system is direct from the blower to a utility panel inside the shed. A schematic of the equipment layout is presented as Figure 6.

Air Sparging (AS)

A total of four AS points were installed on the exterior of Building #3 using a hollow stem auger drill rig at the locations illustrated on Figure 3. Each of the AS points were constructed of 2-inch diameter x 2-foot long 0.020-inch slotted (20 slot) PVC well screens connected to 2-inch diameter PVC pipe. The AS points were placed from approximately 90 to 92 feet below grade. Each AS point was surrounded with a Morie No. 2 sand pack followed by a one-foot-thick bentonite seal. A schematic profile of a typical AS point/SVE well is presented on Figure 5. Influence lines for the AS/SVE system are detailed on Figure 9.

Air sparging is achieved using a 7.5-horsepower reciprocating compressor equipped with an after cooler. The air compressor is capable of delivering approximately 24.3 cubic feet per minute (cfm) of air at 175 pounds per square inch (psi) and was placed in the equipment shed. The electrical connection to the system is directly from the air compressor to a utility panel inside the shed.

The four AS points are each run for 8 hours per day and automatically cycled on and off for optimum effectiveness in accordance with the following schedule:

Sparge Points	Time On	Time Off
AS-1 & AS-4	2:00 AM	10:00 AM
AS-2 & AS-3	4:00PM	12:00AM

The SVE wells run continuously. In addition, an automatic shutoff circuit was installed on the AS/SVE system which disables the sparge-point compressor in the event either of the SVE blowers shut down. This circuitry prevents the generation of impacted soil vapor from the sparge system without the associated collection of the generated vapor through the SVE wells.

The AS/SVE system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the AS/SVE

system may no longer be required, a proposal to discontinue the system will be submitted by the remedial party. Conditions that may warrant discontinuing the AS/SVE system include contaminant concentrations in groundwater and/or soil that: (1) reach levels that are consistently below ambient water quality standards or the site SCGs, as appropriate; (2) have become asymptotic to a low level over an extended period of time, as accepted by the NYSDEC; or (3) the NYSDEC has determined that the AS/SVE system has reached the limit of its effectiveness. This assessment will be based in part on post-remediation contaminant levels in groundwater collected from monitoring wells located throughout the site. Systems will remain in place and operational until permission to discontinue their use is granted in writing by the NYSDEC.

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the site are included in the Quality Assurance Project Plan provided in Appendix E. In addition, a Health and Safety Plan (HASP) to be enforced during future sampling activities is included as Appendix G.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media;
- Assessing compliance with NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site – wide Inspection

Site-wide inspections will be performed at a minimum of once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix F. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date; and

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 Treatment System Monitoring and Sampling

4.3.1 Remedial System Monitoring

Monitoring of the AS/SVE system will be performed on a routine basis, as identified in Table 8 Remedial System Monitoring Requirements and Schedule (see below). Modification to the frequency or sampling requirements will require approval from the NYSDEC. A visual inspection of the complete system will be conducted during each monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the AS/SVE system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. The AS/SVE system components to be monitored include, but are not limited to, the components included in Table 10 below.

Table 10 – Remedial System Monitoring Requirements and Schedule

Remedial System Component	Monitoring Parameter	Operating Range	Monitoring Schedule
Air Compressor	pressure	0-175 psi	Weekly
7 HP Vac. Blower	Vacuum/air flow	45in./40-50 cfm	Weekly
1 HP Vac. Blower	Vacuum/air flow	11 in./15-20 cfm	Weekly

A complete list of components to be inspected is provided in the Inspection Checklist, provided in Appendix F. If any equipment readings are not within their specified operation range, any equipment is observed to be malfunctioning or the system is not performing within specifications; maintenance and repair, as per the Operation and Maintenance Plan, is required immediately.

4.3.2 Remedial System Sampling

Samples shall be collected from the untreated vapor stream between the exhaust side of the blowers and the inlet side of the carbon canisters on a routine basis. Sampling locations, required analytical parameters and schedule are provided in Table 11 – Remedial System Sampling Requirements and Schedule below. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

Table 11 – Remedial System Sampling Requirements and Schedule

Sampling Location	Analytical Parameters				Schedule
				VOC (EPA Method TO-15)	
SVE raw air effluent				X	Semi-annually

Semi-annual vapor samples will be collected from the untreated vapor stream between the exhaust side of the blowers and the inlet side of the carbon canisters using Summa canisters. Samples will be collected as "grab" samples. The laboratory-issued Summa canister will be attached to the existing sampling port using dedicated polyethylene tubing and immediately filled. A record of the sample date, time, sample designation and summa can ID will be kept in a field book or on a sampling form.

As the operation of the SVE unit progresses, PID testing of the raw air and the air between the carbon units will be performed during each system inspection. Summa canister vapor samples of the raw air entering the system will be collected semi-annually and the resulting data will be plotted graphically versus time of operation. The following termination criteria will be employed.

- Once the levels of total VOCs in the SVE wells decrease to a near constant or asymptotic concentration (as approved by NYSDEC) and it is demonstrated that shutdown of the system will not result in the migration of unacceptable concentrations of residual vapors to the on-site and off-site structures (as approved by NYSDOH), operation of the system will be suspended.

- The soil vapor measurements must remain protective of the contemplative use of the on-site and off-site structures.

- The SVE system also serves to capture off-gassing contaminants from the AS system. Therefore, aside from the criteria described above, the SVE system will remain in operation as long as the AS system is in operation.

In addition, the SVE system will run as long as the potential for sub-slab vapor intrusion exists. Once groundwater remediation has been accomplished, the equipment used in the SVE system will be reevaluated and resized, if needed, to meet the goal of preventing vapor intrusion. The SVE system will not be shut down without permission from NYSDEC.

Detailed analytical procedures and protocols are provided in Appendix E – Quality Assurance Project Plan.

The AS system will be kept in operation until the concentration of the contaminants of concern or related degradation by-products meet the criteria established below:

- The AS system will operate until the on-site groundwater meets the New York State GA groundwater standards; or the NYSDEC and NYSDOH concludes that the treatment systems have eliminated potential exposures from on-site sources of contamination prior to shut-down.

- Specifically, the AS system will remain in operation: 1) until the groundwater samples from the compliance wells indicate that they meet the TOGS standards for the contaminants of concern; or 2) the on-site and down-gradient groundwater contamination is at or less than the up-gradient groundwater contamination at the time of re-evaluation and site conditions are protective for its contemplative use, or it is jointly determined that an asymptotic condition is achieved with respect to any residual contaminant concentrations in the compliance point wells.

4.4 Post-Remediation Media Monitoring and Sampling

Samples shall be collected from the monitoring well network on a routine basis. Sampling locations, required analytical parameters and schedule are provided in Table 12 – Remedial System Sampling Requirements and Schedule below. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

Table 12 – Post Remediation Sampling Requirements and Schedule

Sampling Location	Schedule	
	VOCs (EPA Method 8260)	
Monitoring Well network	X	Semi-annually

Detailed analytical procedures and protocols are provided in Appendix E – Quality Assurance Project Plan.

4.4.1 Groundwater Sampling

Groundwater monitoring will be performed semi-annually to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

The network of monitoring wells has been installed to monitor upgradient, on-site and downgradient groundwater conditions at the site. The network of on-site and off-site wells has been designed based on the following criteria:

System performance monitoring includes semi-annual groundwater sampling and analysis utilizing a network of 14 on-site and off-site monitoring wells. The monitoring well network includes shallow, intermediate and deep wells ranging in depth from 80 feet to 195 feet below land surface. Monitoring well details are included in Appendix C. A

map detailing the locations of the wells and the direction of shallow groundwater flow is presented on Figure 7. As shown on Figure 7, the groundwater flow direction beneath the site is to the southeast.

Prior to the start-up of the AS system, "baseline" groundwater samples were collected on June 16-18, 2015, from all of the on-site and off-site wells.

MW-1 is considered the on-site "upgradient" monitoring point with regards to groundwater flow direction, and impacted wells MW-2, MW-8, and MW-9 are considered the on-site "compliance point" wells. The "contaminants of concern" (COCs) for monitoring purposes as identified during previous sampling include TCA, PCE, and 1,1-DCE.

All of the site wells will be sampled on a semi-annual basis and analyzed for halogenated volatile organics using EPA method 8260 or a similar approved method.

4.4.2 Groundwater Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater-sampling log. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

First, depth-to-water and depth-to-bottom measurements will be collected from the monitoring wells. Purging/sampling will be performed in accordance with EPA's Low-Flow (minimal drawdown) Groundwater Sampling Procedures[1]. Purging and sampling will be performed using a low-flow sampling pump at a pumping rate no greater than 0.5 liters per min (LPM). Water levels within the well will be monitored using an electronic

[1] EPA Region 1. Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells. January 2010.

water level indicator and a pumping rate will be maintained to limit drawdown to less than 0.33 feet if possible. In-line water quality field parameters will be measured at a frequency no less than every five minutes. Purging will continue until the readings of pH, temperature, conductivity, ORP, and DO have stabilized (i.e. three successive readings within approximately 0.1 for pH, 3% for conductivity, 10mv for ORP, and 10% for DO). Purge water will be contained in 55-gallon drums and disposed of in accordance with applicable regulations.

After purging is complete, a sample of the groundwater will be collected at the established low-flow pumping rate directly from the pump discharge into laboratory-issued containers by a QEP. The samples will be placed in a cooler on ice and sent to an ELAP certified laboratory via overnight delivery for analysis as specified in Section 3.3.1, above. The following samples will also be collected for QA/QC purposes: trip blank, field blank, duplicate sample, matrix spike, and matrix spike duplicate.

A qualified third-party Data Validator will review the groundwater laboratory data and prepare a DUSR. All data will be provided in the NYSDEC-approved EDD format.

All on-site sampling equipment will be decontaminated between each use in the following manner: laboratory grade detergent and fresh water wash using scrub brush, followed by two fresh water rinses and final air dry. The submersible pump used for groundwater sample collection will be decontaminated between sample collection by passing the detergent and water mixture through the pump, followed by two fresh water rinses. Gloves worn for sample handling will be discarded between sample collections. Dedicated, new polyethylene tubing will be used at each well location for purging and sampling. Samples will be packaged in 40-mil vials supplied by the laboratory by QEPs and stored on ice pending same day or overnight shipment to a NYS-certified laboratory. The vials will be filled completely and checked to ensure no air bubbles are present. Additional field and laboratory QA/QC protocol is included in the QAPP (Appendix E).

If biofouling or silt accumulation occurs in the on-site and off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable. Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures". Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

The sampling frequency may only be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

This Operation and Maintenance Plan provides a brief description of the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the site. This Operation and Maintenance Plan:

- Includes the procedures necessary to allow individuals unfamiliar with the site to operate and maintain the AS/SVE systems;
- Will be updated periodically to reflect changes in site conditions or the manner in which the AS/SVE systems are operated and maintained.

A copy of this Operation and Maintenance Plan, along with the complete SMP, is to be maintained at the Site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of this SMP.

5.2 Remedial System Performance Criteria

As discussed in Section 3.3, a combined AS/SVE System was developed and installed at Building #3 for this project. The SVE system includes SVE wells in 8 locations (four beneath the interior portions of Building #3 and four in exterior locations around Building #3). The exterior and interior SVE wells are connected to separate regenerative blowers and two separate series of vapor-phase carbon units (two units per series). The AS system includes a total of four AS points connected to a reciprocating compressor equipped with an after cooler. Operating range for the major mechanical system components is included on Table 8 in Section 4.3.

The soil vapor collected from each SVE system passes through a moisture knock-out drum, into the blower and flows through a series of vapor-phase carbon units located inside of the shed. The four air pollution carbon barrels are provided by General Carbon. The raw air from the interior SVE passes through two 85-gallon air pollution control barrels (300-

pounds each) connected in series. The extracted air from the exterior SVE passes through two 110-gallon air pollution control barrels (400-pounds each) connected in series. Periodic effluent testing between each of the carbon vessels (as described in Section 4.3.2) ensures that the carbon units are replaced prior to breakthrough of vapor phase contaminants to the system exhaust. As such, no air discharge permit is required.

5.3 Operation and Maintenance of Air Sparge/Soil Vapor Extraction System

The following sections provide a description of the operations and maintenance of the air sparge/soil vapor extraction system. Cut-sheets for this system are provided in Appendix D.

5.3.1 System Start-Up and Testing

1. Inspect mechanical systems (blowers and compressor) to ensure they can safely be put back into operation. Make repairs or perform maintenance as necessary.
2. Check the condition of all hoses, piping and electrical wiring. Repair or replace as necessary.
3. Start-up 1 hp blower and check vacuum levels from the interior SVE wells and check VOC levels in effluent with a PID.
4. Start-up 7hp blower and check vacuum levels from the exterior SVE wells and check VOC levels in effluent with a PID.
5. Start-up the air sparge compressor and check pressure and flow at each of the sparge points. Shut down SVE blowers and check that emergency automatic compressor shut-down circuit is functioning properly.
6. Re-start blowers and compressor for continued operation.

The system testing described above will be conducted if, in the course of the air sparge/soil vapor extraction system lifetime, the system goes down or significant changes are made to the system and the system must be restarted.

5.3.2 Routine System Operation and Maintenance

5.3.2.1 Introduction

This Section addresses, component by component, the standard maintenance needed to operate the system as provided by the manufacturers. Copies of the owner's manuals for key equipment purchased for this project are included as Appendix G.

5.3.2.2 Maintenance Procedures

General

Monthly

A brief check should be performed once a month for possible air leaks, vacuum leaks, excessive temperatures, or other equipment related issues.

Air Compressor

The air compressor should be inspected on the following basis:

Weekly

- Observe oil level- Maintain level at center of sight glass.
- Inspect air inlet filter element.
- Check belt tension.
- Check heat exchangers for cleanliness.
- Check for loose fittings and fasteners.
- Check auto-drain & condensate level.
- Drain condensate from collection bucket.
- Drain condensate valves on the compressor line.

Initial 100 Hours or 30 days

- Change oil filter element.

1000 Hours or 6 Months

- Change oil filter element.
- Inspect air filter element.
- Perform weekly maintenance.
- Take oil sample if applicable.
- Test high temperature shut down switch. Remove fan starter fuses. Start until switch trips at 230°F +/-5°F, reinstall fan fuses, reset control panel. Ready for normal operation.

2000 Hours or 1 Year

- Clean blow down valve orifice.
- Observe unit for proper load/unload cycle.
- Perform weekly maintenance.
- Check electrical connection.
- Observe overall condition of unit-clean if necessary.
- Change oil filter element.
- Change air filter element.

4000 Hours or 1 Year

- Change oil/air separator element.
- Check v-belt alignment.
- Perform weekly maintenance.

8000 Hours or 1 Year

- Change oil.

Pressure Regulators

- There are no periodic maintenance procedures recommended by the manufacturer.

Flow Meters

- The only maintenance required is the occasional cleaning to assure reliable operation and good float visibility.

SVE Blower

Weekly

- Check vacuum gauge at inlet and record value.

Monthly

- Clean the inside and outside of the cooling fan.

Moisture Knock-Out Drum

- The moisture knock-out drum contains an air filter to prevent sediment from entering the blower. The filter should be checked every six months or after a significant increase in the measured vacuum at the blower inlet. The filter element should be either cleaned or replaced depending on the condition of the element. The drum should be checked for water weekly/monthly and drained as needed.

Carbon Units

- The sampling ports on the discharge side of the blower should be monitored during weekly/monthly inspections using a PID and the values recorded. Once the meter indicates breakthrough of the carbon, CA RICH should be contacted to arrange for replacement of the unit(s). There are no periodic maintenance procedures recommended by the manufacturer.

Intermatic Timer

- There is no periodic maintenance required for the timer as specified by the manufacturer. If there is a power outage, verify that the clock is operating properly and set to the correct time.

5.3.3 System Monitoring Devices and Alarms

The AS/SVE system has a failsafe cutoff switch that shuts down the air sparge compressor in the event either of the vacuum blowers shut off. In the event switch is activated, applicable maintenance and repairs will be conducted, as specified in the Operation and Maintenance Plan, and the AS/SVE system will be restarted. Operational problems will be noted in the Periodic Review Report to be prepared for that reporting period.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the site during periodic review, and briefly summarizes the vulnerability of the site and/or engineering controls to severe storms/weather events and associated flooding. The following items will be considered in the vulnerability assessment:

- Flood Plain: Identify whether the site is located in a flood plain, low-lying or low-groundwater recharge area.

- Site Drainage and Storm Water Management: Identify areas of the site which may flood during severe rain events due to insufficient groundwater recharge capabilities or inadequate storm water management systems.

- Erosion: Identify any evidence of erosion at the site or areas of the site which may be susceptible to erosion during periods of severe rain events.

- High Wind: Identify areas of the site and/or remedial system which may be susceptible to damage from the wind itself or falling objects, such as trees or utility structures during periods of high wind.

- Electricity: Identify the susceptibility of the site/remedial system to power loss and/or dips/surges in voltage during severe weather events, including lightning strikes, and the associated impact on site equipment and operations.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the site during site management, and as reported in the Periodic Review Report (PRR).

No green remediation evaluation was required as part of the remedy for this Site. However, in general, remedial systems will be operated properly considering the current site conditions to conserve materials and resources to the greatest extent possible. Consideration will be given to operating rates and use of reagents and consumables. Spent materials will be sent for recycling, as appropriate.

6.3 Remedial System Optimization

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;

- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focuses on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

7.0 REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in Appendix F. These forms are subject to NYSDEC revision. All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 13 and summarized in the Periodic Review Report.

Table 13: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Monthly
Periodic Review Report	Annually

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);

- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and

- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS^{TM} database in accordance with the requirements found at this link:

http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the Department beginning sixteen (16) months after Agency approval of this SMP is issued. After submittal of the initial Periodic Review Report, the next PRR shall be annually to the Department or at another frequency as may be required by the Department. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix B -Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site.
- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances

highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

- A site evaluation, which includes the following:

  – The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;

  – The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;

  – Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;

  – Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and

  – Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the Decision Document.

  – The overall performance and effectiveness of the remedy.

- A performance summary for all treatment systems at the site during the calendar year, including information such as:

  – The number of days the system operated for the reporting period;

  – The contaminant mass removed;

  – A description of breakdowns and/or repairs along with an explanation for any significant downtime;

  – A description of the resolution of performance problems;

- Trends in equipment failure;
- A summary of the performance, effluent and/or effectiveness monitoring; and
- Comments, conclusions, and recommendations based on data evaluation.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"For each institutional or engineering control identified for the site, I certify that all of the following statements are true:

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the site is compliant with the environmental easement;*

- *The engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and;*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative] (and if the site consists of multiple properties): *[I have been authorized and designated by all site owners/remedial parties to sign this certification] for the site."*

At the end of each certifying period, as determined by the NYSDEC, the following certification will be provided to the Department:

"For each institutional identified for the site, I certify that all of the following statements are true:

- *The institutional control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the site is compliant with the environmental easement.*

- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] (and if the site consists of multiple properties): [and I have been authorized and designated by all site owners to sign this certification] for the site."

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report may need to be submitted in hard-copy format, as requested by the NYSDEC Project Manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Work Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC.

7.4 Remedial Site Optimization Report

In the event that an RSO is to be performed (see Section 6.3, upon completion of an RSO, an RSO report must be submitted to the Department for approval. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located, Site Control and the NYSDOH Bureau of Environmental Exposure Investigation.

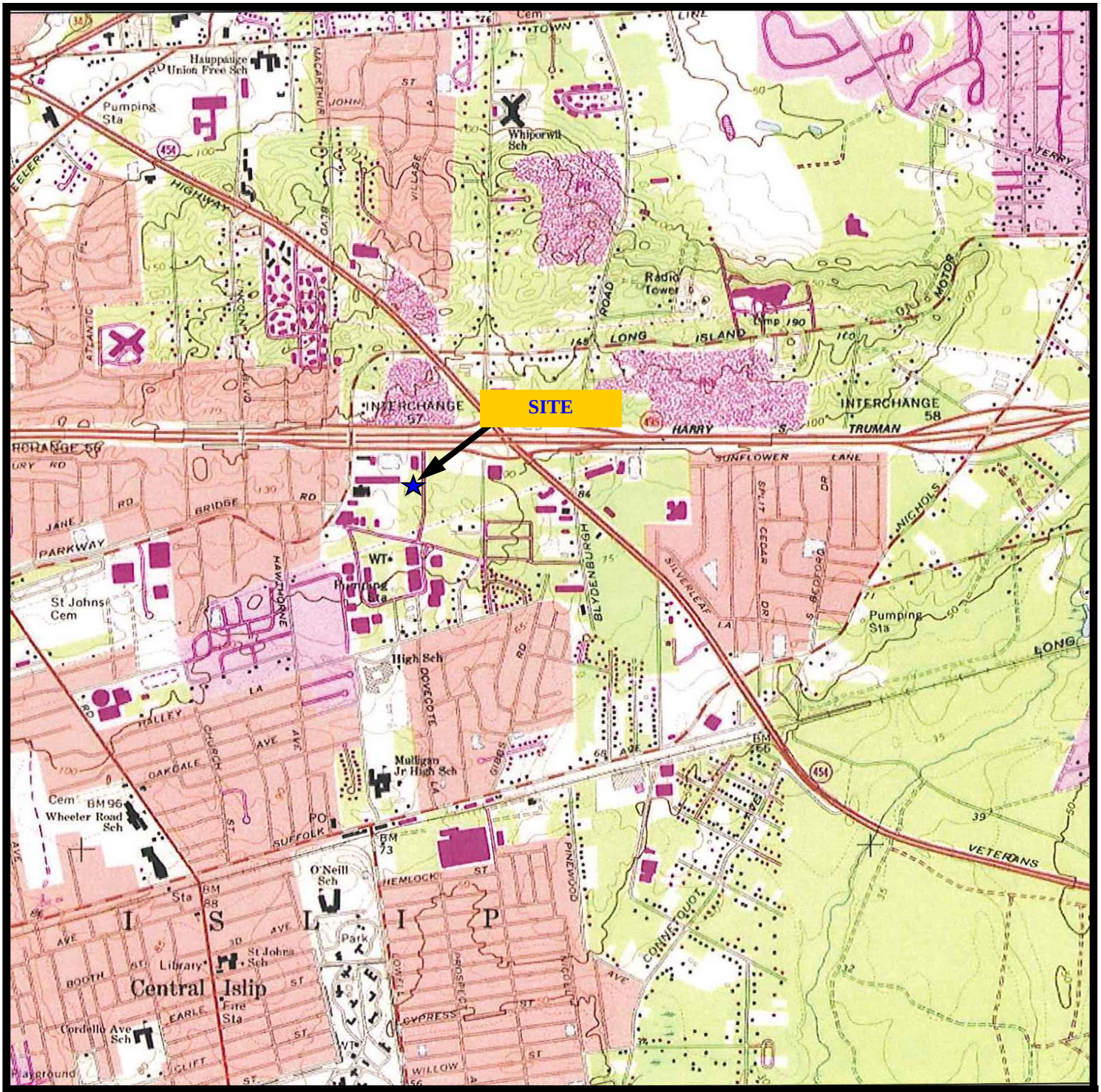
8.0 REFERENCES

6NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation".

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

FIGURES



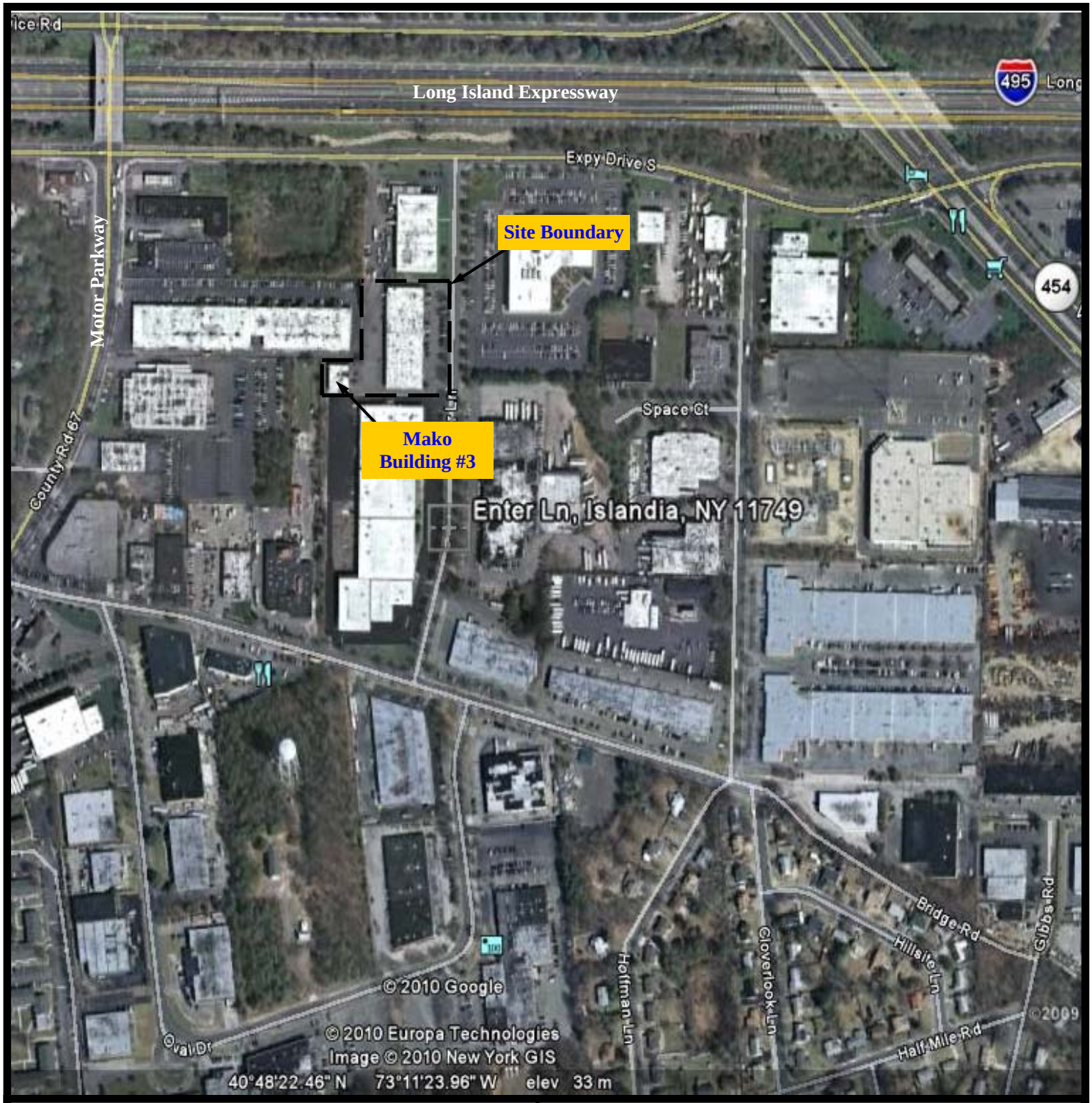
N

Adapted from 1979 USGS Central Islip Quadrangle

CA RICH CONSULTANTS, INC.
17 Dupont Street,
Plainview, NY 11803

TITLE: SITE LOCATION MAP	**DATE:** 4/29/2010
	SCALE: 1 : 24,000
FIGURE: 1	**DRAWN BY:** JP
DRAWING:	**APPR. BY:** STM

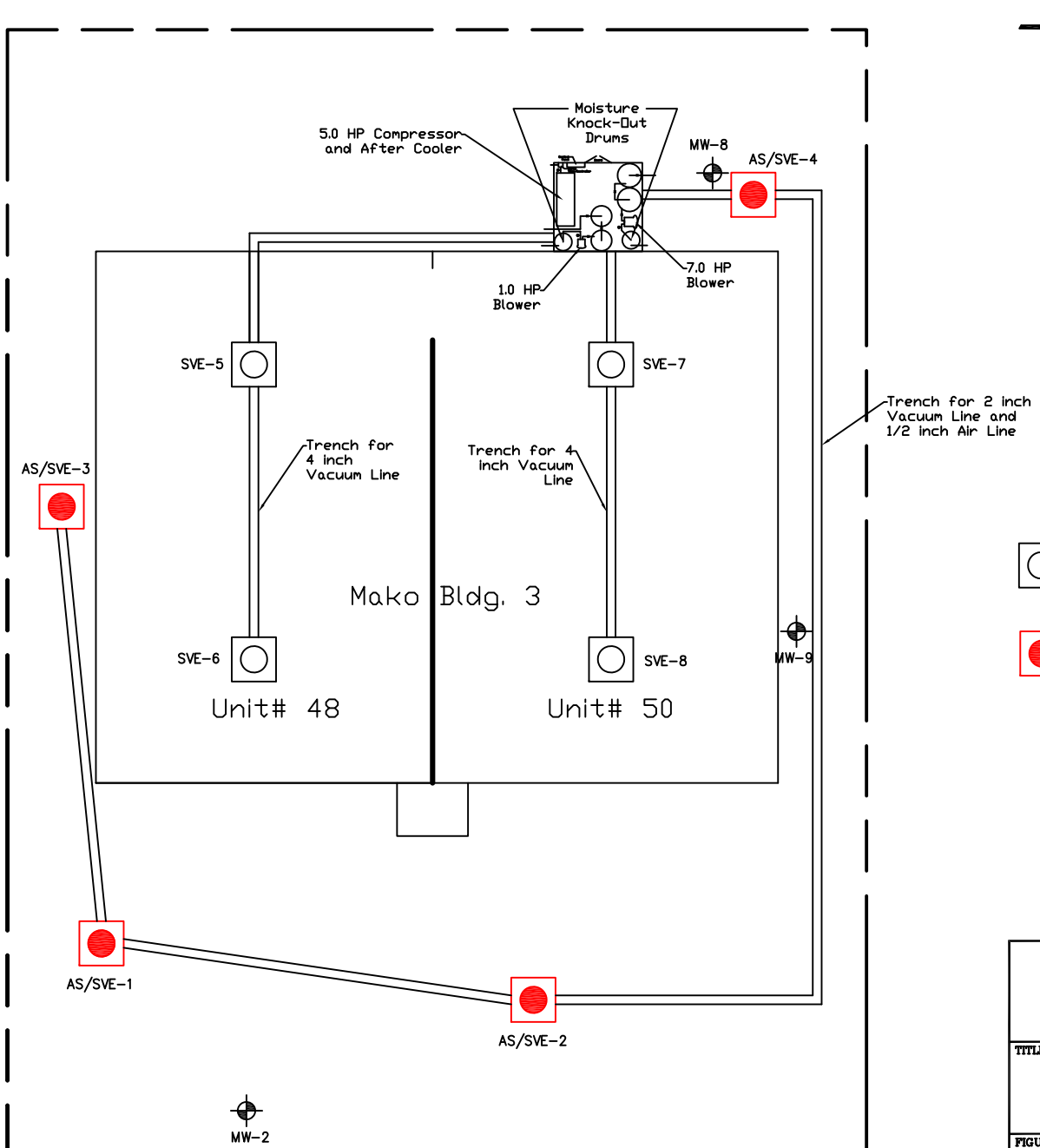
Mako Properties Ltd. Building # 3
48-50 Enter Lane
Islandia, New York



Adapted from Google Earth Aerial Image.

CA RICH CONSULTANTS, INC.
17 Dupont Street,
Plainview, NY 11803

TITLE: **Site Boundaries**		*DATE:* **4/22/10**
		SCALE: **AS SHOWN**
FIGURE: **2**	**Mako Properties LP** **Mako Building # 3** **48-50 Enter Lane** **Islandia, New York**	*DRAWN BY:* **S.T.M.**
DRAWING:		*APPR. BY:* **C.A.R.**



LEGEND

Interior SVE Well

Exterior SVE Well and Sparge Point

0 10 20

Graphic Scale in Feet

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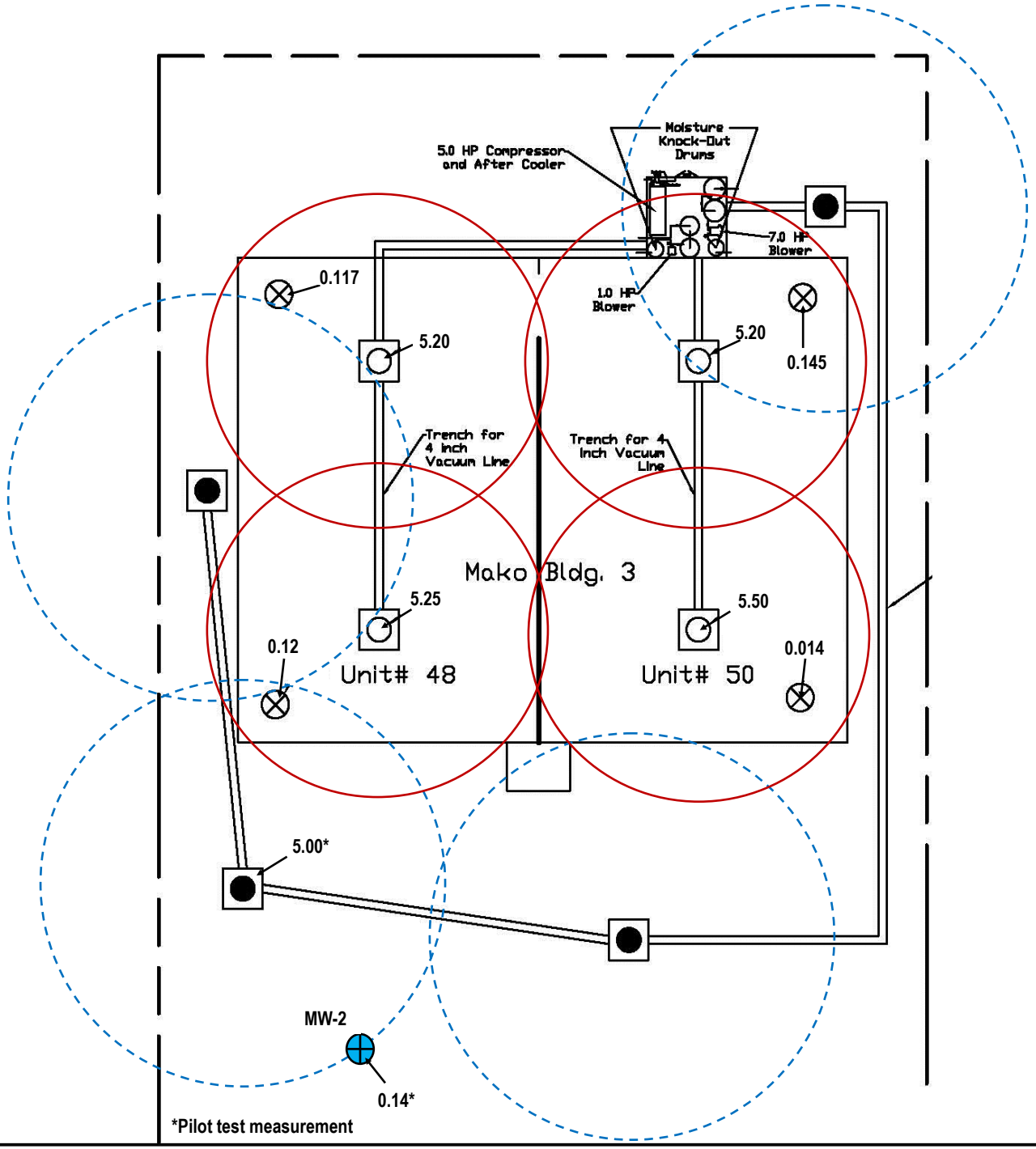
Environmental Specialists Since 1982

17 Dupont Street, Plainview, New York 11803

TITLE: Location of SVE Wells and Sparge Points		DATE: 6/28/2016
		SCALE: As Shown
FIGURE: 3	MAKO PROPERTIES LTD. 48-50 ENTER LANE ISLANDIA, NEW YORK	DRAWN BY: T.R.B.
DRAWING NO: 2016-1		APPR. BY: R.J.I.



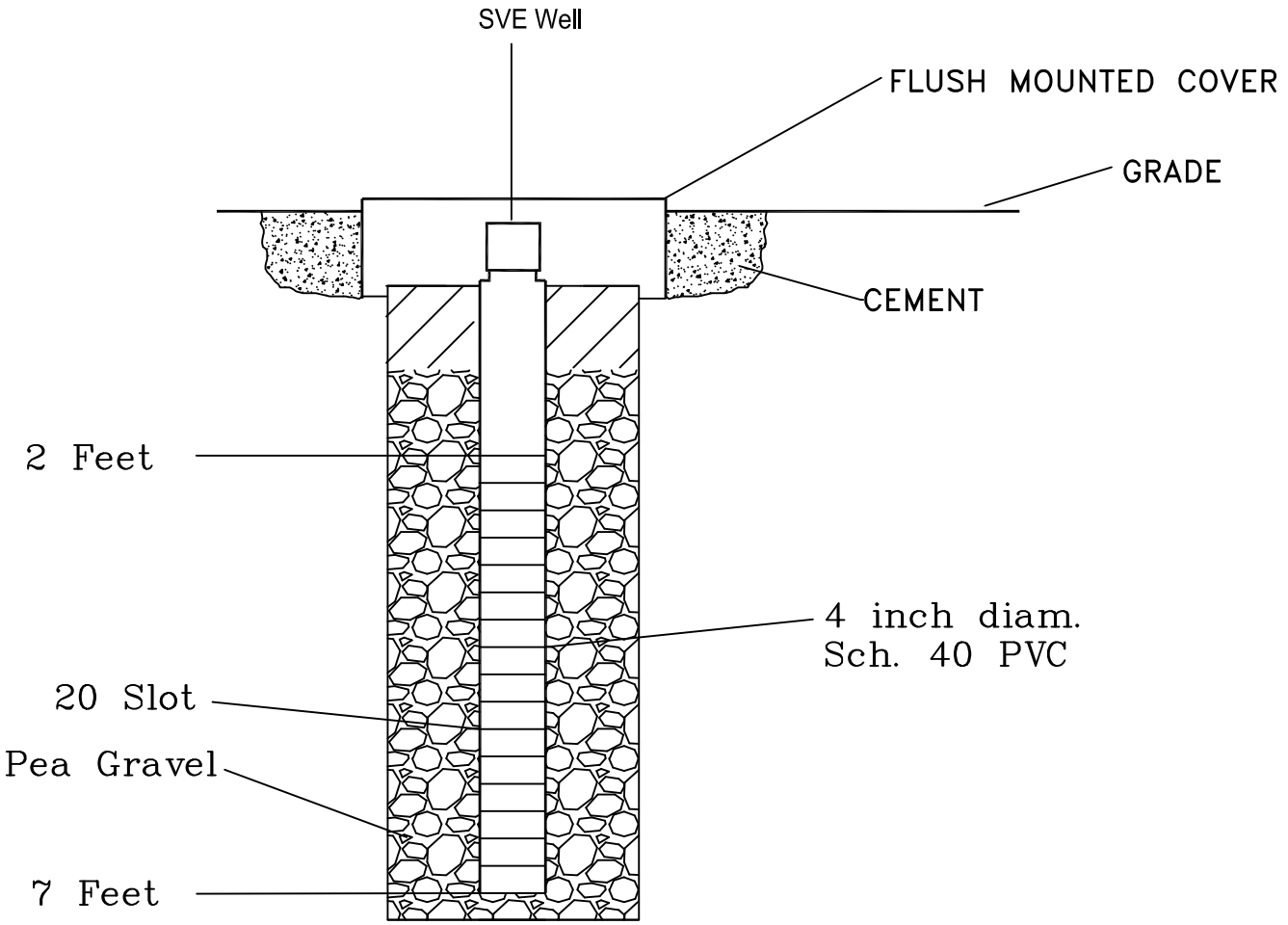
LEGEND

- Sparge point & SVE vacuum Point
- Interior SVE vacuum point with vacuum reading in inches of water (vacuum reading taken Jan. 2018)
- Permanent vacuum point location with vacuum reading in inches of water (vacuum reading taken Jan. 2018)
- Water table monitoring well
- Influence of interior SVE point
- Influence of exterior SVE point

0 10 20
Graphic Scale in Feet

CA RICH CONSULTANTS, INC.
Environmental Specialists Since 1982
17 Dupont Street, Plainview, New York 11803

TITLE: Influence of Interior and Exterior SVE Points		DATE: 3/1/18
		SCALE: As Shown
FIGURE: 3A	MAKO PROPERTIES LTD. 48–50 ENTER LANE ISLANDIA, NEW YORK	DRAWN BY: J.T.C.
DRAWING NO: 2017–1		APPR. BY: M.T.Y.



LEGEND

Pea Gravel

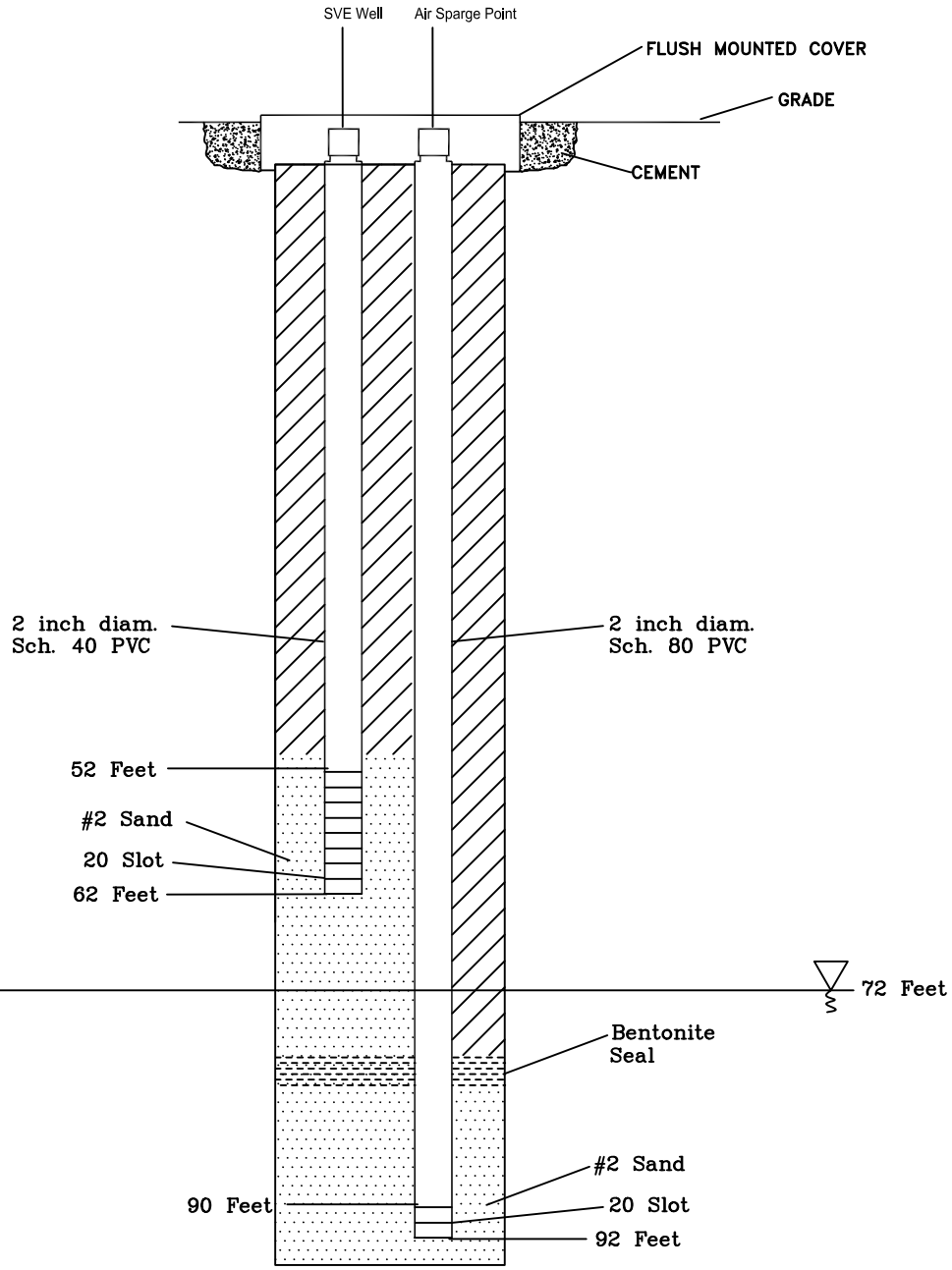
Cement Grout

CA RICH CONSULTANTS, INC.

Environmental Specialists Since 1982

17 Dupont Street, Plainview, New York 11803

TITLE: Interior SVE Well Profile		DATE: 6/28/2016
		SCALE: NTS
FIGURE: 4	MAKO PROPERTIES LTD. 48-50 ENTER LANE ISLANDIA, NEW YORK	DRAWN BY: T.R.B.
DRAWING NO: 2013-7		APPR. BY: R.J.I.



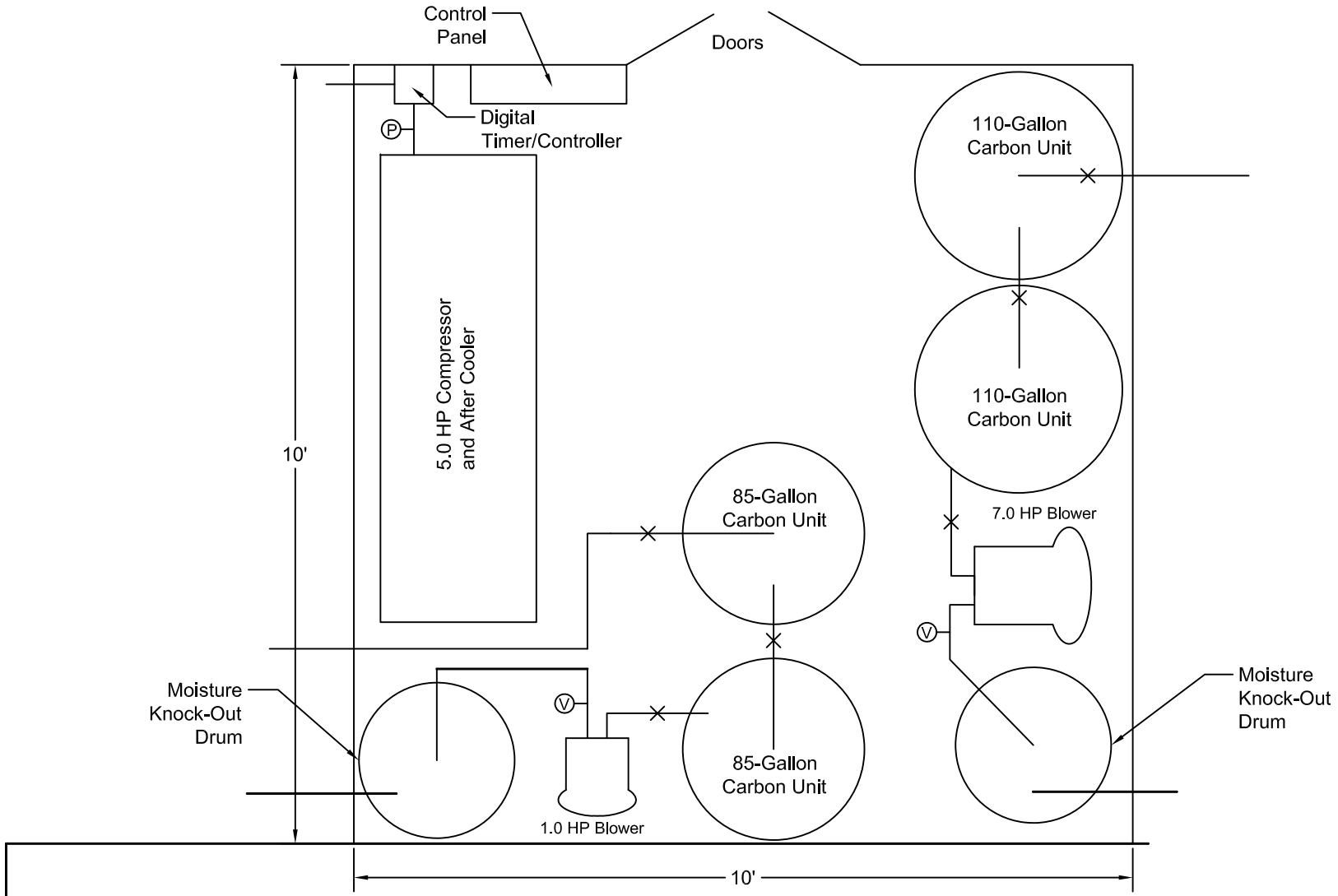
LEGEND

- Bentonite Seal
- #2 Sand
- Cement Grout
- Approximate Water Table Surface

CA RICH CONSULTANTS, INC.

Environmental Specialists Since 1982
17 Dupont Street, Plainview, New York 11803

TITLE: SVE and Air Sparge Profile		DATE: 6/28/2016
		SCALE: NTS
FIGURE: 5	MAKO PROPERTIES LTD. 48–50 ENTER LANE ISLANDIA, NEW YORK	DRAWN BY: T.R.B.
DRAWING NO: 2013–6		APPR. BY: R.J.I.



Existing Building

Legend

- X Sample Port
- Ⓥ Vacuum Gauge
- Ⓟ Pressure Gauge/Regulator

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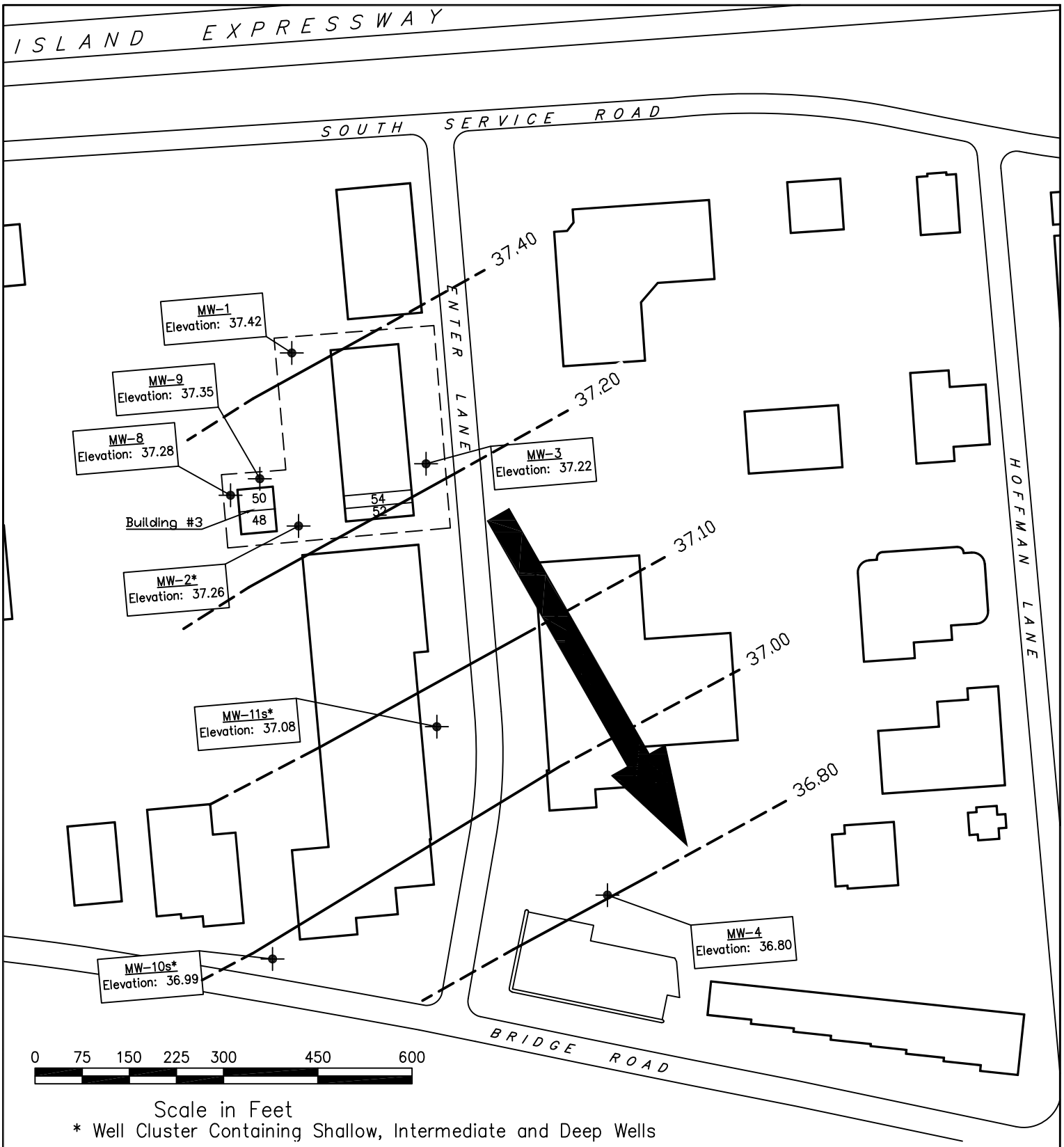
17 Dupont Street Plainview, New York 11803

TITLE: Equipment Layout		DATE: 6/28/2016
		SCALE: Schematic
FIGURE: 6	MAKO PROPERTIES LTD. 48-50 ENTER LANE ISLANDIA, NEW YORK	DRAWN BY: T.R.B.
DRAWING NO: 2014-6		APPR. BY: R.J.I.

H:\Drawings\Mako Properties Limited Bldg 3\2014-6



LEGEND

- Groundwater Monitoring Well
- MW-2 Elevation: 37.26 — Well ID with GW Elevation above Mean Sea Level
- Groundwater Contour Line (Dashed Where Inferred)
- 48 — Building Enter Lane Address

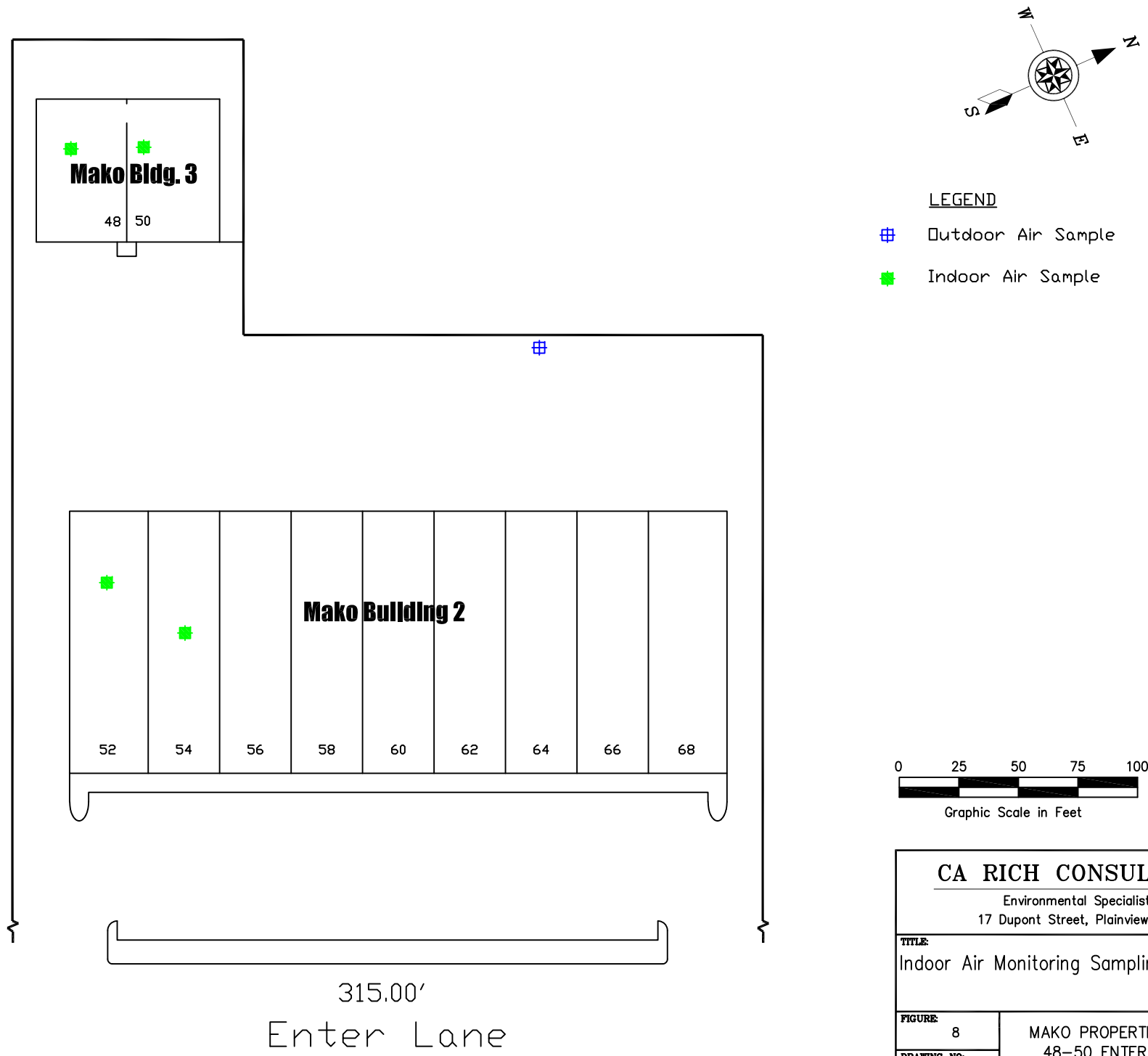
CA RICH CONSULTANTS, INC.

Environmental Specialists Since 1982

17 Dupont Street, Plainview, New York 11803

TITLE: Groundwater Flow Contour Map June 2016	DATE: 8/8/2016
	SCALE: As Shown
FIGURE: 7	DRAWN BY: T.R.B.
DRAWING NO: 2016-2	48-50 ENTER LANE ISLANDIA, NEW YORK
	APPR. BY: R.J.I.

H:\Drawings\Mako Properties Limited Bldg 3\2016-2



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TITLE: Indoor Air Monitoring Sampling Points		DATE: 12/20/2017
		SCALE: As Shown
FIGURE: 8	MAKO PROPERTIES LTD. 48-50 ENTER LANE ISLANDIA, NEW YORK	DRAWN BY: J.T.C./T.R.B.
DRAWING NO: 2017-3		APPR. BY: M.T.Y.

TABLES

Table 2

Groundwater Elevation Data
Mako Building 3
48-50 Enter Lane, Islandia, NY

Well ID	Elevation (ft.)*
MW-1	113.42
MW-2	112.06
MW-2I	111.91
MW-2D	111.84
MW-3	110.84
MW-4	100.85
MW-8	113.62
MW-9	114.17
MW-10	110.78
MW-10I	110.72
MW-10D	110.67
MW-11	110.28
MW-11I	110.29
MW-11D	110.18
MW-21	111.91

**Surveyed by American Engineering & Land Surveying, P.C. on June 30, 2014. Elevations are from top of inner casing and relative to NAVD88 Datum*

CA RICH ENVIRONMENTAL SPECIALISTS

Table 3

HISTORICAL SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS

Mako Groundwater Monitoring Program

48-50 Enter Lane, Islandia, NY

	Downgradient of Building #3				Downgradient of Building #3				Downgradient of Building #3				Upgradient of Building #3				Upgradient of Building #3			
	MW-2 2010	***MW-2 2011***	***MW-2 2012***	***MW-2 2013***	***MW-2I 2010***	***MW-2I 2011***	***MW-2I 2012***	***MW-2I 2013***	***MW-2D 2010***	***MW-2D 2011***	***MW-2D 2012***	***MW-2D 2013***	***MW-8 2010***	***MW-8 2011***	***MW-8 2012***	***MW-8 2013***	***MW-9 2010***	***MW-9 2011***	***MW-9 2012***	***MW-9 2013***
Organic Compounds (ug/L)																				
1,1-Dichloroethene	460	50	6.5	2.4	N/A	ND	ND	ND	N/A	ND	ND	ND	N/A	5.5	ND	ND	N/A	ND	ND	ND
1,1,1-Trichloroethane	55,400	3,800	350	130	N/A	ND	ND	ND	N/A	ND	ND	ND	N/A	490	31	21	N/A	31	15	25
Tetrachloroethene	ND	17.7	6.8	3.6	N/A	ND	ND	ND	N/A	4	ND	ND	N/A	15.8	1.7	1.2	N/A	ND	ND	1.1

Notes:

ug/L - micrograms per Liter or parts per billion.

ND - Not Detected above laboratory detection limit.

NA - Not Analyzed.

* - NYSDEC Division of Water Technical and Operational Guidance series (1.1.1) Ambient Water Quality Standards and Guidance Values, June 1998.

Exceeds GW Standard of 5 ug/L.

RICH ENVIRONMENTAL SPECIALISTS

Table 3 (cont.)

HISTORICAL SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS

Mako Groundwater Monitoring Program

48-50 Enter Lane, Islandia, NY

	Downgradient of Building #3				Downgradient of Building #3				Downgradient of Building #3				Upgradient of Building #3				Upgradient of Building #3			
	MW-2	*MW-2*	*MW-2*	*MW-2*	*MW-2I*	*MW-2I*	*MW-2I*	*MW-2I*	*MW-2D*	*MW-2D*	*MW-2D*	*MW-2D*	*MW-8*	*MW-8*	*MW-8*	*MW-8*	*MW-9*	*MW-9*	*MW-9*	*MW-9*
	Sept. 2014	*June 2015*	*Dec. 2015*	*June 2016*	*Sept. 2014*	*June 2015*	*Dec. 2015*	*June 2016*	*Sept. 2014*	*June 2015*	*Dec. 2015*	*June 2016*	*Sept. 2014*	*June 2015*	*Dec. 2015*	*June 2016*	*Sept. 2014*	*June 2015*	*Dec. 2015*	*June 2016*
Organic Compounds (ug/L)																				
1,1-Dichloroethene	1.6	1.8	ND	ND	NS	ND	ND	ND	NS	ND	ND	ND	NS	ND	ND	ND	NS	ND	ND	ND
1,1,1-Trichloroethane	55	86.5	4	ND	NS	ND	ND	ND	NS	0.93	0.49	ND	NS	8.6	ND	ND	NS	12.2	1.2	0.38
Tetrachloroethene	2.9	6	ND	ND	NS	ND	ND	ND	NS	ND	ND	0.99	NS	0.91	ND	ND	NS	0.8	ND	ND

Notes:

ug/L - micrograms per Liter or parts per billion.

ND - Not Detected above laboratory detection limit.

NA - Not Analyzed.

NS - Not Sampled.

* - NYSDEC Division of Water Technical and Operational Guidance series (1.1.1) Ambient Water Quality Standards and Guidance Values, June 1998.

Exceeds GW Standard of 5 ug/L.

TABLE 4

Summary of Analytical Detections for

Groundwater Samples - Monitoring Well Network

Mako Building #3 - Baseline June 2015

48-50 Enter Lane

Islandia, New York

Sample ID	MW-1	MW-2	*MW-X (Dup)	MW-2I	MW-2D	MW-3	MW-4	MW-8	MW-9	MW-10S	MW-10I	MW-10D	MW-11S	MW-11I	MW-11D	Field Blank	Trip Blank	**NYSDEC
Screen Depth	68ft-83ft	68ft-83ft	NA	118ft-128ft	168ft-178ft	72ft-82ft	62ft-72ft	75ft-85ft	75ft-85ft	74ft-84ft	129ft-139ft	180ft-190ft	78ft-88ft	128ft-138ft	180ft-190ft	NA	NA	TOGS
Date Sampled	6/17/2015	6/18/2015	6/18/2015	6/18/2015	6/18/2015	6/17/2015	6/17/2015	6/18/2015	6/18/2015	6/16/2015	6/16/2015	6/16/2015	6/16/2015	6/16/2015	6/16/2015	6/18/2015	6/18/2015	
Volatile Organics																		
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acetone	ND	ND	ND	ND	ND	4.5 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	ND	ND	ND	ND	0.35 J	ND	ND	ND	ND	ND	ND	0.87 J	ND	ND	0.42 J	ND	ND	7
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.31 J	0.78 J	ND	ND	ND	ND	ND	5
1,1-Dichloroethene	ND	1.8	2.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	**31.8**	ND	ND	ND	ND	5
Methyl Tert Butyl Ether	ND	ND	ND	ND	0.41 J	ND	ND	ND	ND	ND	0.37 J	0.27 J	ND	ND	0.42 J	ND	ND	10
Tetrachloroethene	ND	**6**	**5.5**	ND	ND	ND	ND	0.91 J	0.80 J	ND	ND	ND	**24.8**	ND	ND	ND	ND	5
Toluene	ND	0.29 J	0.25 J	0.26 J	ND	ND	ND	0.28 J	0.23 J	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,1-Trichloroethane	ND	**86.5**	**72.6**	ND	0.93 J	ND	ND	**8.6**	**12.2**	ND	0.33 J	0.53 J	**875**	ND	4.9	ND	ND	5

Notes:

ND= Indicates the compound was analyzed for but not detected.

Bold *indicates that value is above NYSDEC TOGS Cleanup Levels.*

**MW-X(Dup) is the duplicate of MW-2.*

***NYSDEC Technical and Operational Guidance Series (1.1.1), Ambient Water QualityStandards and Guidance Values and Groundwater Effluent Limitations, June 1998.*

TABLE 5

Summary of Analytical Detections for
Groundwater Samples - Monitoring Well Network
Mako Building #3 December 2015
48-50 Enter Lane
Islandia, New York

Sample ID	MW-1	MW-2	MW-2I	MW-2D	MW-3	MW-4	MW-8	MW-9	MW-10S	MW-10I	MW-10D	MW-11S	*MW-XX (Dup)	MW-11I	MW-11D	Field Blank	Trip Blank	**NYSDEC
Screen Depth	66ft-81ft	68ft-83ft	120ft-130ft	176ft-186ft	65ft-80ft	53ft-68ft	75ft-85ft	75ft-85ft	70ft-85ft	130ft-140ft	185ft-195ft	70ft-85ft	NA	130ft-140ft	185ft-195ft	NA	NA	TOGS
Date Sampled	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/17/2015	12/17/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/15/2015	12/17/2015	12/17/2015	
Volatile Organics																		
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acetone	R	R	ND	R	ND	ND	ND	ND	R	ND	ND	R	ND	ND	ND	ND	ND	50
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.97 J	ND	ND	ND	ND	ND	ND	7
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.69 J	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**22.9**	**30.1**	ND	ND	ND	ND	5
Methyl Tert Butyl Ether	ND	ND	ND	0.76 J	ND	ND	ND	ND	ND	0.38 J	0.27 J	ND	ND	ND	ND	ND	ND	10
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**27.4**	**30.5**	ND	ND	ND	ND	5
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,1-Trichloroethane	ND	4.0	ND	0.49 J	ND	ND	ND	1.2	ND	ND	0.50 J	**517**	**553 D**	ND	2.0	ND	ND	5

Notes:

ND = Indicates the compound was analyzed for but not detected.

J = Indicates analyte was detected below reporting limit; value given is an estimate.

R = Indicates the data are unusable; the analyte may or may not be present in the sample

D = Indicates analyte concentration is from diluted analysis.

Bold *indicates value is above NYSDEC TOGS Cleanup Levels.*

**MW-XX(Dup) is the duplicate of MW-11S.*

***NYSDEC Technical and Operational Guidance Series (1.1.1), Ambient Water QualityStandards and Guidance Values and Groundwater Effluent Limitations, June 1998.*

TABLE 6

Summary of Analytical Detections for
Groundwater Samples - Monitoring Well Network
Mako Building #3 - June 2016
48-50 Enter Lane
Islandia, New York

Sample ID	MW-1	MW-2	MW-2I	MW-2D	MW-3	MW-4	MW-8	MW-9	MW-10S	MW-10I	MW-10D	MW-11S	*MW-XX (Dup)	MW-11I	MW-11D	Field Blank	Trip Blank	**NYSDEC
Screen Depth	66ft-81ft	68ft-83ft	120ft-130ft	176ft-186ft	65ft-80ft	53ft-68ft	75ft-85ft	75ft-85ft	70ft-85ft	130ft-140ft	185ft-195ft	70ft-85ft	NA	130ft-140ft	185ft-195ft	NA	NA	TOGS
Date Sampled	6/22/2016	6/22/2016	6/22/2016	6/22/2016	6/22/2016	6/22/2016	6/22/2016	6/22/2016	6/21/2016	6/21/2016	6/21/2016	6/21/2016	6/21/2016	6/21/2016	6/21/2016	6/22/2016	6/22/2016	
Volatile Organics																		
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acetone	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	50
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.75 J	ND	ND	ND	0.26 J	ND	ND	7
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.22 J+	0.55 J	0.28 J	0.28 J	ND	ND	ND	ND	5
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**23.7**	**24.3**	ND	ND	ND	ND	5
Methyl Tert Butyl Ether	ND	ND	ND	0.92 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10
Methylene Chloride	ND	ND	ND	ND	ND	**37.2**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**14.5**	**14.6**	ND	ND	ND	ND	5
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,1-Trichloroethane	ND	ND	ND	0.99 J	ND	ND	ND	0.38 J	ND	0.26 J	0.33 J	**323 D**	**323 D**	ND	1.2	ND	ND	5

Notes:

ND = Indicates the compound was analyzed for but not detected.

UJ = Indicates analyte was analyzed for , but not detected. The reported quantitatio

J = Indicates analyte was detected below reporting limit; value given is an estimate.

J+ = The result is an estimated quantity and may be biased high.

D = Analyte concentration is from diluted analysis.

Bold *indicates value is above NYSDEC TOGS Cleanup Levels.*

**MW-XX(Dup) is the duplicate of MW-11S.*

***NYSDEC Technical and Operational Guidance Series (1.1.1), Ambient Water QualityStandards and Guidance Values and Groundwater Effluent Limitations, June 1998.*

TABLE 7
Summary of VOCs in Indoor & Outdoor Air

Mako Building 2&3, Enter Lane
Islandia, New York
October 22, 2015

Sample ID:	IA-48		IA-50		IA-52		IA-54		IA-AA		*NYSDOH
Sample Date:	10/22/2015		10/22/2015		10/22/2015		10/22/2015		10/22/2015		Mitigation Levels
Volatile Organic Compounds											
Units	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³
Acetone	60.3		78.2		31.4		194		12		NVG
1,3-Butadiene	ND (0.069)		ND (0.069)		ND (0.069)		ND (0.069)		ND (0.069)		NVG
Benzene	1.8		0.96		0.77		1.4		0.67		NVG
Bromodichloromethane	ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		NVG
Bromoform	ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		NVG
Bromomethane	ND (0.085)		ND (0.085)		ND (0.085)		ND (0.085)		ND (0.085)		NVG
Bromoethene	ND (0.087)		ND (0.087)		ND (0.087)		ND (0.087)		ND (0.087)		NVG
Benzyl Chloride	ND (0.13)		ND (0.13)		ND (0.13)		ND (0.13)		ND (0.13)		NVG
Carbon disulfide	ND (0.090)		ND (0.090)		ND (0.090)		0.65		ND (0.090)		NVG
Chlorobenzene	ND (0.15)		ND (0.15)		ND (0.15)		ND (0.15)		ND (0.15)		NVG
Chloroethane	ND (0.058)		ND (0.058)		ND (0.058)		ND (0.058)		ND (0.058)		NVG
Chloroform	0.54	J	ND (0.15)		ND (0.15)		0.59	J	ND (0.15)		NVG
Chloromethane	1.9		1.2		1.2		1.4		1.1		NVG
3-Chloropropene	ND (0.088)		ND (0.088)		ND (0.088)		ND (0.088)		ND (0.088)		NVG
2-Chlorotoluene	ND (0.17)		ND (0.17)		ND (0.17)		ND (0.17)		ND (0.17)		NVG
Carbon tetrachloride[1]	ND (0.16)		ND (0.16)		ND (0.16)		ND (0.16)		ND (0.16)		5.0
Cyclohexane	ND (0.11)		ND (0.11)		ND (0.11)		3		ND (0.11)		NVG
1,1-Dichloroethane	ND (0.13)		ND (0.13)		ND (0.13)		ND (0.13)		ND (0.13)		NVG
1,1-Dichloroethene[2]	ND (0.11)		ND (0.11)		ND (0.11)		ND (0.11)		ND (0.11)		100
1,2-Dibromoethane	ND (0.27)		ND (0.27)		ND (0.27)		ND (0.27)		ND (0.27)		NVG
1,2-Dichloroethane	ND (0.11)		ND (0.11)		ND (0.11)		ND (0.11)		ND (0.11)		NVG
1,2-Dichloropropane	ND (0.23)		ND (0.23)		ND (0.23)		ND (0.23)		ND (0.23)		NVG
1,4-Dioxane	ND (0.23)		ND (0.23)		ND (0.23)		ND (0.23)		ND (0.23)		NVG
Dichlorodifluoromethane	2.3		2.6		2.5		2.6		2.3		NVG
Dibromochloromethane	ND (0.35)		ND (0.35)		ND (0.35)		ND (0.35)		ND (0.35)		NVG
trans-1,2-Dichloroethylene	6.3		ND (0.079)		ND (0.079)		ND (0.079)		ND (0.079)		NVG
cis-1,2-Dichloroethene[2]	ND (0.099)		ND (0.099)		ND (0.099)		ND (0.099)		ND (0.099)		100
cis-1,3-Dichloropropene	ND (0.16)		ND (0.16)		ND (0.16)		ND (0.16)		ND (0.16)		NVG
m-Dichlorobenzene	ND (0.17)		ND (0.17)		ND (0.17)		ND (0.17)		ND (0.17)		NVG
o-Dichlorobenzene	ND (0.18)		ND (0.18)		ND (0.18)		ND (0.18)		ND (0.18)		NVG
p-Dichlorobenzene	ND (0.11)		ND (0.11)		ND (0.11)		ND (0.11)		ND (0.11)		NVG
trans-1,3-Dichloropropene	ND (0.091)		ND (0.091)		ND (0.091)		ND (0.091)		ND (0.091)		NVG
Ethanol	1080	E	34.3		12		97.2		7.3		NVG
Ethylbenzene	2		0.65	J	0.69	J	6.5		ND (0.21)		NVG
Ethyl Acetate	3		3.5		ND (0.23)		ND (0.23)		1.1		NVG
4-Ethyltoluene	1.4		ND (0.11)		0.88	J	90.5		ND (0.11)		NVG
Freon 113	ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		NVG
Freon 114	ND (0.17)		ND (0.17)		ND (0.17)		ND (0.17)		ND (0.17)		NVG
Heptane	24		3.9		18		5.3		0.7	J	NVG
Hexachlorobutadiene	ND (0.35)		ND (0.35)		ND (0.35)		ND (0.35)		ND (0.35)		NVG
Hexane	2.4		2.2		7.4		30		1.3		NVG
2-Hexanone	ND (0.18)		ND (0.18)		ND (0.18)		ND (0.18)		ND (0.18)		NVG
Isopropyl Alcohol	16		3.7		8.6		167		0.71		NVG
Methylene chloride	2		1		5.2		8.3		0.83		NVG
Methyl ethyl ketone	27		2.3		2.1		6.8		1.4		NVG
Methyl Isobutyl Ketone	ND (0.11)		0.66	J	ND (0.11)		ND (0.11)		ND (0.11)		NVG
Methyl Tert Butyl Ether	ND (0.094)		ND (0.094)		ND (0.094)		ND (0.094)		ND (0.094)		NVG
Methylmethacrylate	ND (0.12)		ND (0.12)		ND (0.12)		ND (0.12)		ND (0.12)		NVG
Propylene	ND (0.14)		1.9		ND (0.14)		ND (0.14)		ND (0.14)		NVG
Styrene	11		8.1		ND (0.11)		0.55	J	ND (0.11)		NVG
1,1,1-Trichloroethane[2]	ND (0.17)		ND (0.17)		ND (0.17)		8.2		ND (0.17)		100
1,1,2,2-Tetrachloroethane	ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		NVG
1,1,2-Trichloroethane	ND (0.20)		ND (0.20)		ND (0.20)		ND (0.20)		ND (0.20)		NVG
1,2,4-Trichlorobenzene	ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		ND (0.33)		NVG
1,2,4-Trimethylbenzene	4.8		1.3		2.4		331		0.59	J	NVG
1,3,5-Trimethylbenzene	1.4		ND (0.15)		0.69	J	76.7		ND (0.15)		NVG
2,2,4-Trimethylpentane	1.7		0.98		0.65	J	2.8		0.7	J	NVG
Tertiary Butyl Alcohol	0.61		2		ND (0.15)		0.7		ND (0.15)		NVG
Tetrachloroethene[2]	0.55		0.26	J	ND (0.16)		1.4		ND (0.16)		100
Tetrahydrofuran	27		ND (0.13)		ND (0.13)		2.9		ND (0.13)		NVG
Toluene	11		9		35		7.9		2.3		NVG
Trichloroethene[1]	ND (0.13)		ND (0.13)		ND (0.13)		ND (0.13)		ND (0.13)		5.0
Trichlorofluoromethane	1.3		1.3		1.3		1.5		1.2		NVG
Vinyl chloride[1]	ND (0.082)		ND (0.082)		ND (0.082)		ND (0.082)		ND (0.082)		5.0
Vinyl Acetate	ND (0.19)		ND (0.19)		ND (0.19)		ND (0.19)		ND (0.19)		NVG
m,p-Xylene	6.9		2.1		2.5		31		0.83	J	NVG
o-Xylene	2.9		0.91		0.78	J	19		ND (0.11)		NVG
Xylenes (total)	10		3		3.3		49.5		0.83	J	NVG

Abbreviation:
ND = The compound was analyzed for, but not detected.
Q = Qualifier
J = The compound was detected below reliable detection limits. The value given is an estimate.
NVG = No Value Given by NYSDOH
E = Indicates value exceeds calibration range

Notes:
[1] - Matrix 1 compound. According to NYSDOH, concentrations for indoor air above 5.0 µg/m³ require mitigation.
[2] - Matrix 2 compound. According to NYSDOH, concentrations for indoor air above 100 µg/m³ require mitigation

TABLE 8
Summary of VOCs in Indoor & Outdoor Air

Mako Building 2&3, Enter Lane
Islandia, New York
December 22, 2015

Sample ID:	IA-48		IA-50		IA-52		IA-54		IA-AA		*NYSDOH
Sample Date:	12/22/2015		12/22/2015		12/22/2015		12/22/2015		12/22/2015		Mitigation Levels
Volatile Organic Compounds											
Units	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³
Acetone	34.2		123		70.6		463		4.8		NVG
1,3-Butadiene	ND (0.44)		ND (0.44)		ND (0.44)		ND (0.44)		ND (0.44)		NVG
Benzene	1.9		6.4		0.67		0.67		0.48	J	NVG
Bromodichloromethane	ND (1.3)		ND (1.3)		ND (1.3)		ND (1.3)		ND (1.3)		NVG
Bromoform	ND (2.1)		ND (2.1)		ND (2.1)		ND (2.1)		ND (2.1)		NVG
Bromomethane	ND (0.78)		ND (0.78)		ND (0.78)		ND (0.78)		ND (0.78)		NVG
Bromoethene	ND (0.87)		ND (0.87)		ND (0.87)		ND (0.87)		ND (0.87)		NVG
Benzyl Chloride	ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		NVG
Carbon disulfide	ND (0.62)		ND (0.62)		ND (0.62)		1		ND (0.62)		NVG
Chlorobenzene	ND (0.92)		ND (0.92)		ND (0.92)		ND (0.92)		ND (0.92)		NVG
Chloroethane	ND (0.53)		ND (0.53)		ND (0.53)		ND (0.53)		ND (0.53)		NVG
Chloroform	ND (0.98)		0.54	J	ND (0.98)		0.54	J	ND (0.98)		NVG
Chloromethane	ND (0.41)		ND (0.41)		0.72		0.72		0.68		NVG
3-Chloropropene	ND (0.63)		ND (0.63)		ND (0.63)		ND (0.63)		ND (0.63)		NVG
2-Chlorotoluene	ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		ND (1.0)		NVG
Carbon tetrachloride[1]	ND (1.3)		ND (1.3)		ND (1.3)		ND (1.3)		ND (1.3)		5.0
Cyclohexane	1		3.2		1.2		1.1		ND (0.69)		NVG
1,1-Dichloroethane	ND (0.81)		ND (0.81)		ND (0.81)		ND (0.81)		ND (0.81)		NVG
1,1-Dichloroethene[2]	ND (0.79)		ND (0.79)		ND (0.79)		ND (0.79)		ND (0.79)		100
1,2-Dibromoethane	ND (1.5)		ND (1.5)		ND (1.5)		ND (1.5)		ND (1.5)		NVG
1,2-Dichloroethane	ND (0.81)		ND (0.81)		ND (0.81)		ND (0.81)		ND (0.81)		NVG
1,2-Dichloropropane	ND (0.92)		ND (0.92)		ND (0.92)		ND (0.92)		ND (0.92)		NVG
1,4-Dioxane	ND (0.72)		ND (0.72)		ND (0.72)		ND (0.72)		ND (0.72)		NVG
Dichlorodifluoromethane	1.7		1.7		1.7		1.7		1.7		NVG
Dibromochloromethane	ND (1.7)		ND (1.7)		ND (1.7)		ND (1.7)		ND (1.7)		NVG
trans-1,2-Dichloroethylene	8.7		0.95		ND (0.79)		ND (0.79)		ND (0.79)		NVG
cis-1,2-Dichloroethene[2]	ND (0.79)		ND (0.79)		ND (0.79)		ND (0.79)		ND (0.79)		100
cis-1,3-Dichloropropene	ND (0.91)		ND (0.91)		ND (0.91)		ND (0.91)		ND (0.91)		NVG
m-Dichlorobenzene	ND (1.2)		ND (1.2)		ND (1.2)		ND (1.2)		ND (1.2)		NVG
o-Dichlorobenzene	ND (1.2)		ND (1.2)		ND (1.2)		ND (1.2)		ND (1.2)		NVG
p-Dichlorobenzene	ND (1.2)		ND (1.2)		ND (1.2)		ND (1.2)		ND (1.2)		NVG
trans-1,3-Dichloropropene	ND (0.91)		ND (0.91)		ND (0.91)		ND (0.91)		ND (0.91)		NVG
Ethanol	482	E	48.4		45.8		166		4.3		NVG
Ethylbenzene	1.5		5.6		1.4		7.4		0.24	J	NVG
Ethyl Acetate	7.6		4		27		4		9.7		NVG
4-Ethyltoluene	0.64	J	2		0.93	J	51.1		ND (0.98)		NVG
Freon 113	ND (1.5)		ND (1.5)		ND (1.5)		ND (1.5)		ND (1.5)		NVG
Freon 114	ND (1.4)		ND (1.4)		ND (1.4)		ND (1.4)		ND (1.4)		NVG
Heptane	4.5		16		3.9		2.5		ND (0.82)		NVG
Hexachlorobutadiene	ND (2.1)		ND (2.1)		ND (2.1)		ND (2.1)		ND (2.1)		NVG
Hexane	8.1		2.9		2.1		14		0.74		NVG
2-Hexanone	ND (0.82)		ND (0.82)		ND (0.82)		ND (0.82)		ND (0.82)		NVG
Isopropyl Alcohol	23		8.6		43.3		126		14		NVG
Methylene chloride	7.6		2.7		2.2		9.7		0.73		NVG
Methyl ethyl ketone	23		90.8		5.6		6.5		4.7		NVG
Methyl Isobutyl Ketone	ND (0.82)		ND (0.82)		ND (0.82)		ND (0.82)		ND (0.82)		NVG
Methyl Tert Butyl Ether	ND (0.72)		ND (0.72)		ND (0.72)		ND (0.72)		ND (0.72)		NVG
Methylmethacrylate	ND (0.82)		ND (0.82)		ND (0.82)		ND (0.82)		ND (0.82)		NVG
Propylene	ND (0.86)		ND (0.86)		ND (0.86)		ND (0.86)		ND (0.86)		NVG
Styrene	0.98		4.3		ND (0.85)		ND (0.85)		ND (0.85)		NVG
1,1,1-Trichloroethane[2]	ND (1.1)		ND (1.1)		ND (1.1)		1.7		ND (1.1)		100
1,1,2,2-Tetrachloroethane	ND (1.4)		ND (1.4)		ND (1.4)		ND (1.4)		ND (1.4)		NVG
1,1,2-Trichloroethane	ND (1.1)		ND (1.1)		ND (1.1)		ND (1.1)		ND (1.1)		NVG
1,2,4-Trichlorobenzene	ND (1.5)		ND (1.5)		ND (1.5)		ND (1.5)		ND (1.5)		NVG
1,2,4-Trimethylbenzene	1.6		5.4		1.6		155		ND (0.98)		NVG
1,3,5-Trimethylbenzene	0.59	J	1.7		0.74	J	45		ND (0.98)		NVG
2,2,4-Trimethylpentane	1.1		2		ND (0.93)		1.3		ND (0.93)		NVG
Tertiary Butyl Alcohol	1.9		ND (0.61)		ND (0.61)		ND (0.61)		ND (0.61)		NVG
Tetrachloroethene[2]	0.28		0.51		0.46		2.7		0.57		100
Tetrahydrofuran	0.65		ND (0.59)		1.4		11		ND (0.59)		NVG
Toluene	17		79.1		9.8		6.8		2.3		NVG
Trichloroethene[1]	ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		5.0
Trichlorofluoromethane	1.1		1.2		0.9	J	1.2		0.84	J	NVG
Vinyl chloride[1]	ND (0.51)		ND (0.51)		ND (0.51)		ND (0.51)		ND (0.51)		5.0
Vinyl Acetate	ND (0.70)		ND (0.70)		ND (0.70)		ND (0.70)		ND (0.70)		NVG
m,p-Xylene	5.6		22		3.8		34		0.87		NVG
o-Xylene	2		7.8		0.91		14		0.27	J	NVG
Xylenes (total)	7.4		30		4.8		48.2		1.2		NVG

Abbreviation:
ND = The compound was analyzed for, but not detected.
Q = Qualifier
J = The compound was detected below reliable detection limits. The value given is an estimate.
NVG = No Value Given by NYSDOH
E = Indicates value exceeds calibration range

Notes:
[1] - Matrix 1 compound. According to NYSDOH, concentrations for indoor air above 5.0 µg/m³ require mitigation.
[2] - Matrix 2 compound. According to NYSDOH, concentrations for indoor air above 100 µg/m³ require mitigation

TABLE 9
Summary of VOCs in Indoor & Outdoor Air

Mako Properties LLC - Building 2&3
48-54 Enter Lane, Islandia, New York
June 29, 2016

Sample ID:	IA-48		IA-50		IA-52		IA-54		IA-AA		*NYSDOH
Sample Date:	6/29/2016		6/29/2016		6/29/2016		6/29/2016		6/29/2016		Mitigation Levels
Volatile Organic Compounds											
Units	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³	Q	µg/m³
Acetone	577		1190		58.7		371		23		NVG
1,3-Butadiene	ND (0.062)		ND (0.062)		ND (0.062)		ND (0.062)		ND (0.062)		NVG
Benzene	5.1		32		0.38	J	0.51	J	0.48	J	NVG
Bromodichloromethane	ND (0.26)		ND (0.26)		ND (0.26)		ND (0.26)		ND (0.26)		NVG
Bromoform	ND (0.17)		ND (0.17)		ND (0.17)		ND (0.17)		ND (0.17)		NVG
Bromomethane	ND (0.070)		ND (0.070)		ND (0.070)		ND (0.070)		ND (0.070)		NVG
Bromoethene	ND (0.079)		ND (0.079)		ND (0.079)		ND (0.079)		ND (0.079)		NVG
Benzyl Chloride	ND (0.14)		ND (0.14)		ND (0.14)		ND (0.14)		ND (0.14)		NVG
Carbon disulfide	ND (0.097)		0.34	J	0.34	J	0.34	J	ND (0.097)		NVG
Chlorobenzene	ND (0.26)		ND (0.26)		ND (0.26)		ND (0.26)		ND (0.26)		NVG
Chloroethane	ND (0.095)		ND (0.095)		ND (0.095)		ND (0.095)		ND (0.095)		NVG
Chloroform	ND (0.083)		ND (0.083)		ND (0.083)		ND (0.083)		ND (0.083)		NVG
Chloromethane	1.4		1.9		1.8		1.5		1.3		NVG
3-Chloropropene	ND (0.085)		ND (0.085)		ND (0.085)		ND (0.085)		ND (0.085)		NVG
2-Chlorotoluene	ND (0.088)		ND (0.088)		ND (0.088)		ND (0.088)		ND (0.088)		NVG
Carbon tetrachloride[1]	0.75	J	ND (0.20)		0.6	J	ND (0.20)		ND (0.20)		5.0
Cyclohexane	2.3		10		1.4		1		ND (0.055)		NVG
1,1-Dichloroethane	ND (0.061)		ND (0.061)		ND (0.061)		ND (0.061)		ND (0.061)		NVG
1,1-Dichloroethene[2]	ND (0.083)		ND (0.083)		ND (0.083)		ND (0.083)		ND (0.083)		100
1,2-Dibromoethane	ND (0.32)		ND (0.32)		ND (0.32)		ND (0.32)		ND (0.32)		NVG
1,2-Dichloroethane	ND (0.073)		ND (0.073)		ND (0.073)		ND (0.073)		ND (0.073)		NVG
1,2-Dichloropropane	ND (0.10)		ND (0.10)		ND (0.10)		ND (0.10)		ND (0.10)		NVG
1,4-Dioxane	ND (0.16)		ND (0.16)		0.65	J	ND (0.16)		ND (0.16)		NVG
Dichlorodifluoromethane	2.4		2.6		2.8		2.6		2.4		NVG
Dibromochloromethane	ND (0.45)		ND (0.45)		ND (0.45)		ND (0.45)		ND (0.45)		NVG
trans-1,2-Dichloroethylene	5.9		0.4	J	ND (0.11)		ND (0.11)		ND (0.11)		NVG
cis-1,2-Dichloroethene[2]	ND (0.083)		ND (0.083)		ND (0.083)		ND (0.083)		ND (0.083)		100
cis-1,3-Dichloropropene	ND (0.068)		ND (0.068)		ND (0.068)		ND (0.068)		ND (0.068)		NVG
m-Dichlorobenzene	ND (0.12)		ND (0.12)		ND (0.12)		ND (0.12)		ND (0.12)		NVG
o-Dichlorobenzene	ND (0.096)		ND (0.096)		ND (0.096)		ND (0.096)		ND (0.096)		NVG
p-Dichlorobenzene	ND (0.16)		ND (0.16)		ND (0.16)		ND (0.16)		ND (0.16)		NVG
trans-1,3-Dichloropropene	ND (0.082)		ND (0.082)		ND (0.082)		ND (0.082)		ND (0.082)		NVG
Ethanol	637		151		61		38.6		11		NVG
Ethylbenzene	13		11		1.9		4.8		ND (0.18)		NVG
Ethyl Acetate	43.6		12		9.7		ND (0.27)		0.79		NVG
4-Ethyltoluene	1.7		ND (0.084)		3.4		28		ND (0.084)		NVG
Freon 113	ND (0.16)		0.74	J	ND (0.16)		ND (0.16)		ND (0.16)		NVG
Freon 114	ND (0.22)		ND (0.22)		ND (0.22)		ND (0.22)		ND (0.22)		NVG
Heptane	13		27		2.3		2.3		0.57	J	NVG
Hexachlorobutadiene	ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		NVG
Hexane	6.3		19		6.3		264		0.49	J	NVG
2-Hexanone	0.61	J	ND (0.18)		0.86		0.45	J	ND (0.18)		NVG
Isopropyl Alcohol	119		31		56.8		164		8.4		NVG
Methylene chloride	31		358		1.5		2.6		0.83		NVG
Methyl ethyl ketone	22		60.5		5.6		10		5		NVG
Methyl Isobutyl Ketone	1.7		4.1		0.74	J	0.61	J	ND (0.23)		NVG
Methyl Tert Butyl Ether	ND (0.072)		ND (0.072)		ND (0.072)		ND (0.072)		ND (0.072)		NVG
Methylmethacrylate	1.2		ND (0.16)		ND (0.16)		ND (0.16)		ND (0.16)		NVG
Propylene	ND (0.055)		ND (0.055)		ND (0.055)		ND (0.055)		0.77	J	NVG
Styrene	4		ND (0.064)		0.94		1.6		ND (0.064)		NVG
1,1,1-Trichloroethane[2]	ND (0.13)		ND (0.13)		ND (0.13)		0.82	J	ND (0.13)		100
1,1,2,2-Tetrachloroethane	ND (0.11)		ND (0.11)		ND (0.11)		ND (0.11)		ND (0.11)		NVG
1,1,2-Trichloroethane	ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		NVG
1,2,4-Trichlorobenzene	ND (0.42)		ND (0.42)		ND (0.42)		ND (0.42)		ND (0.42)		NVG
1,2,4-Trimethylbenzene	4.7		ND (0.074)		10		81.1		ND (0.074)		NVG
1,3,5-Trimethylbenzene	1.5		ND (0.22)		3.2		26		ND (0.22)		NVG
2,2,4-Trimethylpentane	7.9		33		0.61	J	1.7		0.51	J	NVG
Tertiary Butyl Alcohol	6.4		21		0.97		0.7		ND (0.16)		NVG
Tetrachloroethene[2]	0.27		1.6		0.95		0.64		ND (0.16)		100
Tetrahydrofuran	17		15		0.53	J	1.4		0.44	J	NVG
Toluene	30		82.9		4.1		4.1		1.1		NVG
Trichloroethene[1]	ND (0.10)		ND (0.10)		ND (0.10)		0.21	J	ND (0.10)		5.0
Trichlorofluoromethane	1.3		1.5		1.6		2		1.3		NVG
Vinyl chloride[1]	ND (0.054)		ND (0.054)		ND (0.054)		ND (0.054)		ND (0.054)		5.0
Vinyl Acetate	ND (0.19)		ND (0.19)		ND (0.19)		ND (0.19)		ND (0.19)		NVG
m,p-Xylene	49.1		20		6.5		18		0.61	J	NVG
o-Xylene	16		4.8		2		6.9		ND (0.22)		NVG
Xylenes (total)	65.2		25		8.3		25		0.61	J	NVG

Abbreviation:
ND = The compound was analyzed for, but not detected.
Q = Qualifier
J = The compound was detected below reliable detection limits. The value given is an estimate.
NVG = No Value Given by NYSDOH

Notes:
[1] - Matrix 1 compound. According to NYSDOH, concentrations for indoor air above 5.0 µg/m³ require mitigation.
[2] - Matrix 2 compound. According to NYSDOH, concentrations for indoor air above 100 µg/m³ require mitigation

APPENDICES

APPENDIX A
LIST OF SITE CONTACTS

Name	**Phone/Email Address**
Site Owner/Remedial Party: Mako Properties LLC Contact: Mark Seiden	(631) 420-0070 /mark@brentmako.com
Qualified Environmental Professional: Mike Yager/CA RICH	(516) 576-8844 / myager@carichinc.com
NYSDEC DER Project Manager: Jahan Reza	(631) 444-0246 / Jahan.reza@dec.ny.gov
NYSDEC Regional Engineer: Ajay Shah, P.E.	(631) 444-0375 / ajay.shah@dec.ny.gov
On and off-site access contact: Mark Seiden	(631) 420-0070 /mark@brentmako.com
Remedial Party Attorney: Charlotte Biblow, Esq.	(516) 227-0686 / cbiblow@farrellfritz.com

APPENDIX B

Environmental Easement

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 21st day of February, 2017, between Owner(s) Mako Properties, LLC f/k/a Mako Properties Limited Partnership, having an office at 931 B Conklin Street, Farmingdale, New York 11735, County of Suffolk, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 48-50 Enter Lane in the Village of Islandia, Town of Islip, County of Suffolk and State of New York, known and designated on the tax map of the County Clerk of Suffolk as tax map parcel numbers: District 0504 Section 006.00 Block 01.00 Lot 018.000, being a portion of the property conveyed to Grantor by deed dated September 26, 1988 and recorded in the Suffolk County Clerk's Office in Liber and Page 10762/245. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.5535 +/- acres, and is hereinafter more fully described in the Land Title Survey dated June 15, 2016 and last revised January 3, 2017 prepared by John J. Toscano, L.L.S. of Carman-Dunne, P.C., which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation

established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: A1-0649-08-10, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Suffolk County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining

contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation

pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: 152230
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and

communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

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IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Mako Properties, LLC:

By: _____

Print Name: Jacob James Kogel

Title: Pres of M.M Date: 2/2/17

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the 2nd day of February, in the year 2017, before me, the undersigned, personally appeared Jacob James Kogel, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Claudia A. Cositore
Notary Public - State of New York

CLAUDIA A. COSITORE
Notary Public State of New York
No. 4859752
Qualified in Suffolk County
Commission Expires 8/11/18

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 21st day of February, in the year 2017, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

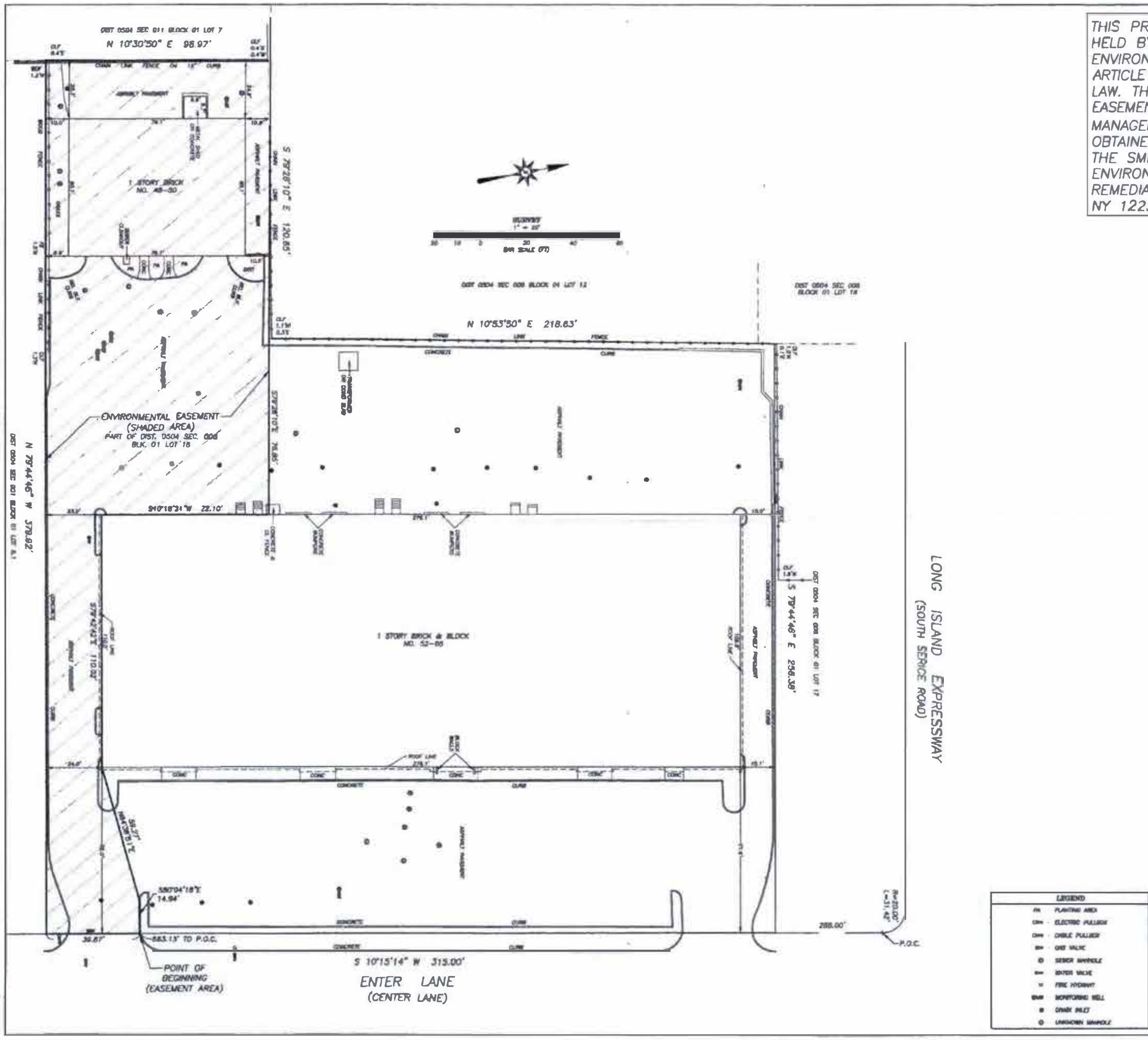
SCHEDULE "A" PROPERTY DESCRIPTION

LEGAL DESCRIPTION
DESCRIPTION OF ENVIRONMENTAL EASEMENT AREA

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, WITH THE BUILDINGS AND IMPROVEMENTS THEREON ERECTED, SITUATE, LYING AND BEING IN THE TOWN OF ISLIP, COUNTY OF SUFFOLK AND STATE OF NEW YORK, AND KNOWN AND DESIGNATED AS PART OF DISTRICT 0504 SECTION 006 BLOCK 01 LOT 18 ON THE SUFFOLK COUNTY LAND AND TAX MAP AND BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY SIDE OF ENTER LANE, SAID POINT BEING 563.13' SOUTHERLY FROM THE SOUTHERLY END OF A CURVE CONNECTING THE SOUTHERLY SIDE OF THE LONG ISLAND EXPRESSWAY WITH THE WESTERLY SIDE OF ENTER LANE; THENCE SOUTH 10 DEGREES 15 MINUTES 14 SECONDS WEST ALONG THE WEST SIDE OF ENTER LANE A DISTANCE OF 39.87 FEET TO A POINT; THENCE NORTH 79 DEGREES 44 MINUTES, 46 SECONDS WEST A DISTANCE OF 379.92 FEET TO A POINT; THENCE NORTH 10 DEGREES 30 MINUTES 50 SECONDS EAST A DISTANCE OF 96.97 FEET TO A POINT; THENCE SOUTH 79 DEGREES 28 MINUTES 10 SECONDS EAST A DISTANCE OF 197.50 FEET TO A POINT; THENCE SOUTH 10 DEGREES 18 MINUTES 21 SECONDS WEST A DISTANCE OF 72.10 FEET TO A POINT; THENCE SOUTH 79 DEGREES 42 MINUTES 42 SECONDS EAST A DISTANCE OF 110.02 FEET TO A POINT; THENCE NORTH 84 DEGREES 38 MINUTES 51 SECONDS EAST A DISTANCE OF 59.27 FEET TO A POINT; THENCE SOUTH 80 DEGREES 04 MINUTES 18 SECONDS EAST A DISTANCE OF 14.94 FEET TO THE POINT OR PLACE OF BEGINNING.

BEING 24,112 SQUARE FEET OR 0.5535 ACRES MORE OR LESS.



THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW. THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN MORE DETAIL IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN BE OBTAINED FROM NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT DERWEB@DEC.NY.GOV.

SCHEDULE A DESCRIPTION & ENVIRONMENTAL EASEMENT DESCRIPTION (SHADED AREA)

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, WITH THE BUILDINGS AND IMPROVEMENTS THEREON ERECTED, SITUATE, LYING AND BEING IN THE TOWN OF ISLIP, COUNTY OF SUFFOLK AND STATE OF NEW YORK, AND KNOWN AND DESIGNATED AS PART OF DISTRICT 0504 SECTION 008 BLOCK 01 LOT 18 ON THE SUFFOLK COUNTY LAND AND TAX MAP AND BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY SIDE OF ENTER LANE, SAID POINT BEING 583.13' SOUTHERLY FROM THE SOUTHERLY END OF A CURVE CONNECTING THE SOUTHERLY SIDE OF THE LONG ISLAND EXPRESSWAY WITH THE WESTERLY SIDE OF ENTER LANE; THENCE SOUTH 10 DEGREES 15 MINUTES 14 SECONDS WEST ALONG THE WEST SIDE OF ENTER LANE A DISTANCE OF 38.87 FEET TO A POINT; THENCE NORTH 79 DEGREES 44 MINUTES 46 SECONDS WEST A DISTANCE OF 378.92 FEET TO A POINT; THENCE NORTH 10 DEGREES 30 MINUTES 50 SECONDS EAST A DISTANCE OF 98.97 FEET TO A POINT; THENCE SOUTH 79 DEGREES 28 MINUTES 10 SECONDS EAST A DISTANCE OF 197.50 FEET TO A POINT; THENCE SOUTH 10 DEGREES 18 MINUTES 21 SECONDS WEST A DISTANCE OF 72.10 FEET TO A POINT; THENCE SOUTH 79 DEGREES 42 MINUTES 42 SECONDS EAST A DISTANCE OF 110.02 FEET TO A POINT; THENCE NORTH 84 DEGREES 38 MINUTES 51 SECONDS EAST A DISTANCE OF 59.27 FEET TO A POINT; THENCE SOUTH 80 DEGREES 04 MINUTES 18 SECONDS EAST A DISTANCE OF 14.94 FEET TO THE POINT OR PLACE OF BEGINNING.

BEING 24,112 SQUARE FEET OR 0.5535 ACRES MORE OR LESS.

OVERALL PROPERTY DESCRIPTION

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, WITH THE BUILDINGS AND IMPROVEMENTS THEREON ERECTED, SITUATE, LYING AND BEING IN THE TOWN OF ISLIP, COUNTY OF SUFFOLK AND STATE OF NEW YORK, AND KNOWN AND DESIGNATED AS DISTRICT 0504 SECTION 008 BLOCK 01 LOT 18 ON THE SUFFOLK COUNTY LAND AND TAX MAP AND BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY SIDE OF ENTER LANE, SAID POINT BEING 268.00' SOUTHERLY FROM THE SOUTHERLY END OF A CURVE CONNECTING THE SOUTHERLY SIDE OF THE LONG ISLAND EXPRESSWAY WITH THE WESTERLY SIDE OF ENTER LANE; THENCE SOUTH 10 DEGREES 15 MINUTES 14 SECONDS WEST ALONG THE WEST SIDE OF ENTER LANE A DISTANCE OF 315.00 FEET TO A POINT; THENCE NORTH 79 DEGREES 44 MINUTES 46 SECONDS WEST A DISTANCE OF 378.92 FEET TO A POINT; THENCE NORTH 10 DEGREES 30 MINUTES 50 SECONDS EAST A DISTANCE OF 98.97 FEET TO A POINT; THENCE SOUTH 79 DEGREES 28 MINUTES 10 SECONDS EAST A DISTANCE OF 120.85 FEET TO A POINT; THENCE NORTH 10 DEGREES 53 MINUTES 50 SECONDS EAST A DISTANCE OF 218.63 FEET TO A POINT; THENCE SOUTH 79 DEGREES 44 MINUTES 46 SECONDS EAST A DISTANCE OF 256.38 FEET TO THE POINT OR PLACE OF BEGINNING.

BEING [illegible] SQUARE FEET OR [illegible] ACRES MORE OR LESS.

Date	Revisions
1/3/2017	REVISE PER COMMENTS
12/9/2016	REVISE PER COMMENTS
11/23/2016	REVISE PER COMMENTS
10/13/2016	REVISE EASEMENT

SURVEY OF 48-66 ENTER LANE
TOWN OF ISLIP
SUFFOLK COUNTY, NEW YORK
SHOWN AS SCTM DISTRICT 0504 SECTION 008 BLOCK 01 LOT 18

CARMAN–DUNNE, P.C.
CONSULTING ENGINEERS & SURVEYORS
8 Lakeview Avenue, Lynbrook, New York 11563
TEL. (516) 599-[illegible] FAX (516) [illegible]

John J. Toscano P.L.S. 049872

Date:	File: K:\Projects\2016\2016058\2016058_SURVEY.dwg		
JUNE 15, 2016	Palette: LegacyCDunne		
Plate No.: 176	Project No.: 2016058.00	Scale: 1"=20'	Sheet 1 of 1

APPENDIX C

Boring Logs & Monitoring Well, SVE Well and Sparge Point Construction Details

CA RICH Consultants, Inc.

Environmental Specialists

17 Dupont Street, Plainview, NY 11803

MONITORING WELL DESIGN

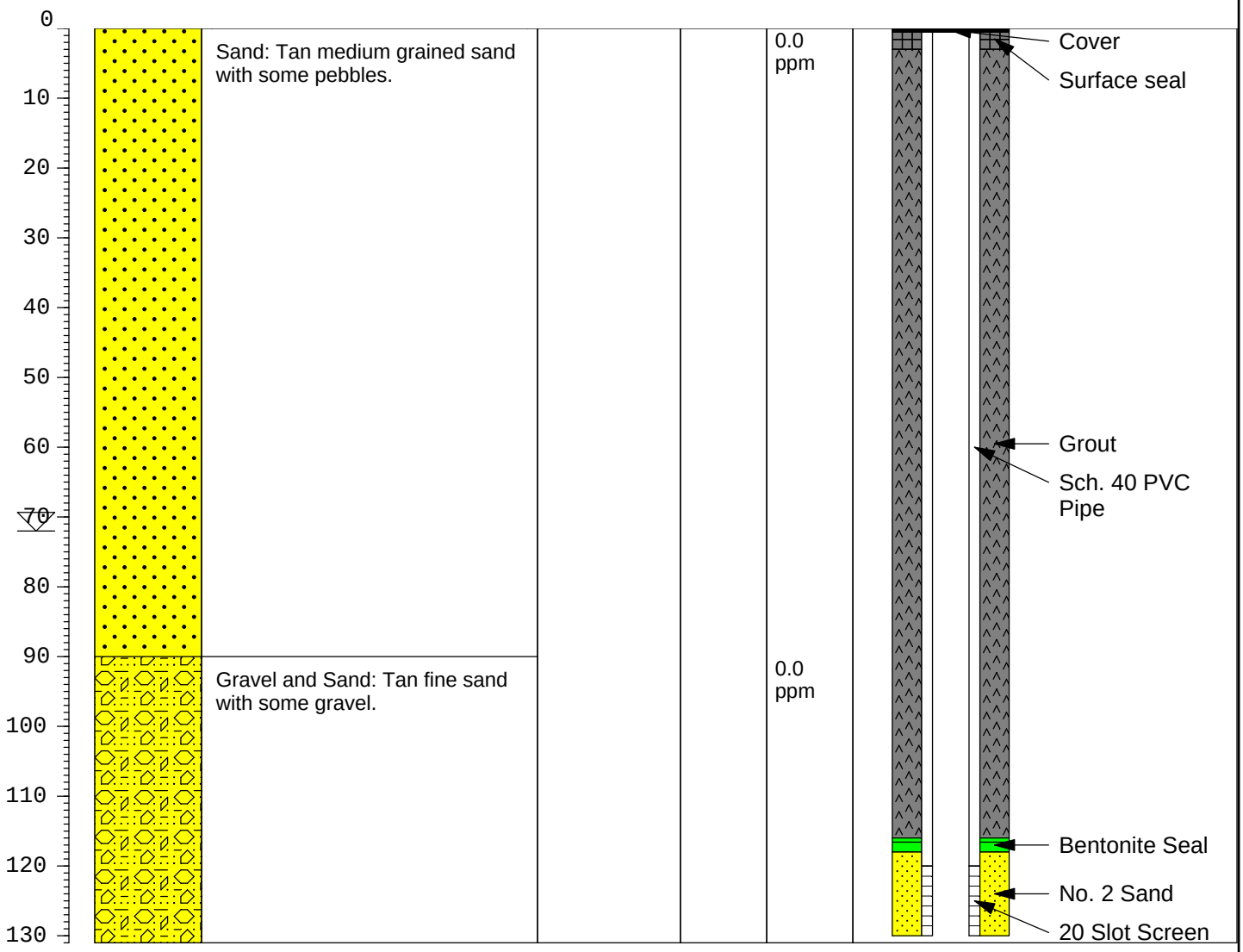
WELL NO.: **MW-2I**

TOTAL DEPTH: **130 ft**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**48-50 Enter Lane**	DRILLING CO.:	**ADT**
SITE LOCATION:	**Islandia, NY**	DRILLER:	**Sean Miller**
JOB NO.:	**Mako Properties**	RIG TYPE:	**Mobile 85**
LOGGED BY:	**Jessica Proscia**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Steve Sobstyl**	SAMPLING METHODS:	**NA**
DATES DRILLED:	**8/18/11**	HAMMER WT./DROP	**NA**

▽ Water level in well

DEPTH	SOIL TYPE	SOIL DESCRIPTION	SAMPLE NUMBER	Blows per ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION



NOTES:

CA RICH Consultants, Inc.

Environmental Specialists

17 Dupont Street, Plainview, NY 11803

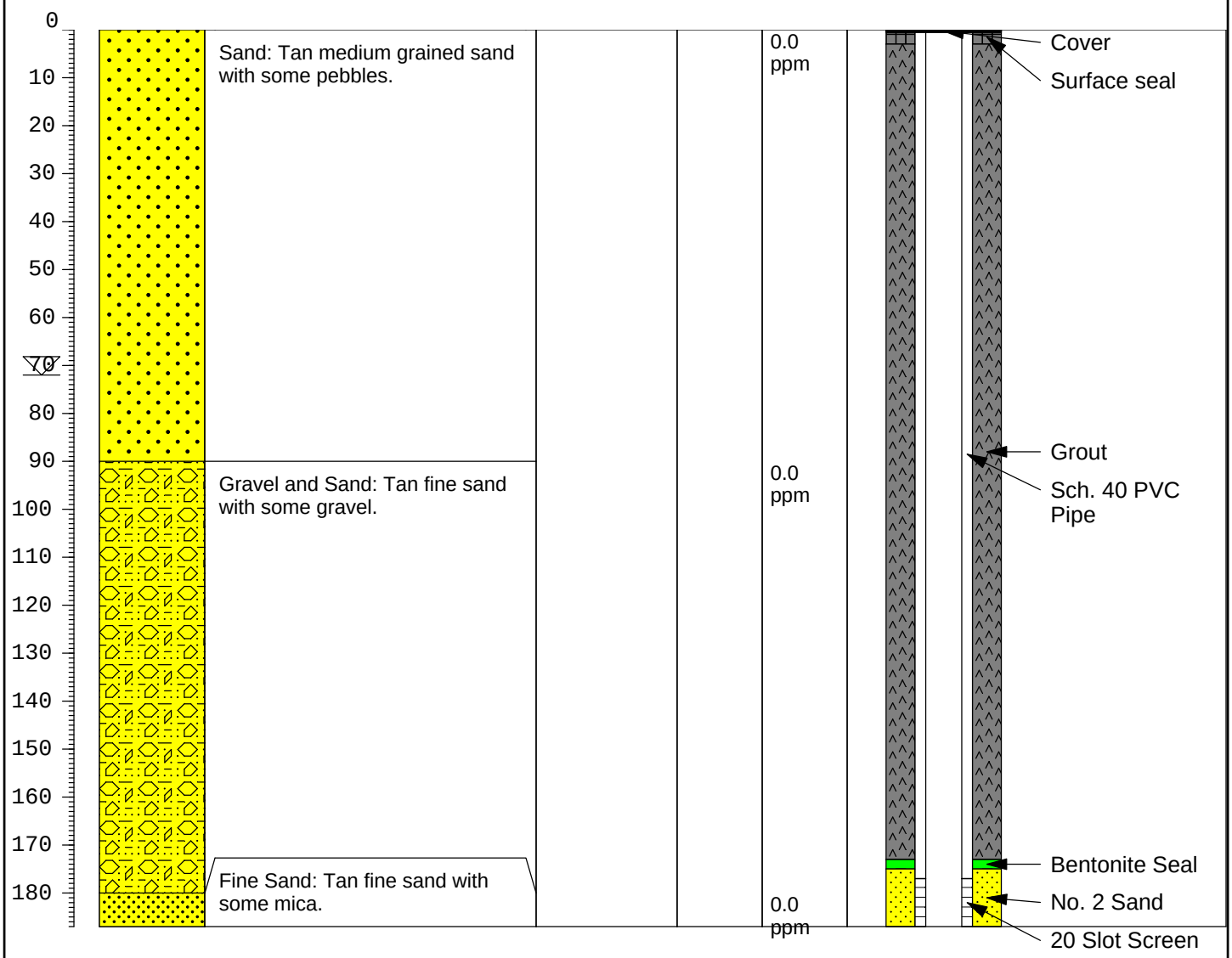
MONITORING WELL DESIGN

WELL NO.: **MW-2D**

TOTAL DEPTH: **187 ft**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**48-50 Enter Lane**	DRILLING CO.:	**ADT**
SITE LOCATION:	**Islandia, NY**	DRILLER:	**Sean Miller**
JOB NO.:	**Mako Properties**	RIG TYPE:	**Mobile 85**
LOGGED BY:	**Jessica Proscia**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Steve Sobstyl**	SAMPLING METHODS:	**NA**
DATES DRILLED:	**8/23/11**	HAMMER WT./DROP	**NA**

▽ Water level in well



NOTES:

Mako Building 3 Limited Partnership

Groundwater Monitoring Well Details June 2015

On-Site Wells + MW-4 Bldg 1

Well ID/Mako Bldg #	Diameter/Material	DTB	Screened Zone	DTW	LF Pump Depth
MW-1/Bldg 2	4 inch/PVC	81 ft	66 – 81 ft	73.87	77 ft
MW-2/Bldg 3	4 inch/PVC	83 ft	68 – 83 ft	72.78	81 ft
MW-2i/Bldg 3	4 inch/PVC	130 ft	120 – 130 ft	72.64	126 ft
MW-2D/Bldg 3	4 inch/PVC	186 ft	176 – 186 ft	72.55	176 ft
MW-3/Bldg 2	4 inch/PVC	80 ft	65 – 80 ft	71.56	77 ft
MW-4/Bldg 1	4 inch/PVC	68 ft	53 – 68 ft	62.07	66 ft
MW-8/Bldg 3	2 inch/PVC	85 ft	75 – 85 ft	74.25	81 ft
MW-9/Bldg 3	2 inch/PVC	85 ft	75 – 85 ft	74.78	81 ft

Off-Site Wells at 40 Enter Lane

Well ID	Diameter/Material	DTB	Screened Zone	DTW	LF Pump Depth
MW-10s	4 inch/PVC	85 ft	70 – 85 ft	71.60	81 ft
MW-10i	4 inch/PVC	140 ft	130 – 140 ft	71.83	136 ft
MW-10D	4 inch/PVC	195 ft	185 – 195 ft	71.70	187 ft
MW-11s	4 inch/PVC	85 ft	70 – 85 ft	71.25	81 ft
MW-11i	4 inch/PVC	140 ft	130 – 140 ft	71.30	136 ft
MW-11D	4 inch/PVC	195 ft	185 – 195 ft	71.20	186 ft

Summary of Sparge Point & Vapor Well Construction
48-50 Enter Lane, Islandia, NY

Well ID #	Vapor or Sparge	Pipe Diameter	Screen Interval(s)	Slot Size	Date Installed	Intermediate Seals/Depths
AS-1	Sparge (used in pilot test)	2 in. Sch. 80 PVC	90-92 ft.	20 slot	3/25/2014	#2 Morie/92-88 ft. Bentonite seal 86-88 ft. Grout to grade.
AS-2	Sparge	2 in. Sch. 80 PVC	90-92 ft.	20 slot	10/8/2014	#2 Morie/92-88 ft. Bentonite seal 86-88 ft. Grout to grade.
AS-3	Sparge	2 in. Sch. 80 PVC	90-92 ft.	20 slot	10/13/2014	#2 Morie/92-88 ft. Bentonite seal 86-88 ft. Grout to grade.
AS-4	Sparge	2 in. Sch. 80 PVC	90-92 ft.	20 slot	10/14/2014	#2 Morie/92-88 ft. Bentonite seal 86-88 ft. Grout to grade.
SVE-1	Vapor (used in pilot test)	2 in. Sch. 40 PVC	52-62 ft.	20 Slot	3/24/2014	#2 Morie/50-62 ft. Bentonite seal 50-51 ft. Drill cuttings to grade.
SVE-2	Vapor	2 in. Sch. 40 PVC	52-62 ft.	20 Slot	10/9/2014	#2 Morie/50-62 ft. -sand Bentonite seal 50-51 ft. Grout to grade.
SVE-3	Vapor	2 in. Sch. 40 PVC	52-62 ft.	20 Slot	10/10/2014	#2 Morie/50-62 ft. -sand Bentonite seal 50-51 ft. Grout to grade.
SVE-4	Vapor	2 in. Sch. 40 PVC	52-62 ft.	20 Slot	10/15/2014	#2 Morie/50-62 ft. Bentonite seal 50-51 ft. Grout to grade.
SVE-5	Vapor	4 in. Sch. 40 PVC	2-7 ft.	20 Slot	10/31/2014	Pea gravel/1-7 ft. Grout to grade
SVE-6	Vapor	4 in. Sch. 40 PVC	2-7 ft.	20 Slot	10/31/2014	Pea gravel/1-7 ft. Grout to grade
SVE-7	Vapor	4 in. Sch. 40 PVC	2-7 ft.	20 Slot	11/3/2014	Pea gravel/1-7 ft. Grout to grade
SVE-8	Vapor	4 in. Sch. 40 PVC	2-7 ft.	20 Slot	11/3/2014	Pea gravel/1-7 ft. Grout to grade

APPENDIX D

Equipment Cut Sheets

HIGH-QUALITY CONSTRUCTION

All critical components in the CA Series are selected and assembled for long-term performance. So you won't have to worry about the cylinders, cylinder heads, crankshaft, connecting rods or pistons wearing out before their time. Plus, stainless steel valves are included on all models. Just as important as the materials is the FS-Curtis standard for quality. All parts are manufactured to precision tolerances for high efficiency, powerful performance and years of service under demanding conditions.

ELECTRIC MODELS

						STANDARD PACKAGE			ULTRA PACK*		
MODELS	HP	PUMP	CYLINDERS	CFM (@175psi)	CONFIGURATION	TANK (Gal.)	DIMENSIONS (LxWxH-In.)	WEIGHT (lbs.)	TANK (Gal.)	DIMENSIONS (LxWxH-In.)	WEIGHT (Lbs.)
CA5	5	E50	3	17.4 Simplex	Horizontal	80	69 x 24 x 47	525	80	69 x 32 x 48	600
					Vertical		36 x 25 x 74			39 x 40 x 74	
CA5+	5	E57	2	18.5 Simplex	Horizontal	80	69 x 24 x 47	510	80	69 x 32 x 48	575
					Vertical		36 x 25 x 74			39 x 40 x 74	
				37 Duplex	Horizontal	120	78 x 27 x 52	910	120	84 x 30 x 54	975
CA7.5	7.5	E57	2	23.2 Simplex	Horizontal	80	69 x 24 x 47	530	80	69 x 32 x 48	580
					Vertical		35 x 25 x 74			39 x 36 x 74	
				46.4 Duplex	Horizontal	120	78 x 28 x 52	930	120	84 x 31 x 54	995
CA10	10	E71	3	34.2 Simplex	Horizontal	120	73 x 26 x 53	940	120	74 x 37 x 54	1026
					Vertical		43 x 31 x 79			43 x 36 x 80	
				68.4 Duplex	Horizontal	120	90 x 30 x 53	1225	120	96 x 33 x 55	1311
CA15	15	E15	3	46.5 Simplex	Horizontal	120	74 x 28 x 58	1080	120	75 x 39 x 59	1166

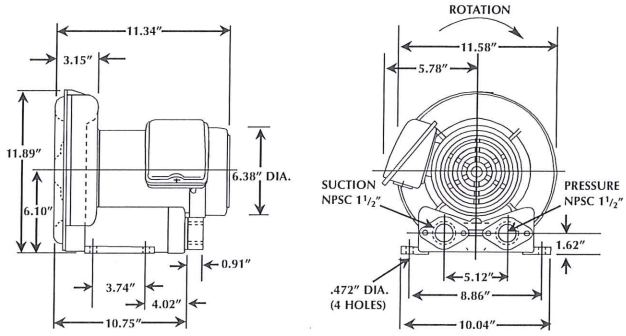
*View features chart for Ultra Pack features.

GAS-DRIVEN MODELS

MODELS	HP	ENGINE	PUMP	CYLINDERS	TANK (Gal.)	CFM (@175psi)	DIMENSIONS (LxWxH-In.)	WEIGHT (Lbs.)
CA13-H	13	Honda	E57	2	30	22	50 x 24 x 50	460
CA14-K	14	Kohler	E57	2	30	22.5	50 x 24 x 50	486

VFC40 RING COMPRESSOR

The VFC40 is a single-stage ring compressor with a maximum pressure of 54.5 in. H_2O, a maximum vacuum of 50 in. H_2O, and a maximum capacity of 98 SCFM. It comes complete with a direct-drive, 1 horsepower, TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase and 1-phase models. All versions have NEMA class B insulation, are UL recognized, CSA certified, and CE. 575V units are CSA certified only.



SPECIFICATIONS

	Model No.	Hz	Voltage	Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight
			Low Voltage/High Voltage			in. H_2O	in. H_2O	SCFM	SCFM	°F(°C)	lbs.(kg)
1 Phase	VFC400P-5T	60	115/230	8.6/4.3	24/12	54.5	50	98	3.5	119(65)	51(23)
		50	110/220	6.0/3.0	22/11	40	37	84	3.5	101(55)	
3 Phase	VFC400A-7W	60	200-240/400-480	3.3-2.8/1.7-1.4	15-16.5/7.4-8.2	54.5	50	98	3.5	119(65)	47.5(21.5)
		50	190-230/380-460	2.2-2.4/1.1-1.2	16.5-18.5/8.3-9.2	40	37	84	3.5	101(55)	
	VFC400A-5W	60	575	1.3	7.2	54.5	50	98	3.5	119(65)	47.5(21.5)

ACCESSORIES

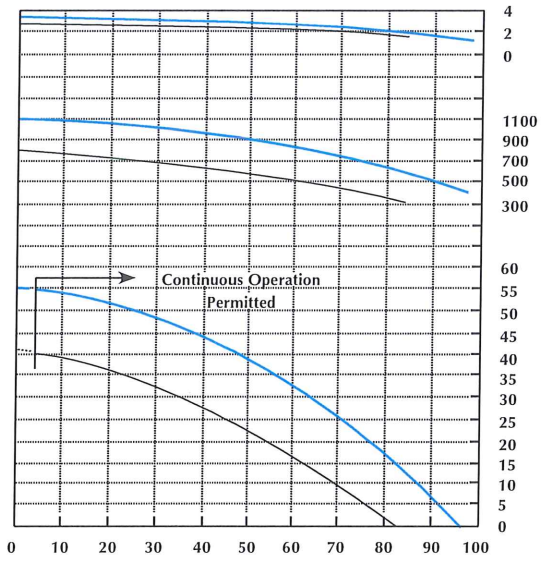
Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Inlet Filter/Receiver	Exhaust Silencer/Muffler
Model No.	VV4	PV4	F-45	C-45	R30P1.5	VFY-024A

NOTE: Maximum allowable time at deadhead is 120 seconds.

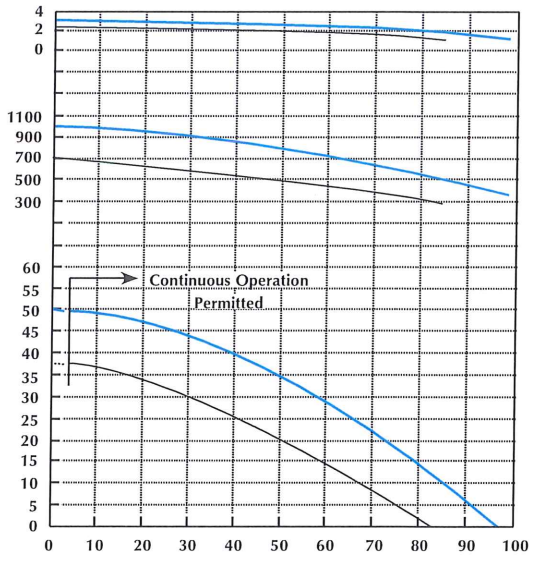
VFC40 PERFORMANCE DATA

KEY
60 Hz
50 Hz

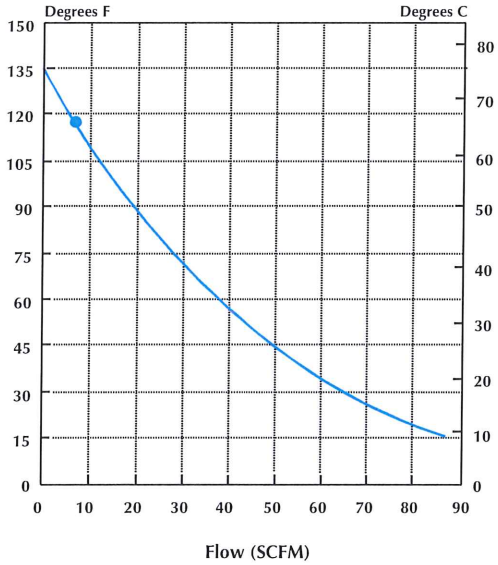
PRESSURE



VACUUM

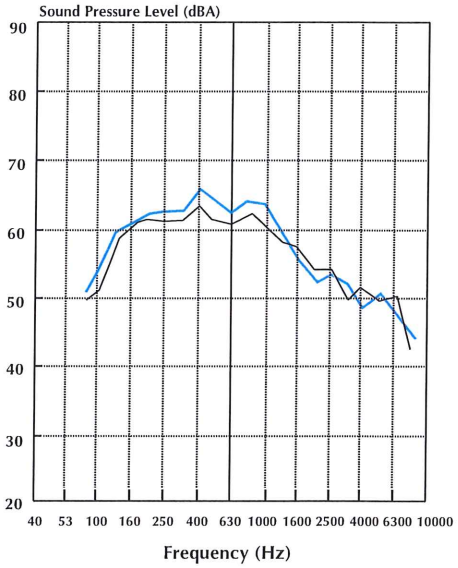


TEMPERATURE RISE



Max. Air Temperature is Value Marked • plus 40 Degrees C Ambient Temperature

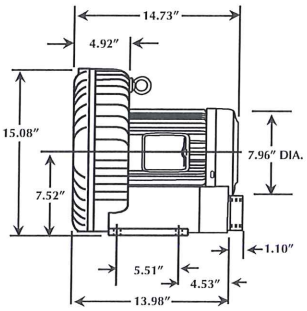
SOUND LEVEL

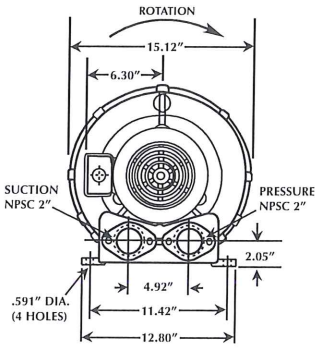


*Measured at distance of 1.0 meter

VFC60 RING COMPRESSOR

The VFC60 is a single-stage ring compressor with a maximum pressure of 118 in. H_2O, a maximum vacuum of 98 in. H_2O, and a maximum capacity of 206 SCFM. It comes complete with a direct-drive, 4.5 horsepower TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase models. All versions have NEMA class B insulation, are UL recognized, CSA certified, and CE. 575 Volt units are CSA certified only.





SPECIFICATIONS

	Model No.	Hz	Voltage	Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight
			Low Voltage/High Voltage			in. H_2O	in. H_2O	SCFM	SCFM	°F(°C)	lbs.(kg)
3 Phase	VFC600A-7W	60	200-240/400-480	12-11/6.0-5.5	78-90/39-45	118	98	206	56	126(70)	114(52)
		50	190-230/380-460	9.2-10.5/4.6-5.2	88-102/44-51	86	72	175	28	108(65)	
	VFC600A-5W	60	575	4.4	36	118	98	206	56	126(70)	114(52)

ACCESSORIES

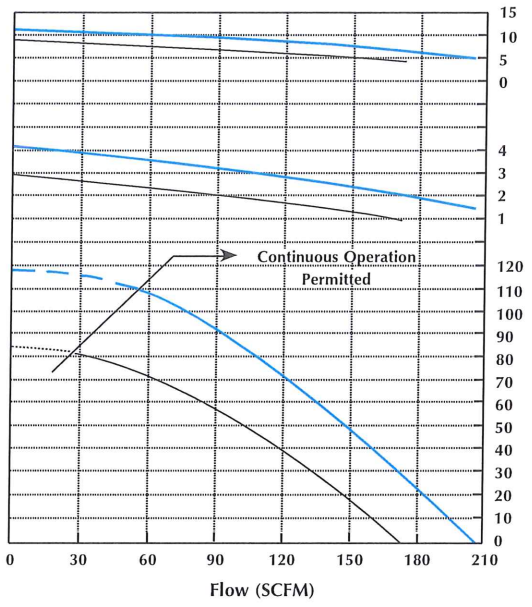
Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Inlet Filter/Receiver	Exhaust Silencer/Muffler
Model No.	VV6	PV6	F-67	C-67	R30P2.0	VFY-026A

NOTE: Maximum allowable time at deadhead is 60 seconds.

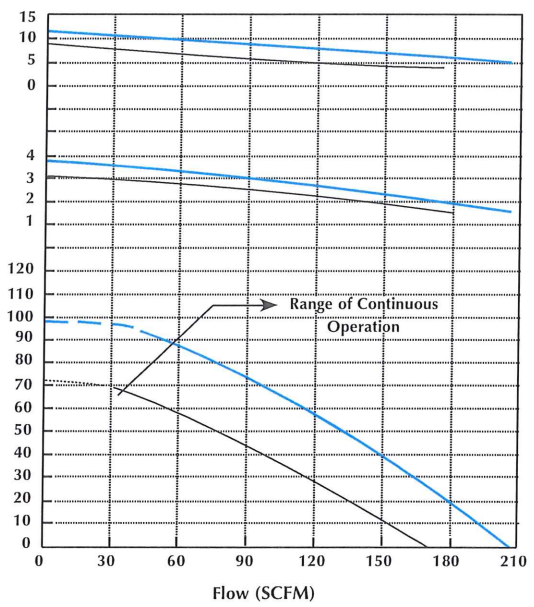
VFC60 PERFORMANCE DATA

KEY
60 Hz
50 Hz

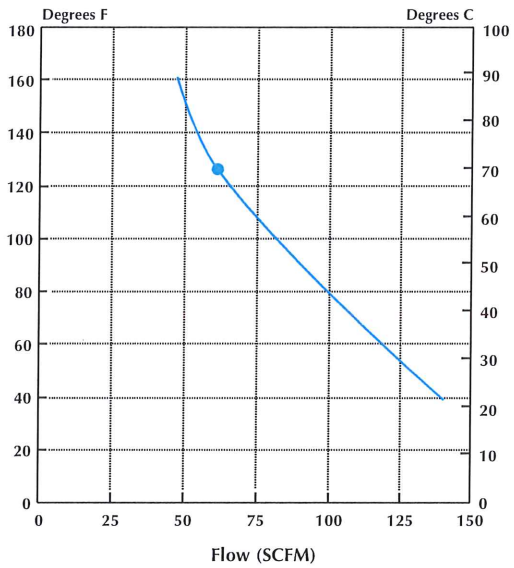
PRESSURE



VACUUM

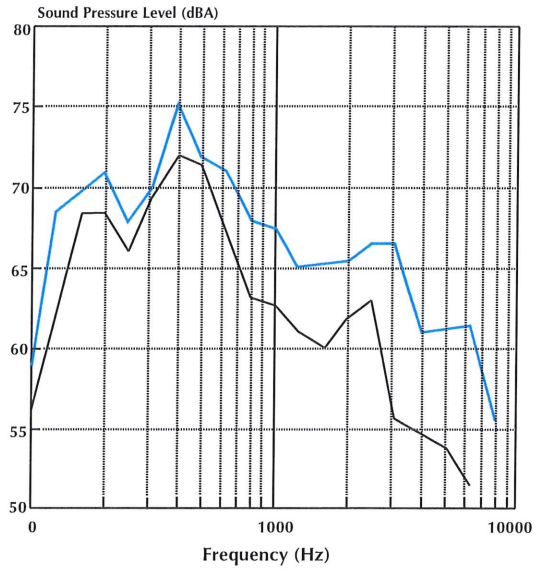


TEMPERATURE RISE



Max. Air Temperature is Value Marked • plus 40 Degrees C Ambient Temperature

SOUND LEVEL



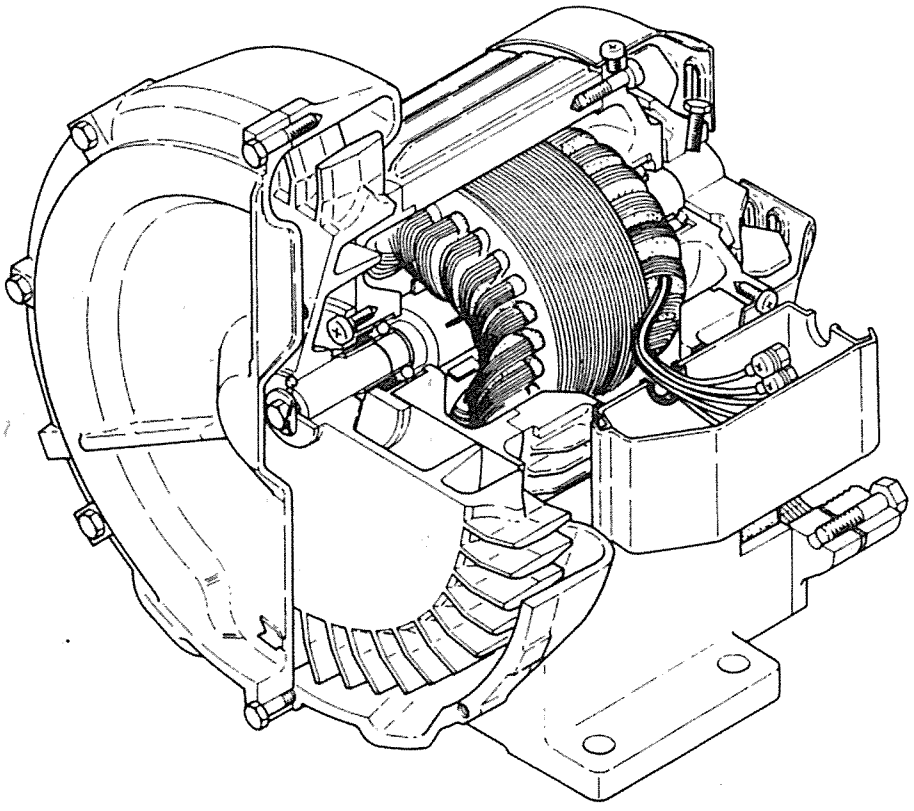
*Measured at distance of 1.0 meter

RING COMPRESSORS

OPERATION AND PARTS MANUAL

[0TH SERIES & 4TH SERIES]

Thank you for purchasing our Ring Compressor. Our product is produced with high quality materials and manufacturing processes. Our superior workmanship will give you the best product available in the air moving market place. Please read the instructions carefully prior to usage.



Fuji Electric Corp. of America

TF-129-00

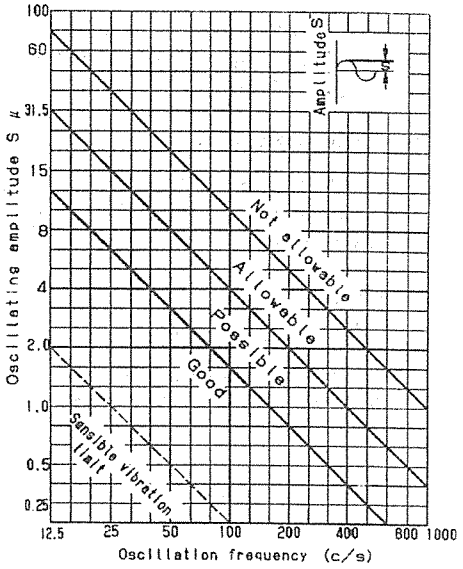
Operating instructions ----------

1) Handling gases

The Ring Compressors are used for handing non-combustible, non-corrosive and non-explosive, gases and air. The inlet and ambient air or gas temperature should be less than 104℉ (40°C), and the relative humidity not exceed 80%.

2) Installation

The Ring Compressors can be installed in any direction.
When installed vertically, the motor side should upward.
VFC704A, 804A and VFC904A should be installed horizontally.
Do not install The Ring Compressors on a base which is subject to or creates vibration. The mounting base should be rigid enough to prevent resonance. Use vibration-insulator bases pads if necessary.
The allowable limit of vibration is shown in the figure.



Shut-off allowable time and minimum required airflow for continuous operation

3) Filtration

Air and gases should be filtered before entering the blower by using an intake or inline filter as recommended in The literature or by The distributor or representatives. Care should be taken not to get dirt or particles be sucked into The Ring Compressor.

4) Direction of rotation

The Ring Compressors should be rotated in the "Arrow" direction as noted on the casing. All units rotate in a clockwise direction as viewed from the motor side. You may observe the rotation by looking at the motor fan or shaft direction. The vacuum connection is marked "IN". The pressure connection is marked "OUT" on the flange.
The three phase units can be run in the reverse or counter-clockwise direction by reversing L1 and L3, but performance is reduced.
The single phase units operate in the clockwise direction only.

Item / Model	Pressure		Vacuum	
	sec①	CFM②	sec①	CFM②
VFC63P	Cont.	0	Cont.	0
VFC084A,084P	Cont.	0	Cont.	0
VFC104A,104P	600	3.5	600	3.5
VFC204A,204P	240	3.5	240	3.5
VFC304A,304P	120	17	120	16
VFC404A,404P	120	3.5	120	3.2
VFC504A,504P	60	45	60	40
VFC604A	60	56	60	50
VFC704A	30	88	30	70
VFC804A	30	135	30	106
VFC904A	30	195	30	140

① Shut-off allowable time(sec)starting at a normal temperature.
② Minimum required air flow.
③ We suggest that vacuum or pressure relief valves be installed to prevent shut-off conditions on VFC304A/P units and larger.

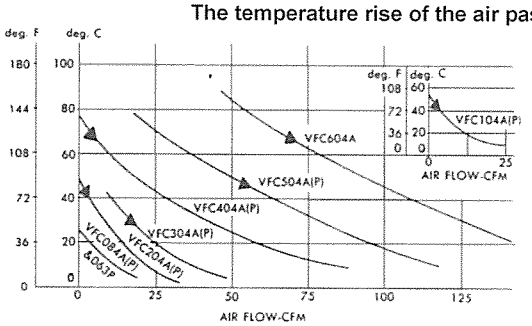
5) Electrical connection

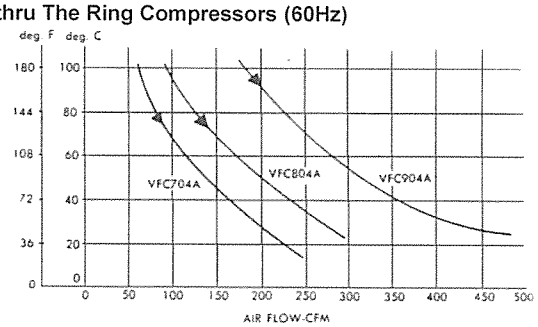
A qualified electrician should make the connection and knows the local electrical codes. Connections should be made as per the nameplate and operation instruction connecting diagram on page 5.
For all three phase units a magnetic motor starter should be used with thermal overload protection. The VFC400P-5T and VFC504P-2T requires a definite purpose contactor.
Caution: Please consult your local electrical codes, through a certified electrician or electrical contractor.

6) Temperature rise

The temperature of the air passing through The Ring Compressors will rise as shown in the figures below.

The temperature rise of the air passing thru The Ring Compressors (60Hz)

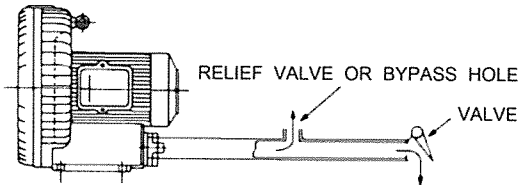




Note : Limited maximum air temperature is temperature rise value marked(▲)+40°C(Ambient temperature)

7) Continuous operations

The Ring Compressors pressure, vacuum and flow can be adjusted from open flow (free air) to shut-off. The minimum flow and maximum shut-off times must be met.
The Ring Compressors must operate within the continuous operating conditions specified in the table.
We recommend our pressure and vacuum relief valves or by-pass hole to prevent shut-off for long periods of time.



BYPASS (Pressure Use)

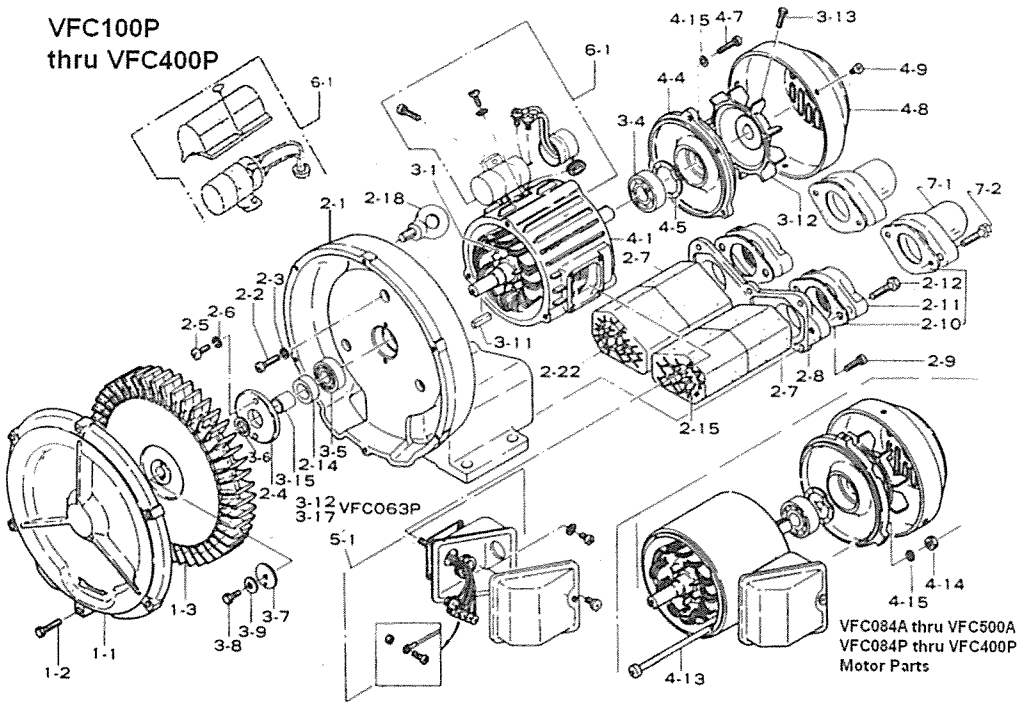
8) Maintenance

Clean the inside and outside (particularly the air path of cooling fan) of The Ring Compressors remove dirt and dust. This may result in abnormal temperature rise, loss of performance or increase of vibration.

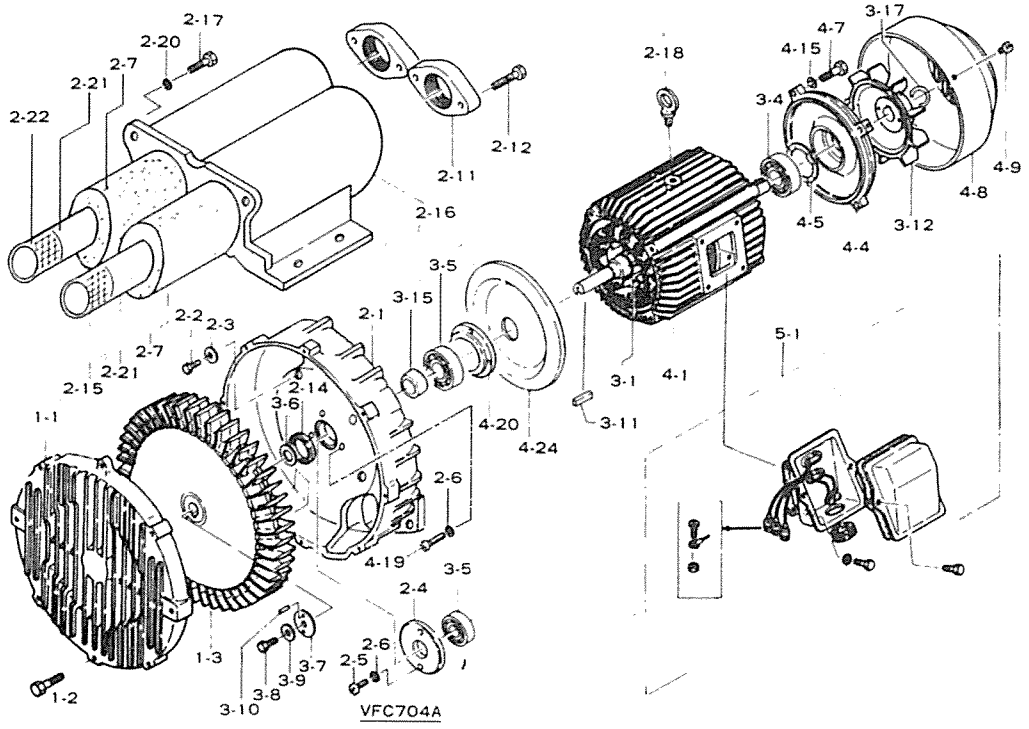
9) Parts

The bearings, oil-seal and silencer are subject to wear. These parts should be replaced with new ones as necessary. The impeller, casing, gasket and wire net may also need replacement depending on the operating conditions.

VFC084A, VFC100A thru VFC600A, VFC063P thru VFC400P and 504P assembly diagram



VFC704A thru VFC904A assembly diagram



Parts list ----------

When ordering, specify Model No. Serial NO., Name of part, Part No., and Quantity.
Right column shows number of required parts in each unit.

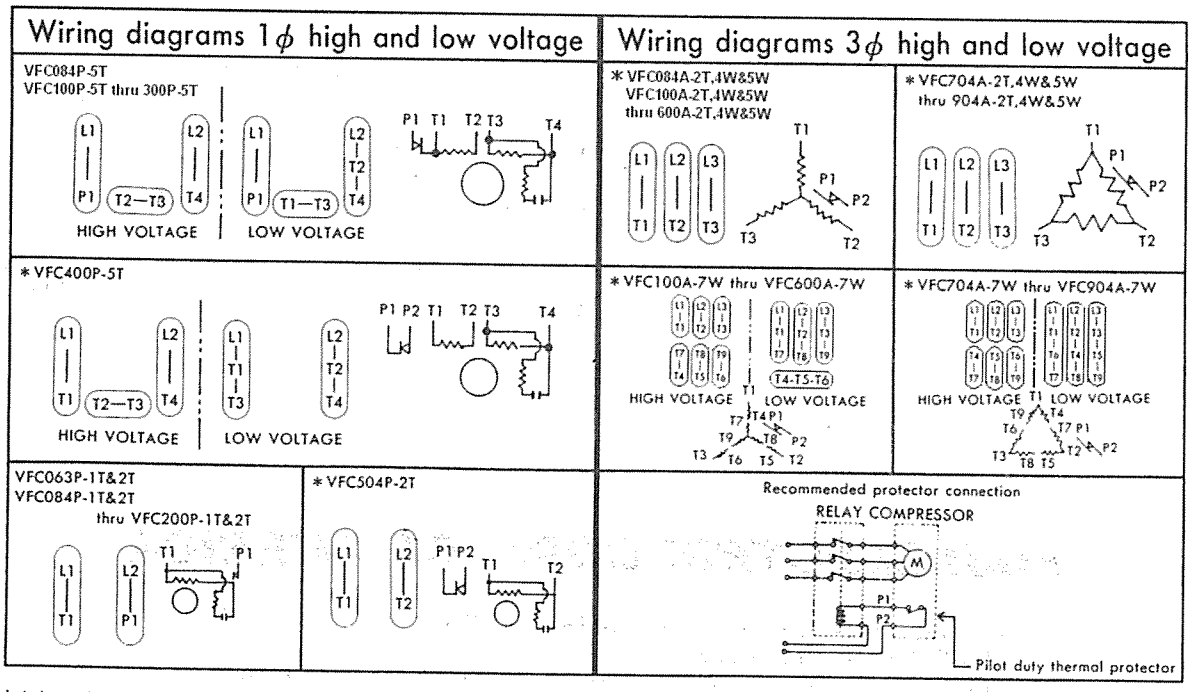
FIG No.	NAME OF PART	VFC 063P	VFC 084P	VFC 100P	VFC 200P	VFC 300P	VFC 400P	VFC 504P	VFC 084A	VFC 100A	VFC 200A	VFC 300A	VFC 400A	VFC 500A	VFC 600A	VFC 704A	VFC 804A	VFC 904A
		PART No.																
1-1	Casing Cover	06P101 1	08P101 1	1S101 1	2S101 1	3S101 1	4Q101 1	5B101 1	08P101 1	1S101 1	2S101 1	3S101 1	4Q101 1	5B101 1	6B101 1	7C101 1	8C101 1	9C101 1
1-2	Bolt-Casing Cover	06P102 5	4P409 6	4Q409 6	1Q504 6	1Q504 6	4Q102 8	5A102 8	4P409 6	4Q409 6	1Q504 6	1Q504 6	4Q102 8	5A102 8	5A102 8	7A102 7 4P308 1	7A102 7 4P308 1	9A102 7 6A308 1
1-3	Impeller	06P103 1	08P103 1	1Q103 1	2R103 1	3R103 1	4Q103 1	5C103 1	08P103 1	1Q103 1	2R103 1	3R103 1	4Q103 1	5C103 1	6C103 1	7C103 1	8C103 1	9C103 1
2-1	Casing	06P201 1	08P201 1	1S201 1	2R201 1	3R201 1	4B201 1	5S201 1	08P201 1	1S201 1	2R201 1	3R201 1	4B201 1	5C201 1	6D201 1	7C201 1	8C201 1	9C201 1
2-2	Bolt-Casing	06P202 3	N/A	N/A	N/A	N/A	N/A	5A202 3	N/A	N/A	N/A	N/A	N/A	N/A	6A202 3	7C202 4	8C202 4	9C202 4
2-3	Spring Washer	N/A	N/A	N/A	N/A	N/A	N/A	4P203 3	N/A	N/A	N/A	N/A	N/A	N/A	4P203 3	4P203 4	7A203 4	9C203 4
2-4	End Cover	N/A	1P204 1	1Q204 1	2Q204 1	2Q204 1	4Q204 1	5C204 1	1P204 1	1Q204 1	2Q204 1	2Q204 1	4Q204 1	5C204 1	5C204 1	7A204 1	N/A	N/A
2-5	Bolt-End Cover	N/A	1P205 2	2P205 2	2P205 2	2P205 2	4Q205 2	4P202 2	1P205 2	2P205 2	2P205 2	2P205 2	4Q205 2	4P202 2	4P202 2	4P202 2	N/A	N/A
2-6	Spring Washer	N/A	1P203 2	2P206 2	2P206 2	2P206 2	2P206 2	4P203 2	1P203 1	2P206 2	2P206 2	2P206 2	2P206 2	4P203 2	4P203 2	4P203 2	4P203 3	4P203 3
2-7	Silencer Assembly (Suc. & Del.)	06P207 1	1Q207 1	1Q207 1	2Q207 1	3Q207 1	4Q207 1	5B207 1	1Q207 1	1Q207 1	2Q207 1	3Q207 1	4Q207 1	5B207 1	6B207 1	7C207 1	8C207 1	9C207 1
2-8	Flange	06P208 1	08P208 1	1Q208 1	2Q208 1	3Q208 1	4Q208 1	5C208 1	08P208 1	1Q208 1	2R208 1	3Q208 1	4Q208 1	5C208 1	6B208 1	N/A	N/A	N/A
2-9	Bolt-Flange	06P202 1	4R209 6	4Q205 6	2P205 5	2P205 6	4Q209 6	5C209 6	4R209 6	4Q205 6	2Q209 5	2P205 6	4Q209 6	5C209 6	2P205 6	N/A	N/A	N/A
2-10	Gasket-Flange	N/A	N/A	1P210 2	1P210 2	3P210 2	4P210 2	5A210 2	N/A	1P210 2	1P210 2	3P210 2	4P210 2	5A210 2	6A210 2	6A210 2	N/A	N/A
2-11	Threaded Flange	N/A	N/A	1P211 2	1P211 2	3P211 2	4P211 2	4P211 2	N/A	1P211 2	1P211 2	3P211 2	4P211 2	4P211 2	6A211 2	6A211 2	8A211 2	9A211 2
2-12	Bolt-Threaded Flange	N/A	N/A	1Q212 4	1Q212 4	3Q212 4	7A407 4	7A407 4	N/A	1Q212 4	1Q212 4	3Q212 4	7A407 4	7A407 4	6B212 4	6B212 4	9A422 4	9C212 4
2-14	Shaft Seal	N/A	N/A	1R214 1	2P214 1	2P214 1	4P214 1	5C214 1	N/A	1R214 1	2P214 1	2P214 1	4P214 1	5C214 1	5C214 1	7A214 1	8A214 1	9A214 1
2-15	Silencer Retaining Net (Suc.)	N/A	N/A	N/A	N/A	N/A	4R215 1	5B215 1	N/A	N/A	N/A	N/A	4R215 1	5C215 1	6E215 1	7C215 1	8C215 1	9C215 1
2-16	Silencer Box	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7C216 1	8C216 1	9C216 1
2-17	Bolt-Silencer Box	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7A407 5	8C217 5	8A217 5
2-18	Lifting Bolt	N/A	N/A	N/A	N/A	N/A	N/A	5A218 1	N/A	N/A	N/A	N/A	N/A	5A218 1	6A218 1	7A218 1	6A218 1	7A218 1
2-20	Washer-Silencer Box	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7A203 5	9C203 5	9C220 5
2-21	Silencer Retaining Sheath (Suc. & Del.)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7C221 2	8C221 2	9C221 2
2-22	Silencer Retaining Net (Del.)	N/A	N/A	N/A	N/A	N/A	4R222 1	5B222 1	N/A	N/A	N/A	N/A	4R222 1	5C222 1	6C222 1	7C215 1	8C215 1	9C215 1
3-1	Rotor and Shaft Assembly	06P301 1	08P301 1	1S301 1	2S301 1	3S301 1	4S301 1	5S301 1	08A301 1	1B301 1	2C301 1	3C301 1	4E301 1	5E301 1	6E301 1	7D301 1	8D301 1	9D301 1
3-4	Bearing-Rear	06P304 1	1P304 1	2P304 1	2P304 1	2P304 1	4P304 1	5A305 1	1P304 1	2P304 1	2P304 1	2P304 1	4P304 1	5A305 1	5A305 1	7A304 1	8A304 1	8A305 1
3-5	Bearing-Front	06P304 1	1P304 1	2P304 1	2P304 1	2P304 1	4P304 1	5D305 1	1P304 1	2P304 1	2P304 1	2P304 1	4P304 1	5D305 1	5D305 1	7D305 1	8D305 1	9D305 1
3-6	Bearing-Shim	06P306 1	1P306 1	1P306 1	2P305 1	2P306 1	2P305 1	5C306 1	1P306 1	1P306 1	2P306 1	2P306 1	2P306 1	5C306 1	6C306 1	7A306 1	8A306 1	9A306 1
3-7	Plate Retaining	06P307 1	1Q307 1	1Q307 1	2Q307 1	2Q307 1	4Q307 1	5B307 1	1Q307 1	1Q307 1	2Q307 1	2Q307 1	4Q307 1	5B307 1	6A307 1	6A307 1	8A307 1	8A307 1
3-8	Bolt-impeller	06P308 1	1P308 1	1P308 1	2P308 1	2P308 1	4P308 1	4P308 1	1P308 1	1P308 1	2P308 1	2P308 1	4P308 1	4P308 1	6A308 1	6A308 1	8A308 1	8A308 1
3-9	Tab-Washer	4P203 1	1P309 1	1P309 1	2P309 1	2P309 1	2P309 1	2P309 1	1P309 1	1P309 1	2P309 1	2P309 1	2P309 1	2P309 1	6A309 1	6A309 1	8A309 1	8A309 1
3-10	Pin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8A310 1	8A310 1
3-11	Key-Impeller	N/A	08P311 1	1P311 1	2P311 1	2P311 1	4P311 1	5B311 1	08P311 1	1P311 1	2P311 1	2P311 1	4P311 1	5B311 1	6A311 1	7A311 1	8A311 1	9A311 1
3-12	Motor Fan	06P312 1	08P312 1	N/A	2S312 1	2S312 1	4S312 1	6D312 1	08P312 1	N/A	2S312 1	2S312 1	4S312 1	5D312 1	6D312 1	7D312 1	8D312 1	9D312 1
3-13	Bolt-Motor Fan	N/A	08P313 1	N/A	2S313 1	2S313 1	2S313 1	2S313 1	08P313 1	N/A	2S313 1	2S313 1	2S313 1	2S313 1	2S313 1	N/A	N/A	N/A
3-15	Collar	N/A	N/A	2P315 1	2P315 1	2P315 1	4P315	N/A	N/A	1P315 1	2P315 1	2P315 1	4P315 1	N/A	N/A	N/A	8C315 1	9C315 1
3-17	Retaining Rings-C Type	06P317 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7D317 1	7D317 1	9D317 1
4-1	Frame Stator and Protector Assy. (High voltage)	06P4012 1	08S401 1	1T401 1	2T401 1	3S401 1	4S401 1	5S401 1	08A4014 1	1E401 1	2E401 1	3D401 1	4E401 1	5E401 1	6E401 1	7D401 1	8D401 1	9D401 1
	Frame Stator and Protector Assy. (Low voltage)	06P4011 1							08A4012 1									
4-4	Rear Housing	06P404 1	08P404 1	1T404 1	2P404 1	2P404 1	4D404 1	6D404 1	08P404 1	1T404 1	2P404 1	2P404 1	4D404 1	5D404 1	6D404 1	7C404 1	8C404 1	9C404 1
4-5	Spring Washer	06P405 1	08P405 1	2P405 1	2P405 1	2P405 1	4P405 1	5C405 1	08P405 1	2P405 1	2P405 1	2P405 1	4P405 1	5C405 1	5C405 1	7A405 1	8A405 1	9A405 1
4-7	Bolt-Rear Housing	4P409 1	N/A	N/A	N/A	N/A	N/A	5A202 3	N/A	N/A	N/A	N/A	N/A	N/A	5A202 3	7C407 4	6A308 4	9C407 4
4-8	Fan Cover	N/A	08P408 1	N/A	2S408 1	3S408 1	4S408 1	6D408 1	08P408 1	N/A	2S408 1	3S408 1	4S408 1	5D408 1	6D408 1	7D408 1	8D408 1	9D408 1
4-9	Bolt-Fan Cover	N/A	08P409 3	N/A	2S409 3	2S409 3	4S409 3	2S409 3	08P409 3	N/A	2S409 3	3S409 3	4S409 3	2S409 3	2S409 3	2S409 3	8D409 4	8D409 4
4-13	Bolt-Frame	N/A	08P413 3	2P413 4	2P413 4	3P413 4	4B413 4	N/A	08P413 3	2P413 4	2P413 4	3P413 4	4D413 4	5D413 4	N/A	N/A	N/A	N/A
4-14	Nut-Frame	2P414 3	2P414 3	2P414 4	2P414 4	2P414 4	9A515 4	N/A	2P414 3	2P414 4	2P414 4	2P414 4	9A515 4	9A515 4	N/A	N/A	N/A	N/A
4-15	Spring Washer	1P203 2	1P203 3	1P203 4	1P203 4	1P203 4	2P206 4	4P203 3	1P203 3	1P203 4	1P203 4	1P203 4	2P206 4	2P203 4	4P203 3	4P203 4	7A203 4	9C203 4
4-19	Bolt-Bearing Retainer-Front	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8C419 3	9C419 3
4-20	Bearing Retainer-Front	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8C420 1	9C420 1
4-24	Front Frame Cover	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7C424 1	8C424 1	9C424 1
5-1	Terminal Box Assembly	N/A	1S501 1	1S501 1	1S501 1	1S501 1	4S501 1	5S501 1	1S501 1	1D501 1	1D501 1	1D501 1	4D501 1	1D501 1	6D501 1	6D501 1	8D501 1	9D501 1
6-1	Capacitor Assy. (High voltage)	06P6012 1	08S601 1	1T601 1	2T601 1	3T601 1	4T601 1	5S601 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Capacitor Assy. (Low voltage)	06P6011 1																
7-1	Hose Flange	N/A	N/A	1P701 2	1P701 2	3P701 2	4P701 2	4P701 2	N/A	1P701 2	1P701 2	3P701 2	4P701 2	4P701 2	6A701 2	N/A	N/A	N/A
7-2	Bolt-Hose Flange	N/A	N/A	2P308 4	2P308 4	3Q702 4	4Q702 4	3Q702 4	N/A	2P308 4	2P308 4	3Q702 4	3Q702 4	3Q702 4	8A308 4	N/A	N/A	N/A
"UL" : Recognized		＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1	＊1
"CSA" : Recognized		＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2

The marking ＊1 : Recognized (Expect : -5W Models)
＊2 : Recognized (All Models)

Trouble shooting

	Troubles	Possible cause (* 3 Phase Units, **1 Phase Units)	Remedy
Impeller does not turn	Humming sound	1. One phase of line not connected. (*) 2. One phase of stator winding open (*) 3. Bearings defective 4. Impeller jammed by foreign material 5. Impeller jammed against housing or cover 6. Capacitor open (**)	1. Connect 2. Contact Factory 3. Change bearings 4. Clean 5. Adjust 6. Change capacitor
	No sound	1. Two phases of power line not connected.(*) 2. Two phases of stator winding open (*)	1. Connect 2. Contact factory
Impeller turn	Blown fuse	1. Insufficient fuse capacity 2. Short circuit	1. Use fuse or proper rating 2. Repair
	Motor overheated or protector trips	1. High or low voltage 2. Operating in single phase condition(*) 3. Bearing defective 4. Impeller rubbing against housing or cover 5. Impeller or air passage clogged by foreign material 6. Unit operating beyond performance range 7. Capacitor shorted 8. One phase of stator winding short circuited (*)	1. Check input voltage 2. Check connections 3. Change bearings 4. Adjust 5. Clean 6. Contact factory 7. Change capacitor 8. Contact factory
	Abnormal sound	1. Impeller rubbing against housing or cover 2. Impeller or air passages clogged by foreign material 3. Bearings defective	1. Adjust 2. Clean 3. Change bearings
	Performance below standard	1. Leak in piping 2. Piping and air passages clogged 3. Impeller rotation reversed 4. Leak in Compressor 5. Low voltage	1. Tighten 2. Clean 3. Check wiring 4. Tighten cover, flange 5. Check input voltage

Connections



(Note) 1. The marking * : Pilot duty thermal protector.
2. Model VFC504A-2T may not be equipped with thermal protector. Please check it on the nameplate.
3. All 3-phase units use magnetic starter.

⚠ WARNING!

This blower is designed to operate indoors, and is an environment that is a water-free and dust-free.

This blower is only a component, it must be installed in a machine or part of a machinery which meets the terms of the Machine directive 89/392/EEC. Commission will not occur until the end product or machinery conforms with the guidelines in EN60204-1.

FUJI ELECTRIC CORP. OF AMERICA

FRASSETTO INDUSTRIAL PARK, 6A FRASSETTO WAY
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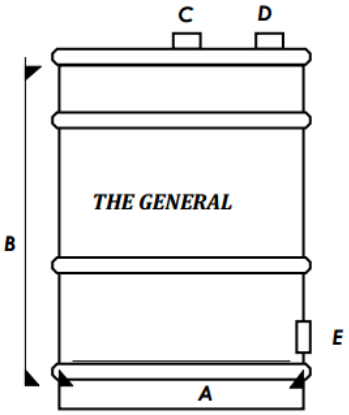
The Air General

Air Pollution Control Barrels

The General Air Pollution Control Barrels are ready to use, low cost, self-contained air purification adsorbers designed to treat airflow streams of up to 250 CFM. The units are available in four different sizes to better serve your treatment applications.

Specifications	30 Gallon	55 Gallon	85 Gallon	110 Gallon
A – Diameter, Outside:	19-1/2″	24″	28″	32″
B – Height, Outside:	29″	35″	39″	43″
Inlet Fitting:	E-2″MPT	E-2″MPT	C-4″FPT	C-4″FPT
Outlet Fitting:	C-2″MPT	C-2″MPT	D-4″FPT	D-4″FPT
Drain Fitting:	E-1″FPT	E-1″FPT	E-1″FPT	E-1″FPT
Carbon Weight, lbs.:	90	150	300	400
Max Recommended Flow Rate, CFM:	100	100	180	250
Max Pressure, PSIG:	7	10	7	7
Max Design Temp., Fahrenheit:	140	140	140	140
Flow Direction	Upflow	Upflow	Upflow	Upflow

Activated Carbon – The Air General vapor adsorbers are filled with virgin, high activity, activated carbon. Any of virgin coal, coconut shell, reactivated or impregnated carbons are available as well.



Removable Lid – 16 gauge lid with ring and bolt closure, poly-clad cellulose gasket.

Connections – Metal connections with standard pipe threads insure easy, durable and leak- proof hookup to your system. Unions or quick connect fittings are advised to make drum exchange easy. Drains let you remove any accumulated condensate.

Flow Distributors – The 55 gallon barrel uses an air chamber to insure even distribution of the airflow through the carbon. Low-pressure drop slotted Schedule 40 PVC collectors are used in the 85 gallon and 110 gallon drums for proper flow distribution. Stainless Steel internals and drums are available for special applications.

Coatings – The Air General pollution control barrels are coated on the inside with heat cured phenolic epoxy. The outside coating is industrial enamel. A polyethylene liner is available for extra corrosion resistance for the 55 gallon and 85 gallon units.

Installation and Startup – The General air pollution control barrel requires no special procedure for startup. Just connect the inlet and outlet to the treatment system and start it up. Multiple units are usually connected in series with testing advised between the units to determine when the first unit needs to be changed out.

Maintenance – Once connected, The Air General requires no maintenance other than the monitoring of the influent and effluent air streams and the operation pressure of the system. Monitoring the air stream into the last Air Pollution Control Barrel in series mode is a recommended safeguard against breakthrough in the final discharge. When the concentration of contaminants in the outflow equals the concentration in the inflow, The General has reached its removal capacity and should be removed from service. The working life of each adsorber is dependent upon the type of contaminant in the air as well as its concentration and the airflow rate. A pressure relief device is advised to prevent damage to the canister in the event of excessive pressure buildup.

Recharging The General – Once the carbon has reached its pollutant removal capacity, the unit should be removed and replaced with a fresh one. To purchase replacement carbon or to arrange for a carbon change out, please contact our office.

Disposal – Dispose of the spent carbon in accordance with Local, State and Federal regulations.

WARNING!

Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels. Confined space / low oxygen procedures should be put in place before any entry is made. Such procedures should comply with all applicable local, state and federal guidelines.

Activated carbon releases heat in its normal operation. Certain chemicals and/or situations can greatly increase the heat released and the potential for fire. If you are dealing with flammable chemicals, understand the correct operation of your system. If you have any questions about the fire potential of your system, please call General Carbon Corporation at 973-523-2223

APPENDIX E

Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN

For

SITE MANAGEMENT PLAN

48-50 Enter Lane, Islandia, NY
NYSDEC SITE #152230

May 2017

Prepared for:

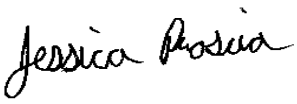
MAKO PROPERTIES LIMITED PARTNERSHIP
931B Conklin Street
Farmingdale, NY 11735-2429

Prepared by:

CA RICH CONSULTANTS, INC.
17 Dupont Street
Plainview, NY 11803-1614

Quality Assurance Project Plan

1.1 Introduction - The following Quality Assurance Project Plan ("QAPP") has been prepared specifically for the Site Management Plan at 48-50 Enter Lane in Islandia, New York. This Plan was prepared and approved as stated below.



Prepared by: _____ Date: 5/16/17
Jessica Proscia, Quality Assurance Officer

Approved by: _____ Date: 5/16/17
Michael Yager, Project Manager

1.2 QAPP - Table of Contents

The following elements are included in this QAPP:

1.3 Project Description - The Site Management Plan subject to this QAPP has been prepared to address the following issues:

- Ensure the on-going effectiveness of Engineering and Institutional Controls in place at the Site for protection of pu8blic health and the environment.

Monitoring methods that will be used may include well drilling, monitoring well installation, monitoring well sampling, and soil vapor sampling. These are described in detail in the Site Management Plan.

1.4 Project Organization – Mr. Michael Yager will serve as the Project Manager (PM) and will be responsible for the overall scheduling and performance of all investigative activities.

Ms. Jessica Proscia will serve as the Quality Assurance Officer (QAO) for this project. Her duties will include:

- Review of laboratory data packages
- Interface with laboratory
- Performance of Field Audits

Experienced CA RICH staff will perform and/or oversee completion of all the field activities described in the Investigation Work Plan.

1.5 Quality Assurance Objectives and Data Measurement – There are two sources of data collection methodology that will provide data information during this Investigation.

Field Screening - Organic vapor readings will be recorded from the head space of soil samples. This data is intended to be used only as a screening tool. To meet these goals, clean sampling tools will be used for each head space measurement and the photo-ionization detector (PID) will be calibrated at the beginning of each screening day on-site.

Chemical Analysis – All environmental samples will delivered to a New York State-Certified laboratory contracted to CA RICH for chemical analysis. This data is intended to determine the nature and extent of contamination in soil and groundwater. The laboratory will follow the NYSDEC – Analytical Services Protocol dated 2005. All analytical reports will be prepared in NYSDEC ASP Category B deliverables. All samples will be placed in iced-filled coolers and delivered to the laboratory within 48 hours of collection.

Quality assurance objectives are generally defined in terms of five parameters:

- **Representativeness -** Representativeness is the degree to which sampling data accurately and precisely represents site conditions, and is dependent on sampling and analytical variability. The Supplemental Site Investigation Work Plan has been designed to assess the presence of the constituents in the target media at the time of sampling. The Plan present the rationale for sample quantities and location. The Plan also present field sampling methodologies and laboratory analytical methodologies.

  The use of the prescribed field and laboratory analytical methods with associated holding times and preservation requirements are intended to provide representative data. Further discussion of QC checks is presented in Section 1.11.

- **Comparability** - Comparability is the degree of confidence with which one data set can be compared to another data set. Comparability between this investigation and to the extent possible, with existing data will be maintained through consistent sampling and analytical methodology set forth in the QAPP; the and the Supplemental Site Investigation Work Plan; the NYSDEC ASP analytical methods (2005) with NYSDEC ASP QA/QC requirements (2005); and through use of QA/QC procedures and appropriately trained personnel.

- **Completeness -** Completeness is defined as a measure of the amount of valid data obtained from a sampling event compared to the amount that was expected to be obtained under normal conditions. This will be determined upon assessment of the analytical results.

- **Precision -** Precision is the measure of reproducibility of sample results. The goal is to maintain a level of analytical precision consistent with the objectives of the Work Plan. To maximize precision, sampling and analytical procedures will be followed. All work for the investigation phase of this project will adhere to established protocols presented in the QAPP, and Supplemental Site Investigation and IRM Work Plans. Checks for analytical precision will include the analysis of matrix spike duplicated, laboratory duplicates, and field duplicates. Checks for field measurement precision will include obtaining duplicate field measurements. Further discussion of precision QC checks is provided in Section 1.11.

- **Accuracy** - Accuracy is the deviation of a measurement from the true value of a known standard. Both field and analytical accuracy will be monitored through initial and continuing calibration of instruments. In addition, internal standards, matrix spikes, blank spikes, and surrogates (system monitoring compounds) will be used to assess the accuracy of the laboratory analytical data.

1.6 Sampling Procedures - The sampling procedures that will be employed are discussed in detail in the Site Characterization and IRM Work Plans.

1.7 Sample and Document Custody Procedures

- **General** - The Chain-of-Custody program allows for the tracing of possession and handling of the sample from its time of collection through its chemical analysis in the laboratory. The chain-of-custody program at this site will include:

  - Sample labels
  - Chain-of-Custody records
  - Field records

- **Sample Container Details**

Sample Matrix and Parameters	Container Type and Preservative	Method	Holding Time*
Groundwater			
VOCs	Two (2) - 40 Vial with HCL - ICE	USEPA 8260	14 Days
Sub Slab Vapor			
VOCs	Six-liter Summa Canister	TO-15	30 Days

*Holding Time is calculated from collection date

- **Sample Labels** - To prevent misidentification of samples, a label will be affixed to the sample container and will contain the following information:

  - Site Name
  - Sample identification number
  - Date and time of collection
  - Initials of Sampler
  - Preservation (if any)
  - Type of analysis to be conducted.

- **Chain-of-Custody Records** - To establish the documentation necessary to trace sample possession from the time of collection, a chain-of-custody record (sample attached) will be filled out and will accompany samples at all times. The record will contain the following information:

  - Project name:
  - Printed name and signature of samplers
  - Sample number
  - Date and time of collection
  - Sampling location
  - Number of containers for each sample
  - Signature of individuals involved in sample transfer (when relinquishing and accepting samples)
  - Inclusive dates and times of possession.

- **Field Records** - Field records will be maintained during each sampling effort in a logbook. All aspects of sample collection, handling and visual observations will be recorded. All sample collection equipment, field analytical equipment and equipment utilized to make physical measurements will be identified in the field logbook.

  All calculations, results and calibration data for field sampling, field analytical and field physical measurement equipment will also be recorded in the field logbook. Entries will be dated and initialed. Entries will be made in ink, and will be legible.

1.8 Calibration Procedures and Frequency - The contracted laboratory will follow the NYSDEC Category-B requirements for equipment calibration procedures and frequency.

The QA Officer will be responsible for ensuring that the Field PID is calibrated at the beginning of each day of field sampling using calibration gas supplied by the manufacturer. A log of the meter calibration will be kept in the field logbook.

1.9 Analytical Procedures - All laboratory analysis will follow NYSDEC ASP (2005) protocols with Category B deliverables. The following samples will be collected for QA/QC purposes: 1 trip blank, 1 field blank, 1 duplicate samples, 1 matrix spike, and 1 matrix spike duplicate per every twenty field samples. A qualified data validator will review the laboratory data and a Data Usability Summary Report (DUSR) will be prepared.

1.10 Data Reduction, Validation and Reporting

- **Field Data** - All field data recorded in logbooks or on log sheets will be evaluated in the Office and transferred to word processor text by field personnel or clerical staff. PID readings will be included on the logs. The QAO and/or PM will review this data for accuracy and completeness. Typed test pit logs will be prepared for all test pits. Construction diagrams will be prepared for all monitoring wells and soil vapor probes installed by CA RICH.

- **Laboratory Data** - The laboratory will transfer the instrument readings to laboratory report forms. Ms. Lori Beyer will perform independent data validation of all analytical data using NYSDEC DUSR protocols. Lori Beyer's resume is attached.

  The Data Validator will provide CA RICH with a Data Validation Summary Report. The QAO will review the summary report as well as other field data and prepare a Data Usability Report.

  CA RICH will prepare summary tables of the validated analytical data using computer spreadsheet software. The data entries will be reviewed using the red check-green check method. All entries will be reviewed and entry errors will be marked in red ink. Once these entries are corrected, the printouts will be marked with green ink and placed in the project file.

1.11 Internal Quality Control Checks

Both field and laboratory quality control checks are proposed for this project. In the event that there are any deviations from these checks, the Project Manager and Quality Assurance Officer will be notified. The proposed field and laboratory control checks are discussed below.

Field Quality Control Checks

- **Field Measurements -** To verify the quality of data collected using field instrumentation, at least one duplicate measurement will be obtained per day and reported for all field analytical measurements.

- **Sample Containers -** Certified-clean sample containers will be supplied by the contracted laboratory.

- **Field Duplicates** – Field duplicates will be collected to check reproducibility of the sampling methods. Field duplicates will be prepared as discussed in the IRM Work Plan. Field duplicates will be analyzed every 20 field samples.

- **Field Rinse Blanks** – Field rinse blanks are used to monitor the cleanliness of the sampling equipment and the effectiveness of the cleaning procedures. Field rinse blanks will be prepared and submitted for analysis during this investigation. Field rinse blanks will be prepared by filling sample containers with analyte-free water (supplied by the laboratory), which has been routed through a cleaned sampling device.

- **Trip Blanks** – Trip blanks will be used to assess whether site samples have been exposed to non-site-related volatile constituents during storage and transport. Trip blanks will be analyzed at a frequency of once per day, and will be analyzed for volatile organic constituents. A trip blank will consist of a container filled with analyte-free water (supplied by the laboratory), which remains unopened with field samples throughout the sampling event. Trip blanks will only be analyzed for volatile organic constituents.

1.12 Performance and Systems Audits

Performance and systems audits will be completed in the field and the laboratory during the investigation phase of this project as described below.

- **Field Audits –** CA RICH's Project Manager and Quality Assurance Officer will monitor field performance and field meter calibrations to verify that measurements are taken according to established protocols. The Project Manager will review all field logs. In addition, the Project Manager and the Quality Assurance Officer will review the field rinse and trip blank data to identify potential deficiencies in field sampling and cleaning procedures.

- **Laboratory Audits** – The contracted laboratory will perform internal audits consistent with NYSDEC ASP (2005).

1.13 Preventive Maintenance

Preventive maintenance schedules have been developed for both field and laboratory instruments. A summary of the maintenance activities to be performed is presented below.

- **Field Instruments and Equipment -** Prior to any field sampling, each piece of field equipment will be inspected to assure it is operational. If the equipment is not operational, it must be serviced prior to use. All meters which require charging or batteries will be fully charged or have fresh batteries. If instrument servicing is required, it is the responsibility of the field personnel to follow the maintenance schedule and arrange for prompt service.

- **Laboratory Instruments and Equipment -** The laboratory will document Laboratory instrument and equipment procedures. Documentation includes details of any observed problems, corrective measure(s), routine maintenance, and instrument repair (which will include information regarding the repair and the individual who performed the repair).

  Preventive maintenance of laboratory equipment generally will follow the guidelines recommended by the manufacturer. A malfunctioning instrument will be repaired immediately by in-house staff or through a service call from the manufacturer.

1.14 Data Assessment Procedures

The analytical data generated during the Investigation Work Plan and IRM Work Plan will be evaluated with respect to precision, accuracy, and completeness. The procedures utilized when assessing data precision, accuracy, and completeness are presented below.

- **Data Precision Assessment Procedures -** Field precision is difficult to measure because of temporal variations in field parameters. However, precision will be controlled through the use of experienced field personnel, properly calibrated meters, and duplicate field measurements. Field duplicates will be used to assess precision for the entire measurement system including sampling, handling, shipping, storage, preparation and analysis.

  Laboratory data precision for organic analyses will be monitored through the use of matrix spike duplicate sample analyses. For other parameters, laboratory data precision will be monitored through the use of field duplicates and/or laboratory duplicates.

  The precision of data will be measured by calculation of the standard deviation (SD) and the coefficient of variation (CV) of duplicate sample sets. The SD and CV are calculated for duplicate sample sets by:

  $$SD = (A-B)/1.414$$
  $$CV = ((A-B)/1.414(A+B)/2))$$

  Where:

  A = Analytical result from one of two duplicate measurements
  B = Analytical result from the second measurement.

  Where appropriate, A and B may be either the raw measurement or an appropriate mathematical transformation of the raw measurement (e.g., the logarithm of the concentration of a substance).

  Alternately, the relative percent difference (RPD) can be calculated by the following equation:

  $$RPD = \frac{(A-B)}{(A+B)/2} \times 100$$

  $$RPD = 1.414\ (CV)(100)$$

- **Data Accuracy Assessment Procedures -** The accuracy of field measurements will be controlled by experienced field personnel, properly calibrated field meters, and adherence to established protocols. The accuracy of field meters will be assessed by review of calibration and maintenance logs.

  Laboratory accuracy will be assessed via the use of matrix spikes, surrogate spikes, and internal standards. Where available and appropriate, QA performance standards will be analyzed periodically to assess laboratory accuracy. Accuracy will be calculated as a percent recovery as follows:

  $$Accuracy = \frac{A-X}{B} \times 100$$

  Where:

  A = Value measured in spiked sample or standard
  X = Value measured in original sample
  B = True value of amount added to sample or true value of standard

This formula is derived under the assumption of constant accuracy over the original and spiked measurements. If any accuracy calculated by this formula is outside of the acceptable levels, data will be evaluated to determine whether the deviation represents unacceptable accuracy, or variable, but acceptable accuracy. Accuracy objectives for matrix spike recoveries and surrogate recovery objectives are identified in the NYSDEC, ASP (2005).

- **Data Completeness Assessment Procedures -** Completeness of a field or laboratory data set will be calculated by comparing the number of samples collected or analyzed to the proposed number.

$$\text{Completeness} = \frac{\text{No. Valid Samples Collected or Analyzed}}{\text{No. Proposed Samples Collected or Analyzed}} \times 100$$

As general guidelines, overall project completeness is expected to be at least 90 percent. The assessment of completeness will require professional judgment to determine data usability for intended purposes.

1.15 Corrective Action

Corrective actions are required when field or analytical data are not within the objectives specified in this QAPP, or the Supplemental Investigation Work Plan. Corrective actions include procedures to promptly investigate, document, evaluate, and correct data collection and/or analytical procedures. Field and laboratory corrective action procedures for this project are described below.

- **Field Procedures** - When conducting the investigative fieldwork, if a condition is noted that would have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause and corrective action implemented will be documented as a memo to the project file and reported to the Project Manager.

  Examples of situations, which would require corrective actions, are provided below:

  - Protocols as defined by the QAPP and the Supplemental Site Investigation and IRM Work Plans have not been followed;
  - Equipment is not in proper working order or properly calibrated;
  - QC requirements have not been met; and
  - Issues resulting from performance or systems audits.

  Project field personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

- **Laboratory Procedures -** In the laboratory, when a condition is noted to have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause and corrective action to be taken will be documented, and reported to the Quality Assurance Officer.

Corrective action may be initiated, at a minimum, under the following conditions:

- Specific laboratory analytical protocols have not been followed;
- Predetermined data acceptance standards are not obtained;
- Equipment is not in proper working order or calibrated;
- Sample and test results are not completely traceable;
- QC requirements have not been met; and
- Issues resulting from performance or systems audits.

Laboratory personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

1.16 Quality Assurance Reports and Management

- **Internal Reporting -** The analytical laboratory will submit analytical reports using NYSDEC ASP (2005), Category B requirements. The analytical reports will be submitted to the Data Validator for review. Supporting data (i.e., historic data, related field or laboratory data) will also be reviewed to evaluate data quality, as appropriate. The Quality Assurance Officer will incorporate results of data validation reports (if any) and assessments of data usability into a summary report. This report will be filed in the project file and will include the following:

  - Assessment of data accuracy, precision, and completeness for field & laboratory data;
  - Results of the performance and systems audits;
  - Significant QA/AC problems, solutions, corrections, and potential consequences;
  - Analytical data validation report; and
  - Data usability report.

- **Reporting** - The IRM Report will contain a separate QA/QC section including the DUSR and a summary of data collected and/or used as appropriate to the project DQOs. The Quality Assurance Officer will prepare the QA/QC summary tables and reports and memoranda documenting the data assessment and validation.

APPENDIX F

Inspection Forms

Mako 3 Systems Checklist

Date: _____ **Time:** _____ **Inspector:** _____

Sparging:

	AS-1	AS-2	AS-3	AS-4
On/Off -				
PSI -				
SCFH –				

In-Line Pressure (PSI) - **Regulator Pressure (PSI) -**

In-Line Water Separator:

Draining – Yes/No _____ **Water Build-up – Yes/No** _____

Condensate Bucket Fluid Level (Low/Half/Full) _____

Compressor Oil Level (Good/OK/Low) _____

Compressor Regulator between 130 & 160 PSI – Yes/No _____

2HP Moisture KO Drum: Water in site-tube – Yes/No _____

7HP Moisture KO Drum: Water in site-tube – Yes/No _____

Temperature of Duct Lines (degrees Fahrenheit):

2HP Blower –	**Pressure -**	**Vacuum -**	**Mid-Carbon -**	**Exhaust –**
7HP Blower –	**Pressure -**	**Vacuum -**	**Mid-Carbon -**	**Exhaust –**

PID 11.7 Lamp MiniRae (ppm):

2HP Blower –	**Raw -**	**Mid-Carbon -**	**Exhaust –**
7HP Blower –	**Raw -**	**Mid-Carbon -**	**Exhaust –**

PID 10.6 Lamp MiniRae (ppm):

2HP Blower –	**Raw -**	**Mid-Carbon -**	**Exhaust –**
7HP Blower –	**Raw -**	**Mid-Carbon -**	**Exhaust –**

Comments:

Site-Wide Inspection Check List
Mako Building 3
48-50 Enter Lane, Islandia, NY
Islandia, New York
NYSDEC Site Number: 152-20-30

Compliances to be Addressed	Comments
Provide an evaluation of the condition and continued effectiveness of engineering controls (Air Sparge/ Soil Vapor Extraction System).	
Are all institutional controls, including Site usage in compliance?	
What are the general Site conditions?	
Are Site management activies being conducted including, confirmation sampling and a health and safety inspection?	
Are all Site records up to date?	
Does Site access remain available to maintain engineering controls?	
Are all permits and schedules included in the Operation and Maintenance Plan in Compliance?	

Inspector-
Date/Time-

APPENDIX G

Health & Safety Plan

HEALTH AND SAFETY PLAN
&
COMMUNITY AIR MONITORING PLAN

For

SITE MANAGEMENT PLAN

48-50 Enter Lane, Islandia, NY
NYSDEC SITE #152230

May 2017

Prepared for:

MAKO PROPERTIES LIMITED PARTNERSHIP
931B Conklin Street
Farmingdale, NY 11735-2429

Prepared by:

CA RICH CONSULTANTS, INC.
17 Dupont Street
Plainview, NY 11803-1614

HEALTH AND SAFETY PLAN
&
COMMUNITY AIR MONITORING PLAN

1.0 INTRODUCTION

This Health and Safety Plan (HASP) is developed for implementation of the Site Management Plan at 48-50 Enter Lane, Islandia, New York, NYSDEC Site #152230 (hereinafter referred to a 'Mako Building #3' or the 'Site'. The HASP is to be enforced by the Project Health and Safety Manager and on-site Health & Safety Coordinator (HSC). The on-site HSC will interface with the Project Manager and is vested with the authority to make field decisions including the termination of on-site activities if an imminent health and safety hazard, condition or related concern arises. Information and protocol in the HASP is applicable to all on-site personnel who will be entering the work zone.

2.0 POTENTIAL HAZARDS

2.1 Chemical Hazards

During the investigation activities, CA RICH Consultants, Inc. (CA RICH) will operate as if the contaminants of concern are 1,1,1-trichloroethane (TCA) and its degradation products.

TCA looks like water and has a mild sweet odor like the odor of chloroform or ether. TCA vapor is heavier than air, so it can collect in very high concentrations in pits, tanks, or other low spots. Acute exposure to significant concentrations of TCA can cause irritation of the skin, eyes and mucus membrane, headache, dizziness, nausea, and in high enough concentrations, loss of consciousness and death *(Sax, 1984)*. It is suspected to be carcinogenic with chronic exposure.

Physical properties and additional toxicological information is included in Appendix A.

2.2 Other Health and Safety Risks

The HASP addresses the environmentally-related chemical hazards identified on the Site. Normal physical hazards associated with using drilling equipment and hand tools as well as hazards associated with adverse climatic conditions (heat & cold) also exist and represent a certain degree of risk to be assumed by on-site personnel.

Certain provisions in this Plan, specifically the use of personnel protective equipment, may tend to increase the risk of physical injury, as well as susceptibility to cold or heat stress. This is primarily due to restrictions in dexterity, hearing, sight, and normal body heat transfer inherent in the use of protective gear.

3.0 RISK MANAGEMENT

3.1 Work / Exclusion Zones

For each proposed investigation activity dealing (eg. monitoring well installation, soil vapor sampling, etc.), a work / exclusion zone will be established surrounding the activity. Access to this area will be limited to properly trained, properly protected personnel directly involved with the on-site activities. Enforcement of the work / exclusion zone boundaries is the responsibility of the on-site Health and Safety Coordinator.

3.2 Personnel Protection

Health & Safety regulatory personnel have developed different levels of personnel protection to deal with differing degrees of potential risks of exposure to chemical constituents. The levels are designated as **A, B, C,** and **D** and ranked according to the amount of personnel protection afforded by each level. Level **A** is the highest level of protection and Level **D** is the lowest level of protection as described below.

A – Fully encapsulating suit, SCBA, hard hat, chemcial-resistant steel-toed boots, boot covers, inner and outer gloves.

B – One-piece, hooded chemical-resistant splash suit, SCBA, hard hat, chemcial-resistant steel-toed boots, boot covers, inner and outer gloves.

C – One-piece, hooded chemical-resistant splash suit, hard hat, canister equipped face mask, chemcial-resistant steel-toed boots, boot covers, inner and outer gloves.

D – Work clothes, hard hat (optional), work boots/shoes, gloves (as needed).

The different levels are primarily dependent upon the degree of respiratory protection necessary, in conjunction with appropriate protective clothing. Levels of protection mandate a degree of respiratory protection. However, flexibility exists within the lower levels (B, C, and D) concerning proper protective clothing.

The four levels of protection were developed for utilization in situations which involve suspected or known atmospheric and/or environmental hazards including airborne contamination and skin-affecting substances.

It is anticipated that all of the investigation work will be performed using Level D protection (no respiratory protection with protective clothing requirements limited to long sleeved shirts, long pants or coveralls, work gloves and steel-toe leather work boots).

Level D may be modified by the HSC to include protective clothing or equipment (Saran-coated disposable coveralls or PVC splash suits, safety glasses, hard hat with face shield, and chemically resistant boots) based upon physical hazards, skin contact concerns, and real-time monitoring.

Real-time air monitoring for total airborne organics using either a photo-ionization detector will determine if and when an upgrade from Level D to a higher level of respiratory protection is warranted. Decisions for an upgrade from Level D to higher levels of protection, mitigative actions, and/or suspension of work are the responsibility of the Project Manager and/or the designated on-site Health & Safety Coordinator.

3.3 Air Monitoring

The Health & Safety Coordinator or his properly trained assignee will conduct “Real Time” air monitoring for total organic vapor and total particulates. 'Real-time' monitoring refers to the utilization of instrumentation, which yields immediate measurements. The utilization of real time monitoring helps determine immediate or long-term risks to on-site personnel and the general public, the appropriate level of personnel respiratory protection necessary, and actions to mitigate the recognized hazard. Air monitoring will be conducted in accordance with NYSDOH's Community Air Monitoring Program.

3.3.1. Particulate Monitoring

a. Instrumentation

Dust particulates in air will be monitored using a light scattering technique MINIRAM Model PDM-3 Miniature Real-time Aerosol Monitor (MINIRAM) or equivalent. The MINIRAM is capable of measuring airborne dust particles within the range of 10 to 100,000 micrograms per cubic meter ($\mu g/m^3$).

b. Application

Dust monitoring will occur at regular intervals excavation work activities. Monitoring will be conducted in upgradient and downgradient locations, relative to prevailing wind direction) along the perimeter of the work zone. The HSC or his designee will perform monitoring. As outlined in the NYSDOH Community Air Monitoring Plan, if particluate levels in the downwind location are 150 mg/m^3 greater than those measured in the upwind location, dust suppression techniques shall be employed.

3.3.2 Organic Vapor

a. Instrumentation

Real-time monitoring for total organic vapor (TOV) utilizes either a photo-ionization detector (PID) or flame ionization detector (FID). The appropriate PID is an intrinsically safe HNU Systems Model PI-101 Photoionization detector (HNU) or MiniRae™ Photo-ionization detector or equivalent, which is factory, calibrated to benzene. The appropriate FID is a Foxboro model 128 Organic vapor Analyzer (OVA) or equivalent, which is factory calibrated to methane.

b. Application

Organic vapor monitoring is performed as outlined in the NYSDOH Community Air Monitoring Plan. Specifically, monitoring shall be conducted at the downwind perimeter of the work zone periodically during work activities. If TOV levels exceed 5 parts per million (ppm) above established pre-work background levels, work activities will be halted and monitoring will be continued under the provision of a Vapor Emission Response Plan (as outlined in the Community Air Monitoring Plan).

3.4 Worker Training

Personnel overseeing the excavation of the contaminated soil will be trained, fit-tested, and medically certified (OSHA 29 CFR 1910. 134). This includes the Health & Safety Coordinator or his/her properly trained assignee.

Prior to any work, all workers involved with the project should be aware of the potential chemical, physical and biological hazards discussed in this document, as well as the general safety practices outlined below. A safety briefing by the on-site HSC and/or assistant designee shall take place at the outset of work activities.

The HSC will be available to address project-related health & safety issues a site worker (such as an equipment operator or laborer) may have regarding the site conditions. Once an issue is brought to the HCS's attention, he or she will evaluate the issue and apply the procedures outlined in this Health & Safety Plan.

3.5 General Safety Practices

All project personnel shall follow the following safety practices:

1. Avoid unnecessary skin exposure to subsurface materials. Long-sleeved shirts tucked into long pants (or coveralls), work gloves, and steel-toe leather work boots are required unless modified gear is approved by the HSC. Remove any excess residual soil from clothes prior to leaving the site.

2. No eating, drinking, gum or tobacco chewing, or smoking allowed in designated work areas. Thoroughly wash hands prior to these activities outside the work area. Avoid sitting on the ground during breaks or while eating and drinking. Thoroughly wash all exposed body areas at the end of the workday.

3. Some symptoms of acute exposure include: nausea, dizziness, light-headedness, impaired coordination, headache, blurred vision, and nose/throat/eye irritation. If these symptoms are experienced or strong odor is detected, leave the work area and immediately report the incident to the on-site HSC.

3.6 Enforcement

Enforcement of the Site Safety Plan will be the responsibility of the HSC. The Coordinator should be on-site on a full-time basis and perform or directly oversee all aspects of Project Health & Safety operations including: air monitoring; environmental mitigation; personnel respiratory and skin protection; general safety practices; documentation; emergency procedures and protocol; and reporting and recordkeeping as described below.

3.7 Reporting and Recordkeeping

Incidents involving injury, symptoms of exposure, discovery of contained (potentially hazardous) materials, or unsafe work practices and/or conditions should be immediately reported to the HSC.

A log book must be maintained on-site to document all aspects of HASP enforcement. The log is paginated and dated with entries made on a daily basis in waterproof ink, initialed by the HSC or designee. Log entries should include date and time of instrument monitoring, instrument type, measurement method, test results, calibration and maintenance information, as well as appropriate mitigative actions responding to detections. Miscellaneous information to be logged may include weather conditions, reported complaints or symptoms, regulatory inspections, and reasons to upgrade personnel protection above the normal specification (Level D).

4.0 EMERGENCIES

4.1 EMERGENCY RESPONSE SERVICES

(1)	**HOSPITAL** Southside Hospital 301 East Main Street Bay Shore, NY 11706 (See Figure 1 for Map Route)	**(631) 968-3000**
(2)	**AMBULANCE**	**911**
(3)	**FIRE DEPARTMENT** **HAZARDOUS MATERIAL**	**911**
(4)	**POLICE DEPARTMENT**	**911**
(5)	**POISON CONTROL CENTER**	**(800) 222-1222**

The preceding list and associated attached map (Figure 1) illustrating the fastest route to the nearest hospital must be conspicuously posted in areas of worker congregation and adjacent to all on-site telephones (if any).

4.2 EMERGENCY PROCEDURES

4.2.1 Contact or Exposure to Suspected Hazardous Materials

In the event of a fire, chemical discharge, medical emergency, workers are instructed to immediately notify the HSC and proper emergency services (posted). Should physical contact with unknown or questionable materials occur, immediately wash the affected body areas with clean water and notify the HSC. Anyone experiencing symptoms of exposure should exit the work area, notify the HSC, and seek medical attention.

4.2.2 Personnel Decontamination, First Aid, and Fire Protection

The first step in the treatment of skin exposure to most chemicals is to rinse the affected area with water. For this reason, adequate amounts of potable water and soap are maintained on-site in a clearly designated and readily-accessible location. Portable emergency eyewash stations and a first aid kit must be made available and maintained in the same locations as the potable water. Fire extinguishers are also to be maintained on-site in designated locations. All on-site personnel are to be made aware of the locations of the above-mentioned on-site Health & Safety accommodations during the initial Health and Safety briefing.

4.2.3 Ingress/egress

Clear paths of ingress/egress to work zones and site entrances/exits must be maintained at all times. Unauthorized personnel are restricted from accessing the site.

5.0 COMMUNITY AIR MONITORING PLAN

Real-time air monitoring, for volatile compounds and particulate levels at the perimeter of the work area is necessary. This plan includes the following:

- Volatile organic compounds must be monitored at the downwind perimeter of the work area on a continuous basis. If total organic vapor levels exceed 5 ppm above background, work activities must be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings must be recorded and be available for State (DEC & DOH) personnel to review.

- Particulates should be continuously monitored upwind, downwind and within the work area at temporary particulate monitoring stations during excavation activities. If the downwind particulate level is 150 µg/m^3 greater than the upwind particulate level, then dust suppression techniques must be employed. All readings must be recorded and be available for State (DEC & DOH) personnel to review.

Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- The organic vapor level 200 ft. downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts to abate the emission source are unsuccessful and, if organic vapor levels are approaching 5 ppm above background for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect;

However, the Major Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels are greater than 10 ppm above background.

Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in the Health and Safety Plan of the Work Plan will go into effect.

2. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.

3. Frequent air monitoring will be conducted at 30 minutes intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

6.0 HEALTH AND SAFETY PLAN REFERENCES

1. American Conference Governmental Industrial Hygienists, 1989; Threshold Limit Values And Biological Exposure Indices, 111 Pp.

2. Geoenvironmental Consultants, Inc.; 1987; Safety & Operations At Hazardous Materials Sites

3. NIOSH Guide To Chemical Hazards, 1985, US Department Of Health And Human Services, Centers For Disease Control

4. US Department Of Labor Occupational Safety & Health Administration, 1989; Hazardous Waste Operations And Emergency Response Interim Final Rule, 29 CFR Part 1910

5. Sax, N. I. Dangerous Properties Of Industrial Materials; © 1984

7.0 KEY PERSONNEL

Responsibility	Name and Phone Number	Task Description
Project Manager	Mike Yager (516) 576-8844	Oversee and coordinate all technical aspects for the project
Site Safety Officer	Jessica Proscia (516) 576-8844	Coordinate and inspect all health and safety operations from the project site
Client Representative	Mark Seiden (631) 420-0070 and Jim Kogel (631) 420-0070	
Project Manager Alternate	Rich Izzo (516) 576-8844	
Site Safety Officer Alternate	Jason Cooper (516) 576-8844	

YOUR TRIP TO:

Southside Hospital

20 MIN | 8.6 MI

Est. fuel cost: $0.86

Trip time based on traffic conditions as of 8:44 AM on May 24, 2017. Current Traffic: Heavy

1. Start out going **south** on Enter Ln toward Bridge Rd.

Then 0.18 miles — 0.18 total miles

2. Turn **right** onto Bridge Rd.

Then 0.25 miles — 0.43 total miles

3. Turn **left** onto Motor Pkwy/County Hwy-67.

Then 1.26 miles — 1.69 total miles

4. Turn **left** onto Joshuas Path/NY-111. Continue to follow NY-111.

NY-111 is just past Yalta Dr.

If you reach Highland Rd you've gone a little too far.

Then 4.79 miles — 6.49 total miles

5. Turn **right** onto Union Blvd/County Hwy-50.

Union Blvd is 0.1 miles past Moffitt Blvd.

If you reach Rose St you've gone a little too far.

Then 1.49 miles — 7.98 total miles

6. Turn **left** onto Brentwood Rd.

If you reach Oakland Ave you've gone a little too far.

Then 0.18 miles — 8.16 total miles

7. Turn **right** onto E Main St/NY-27A.

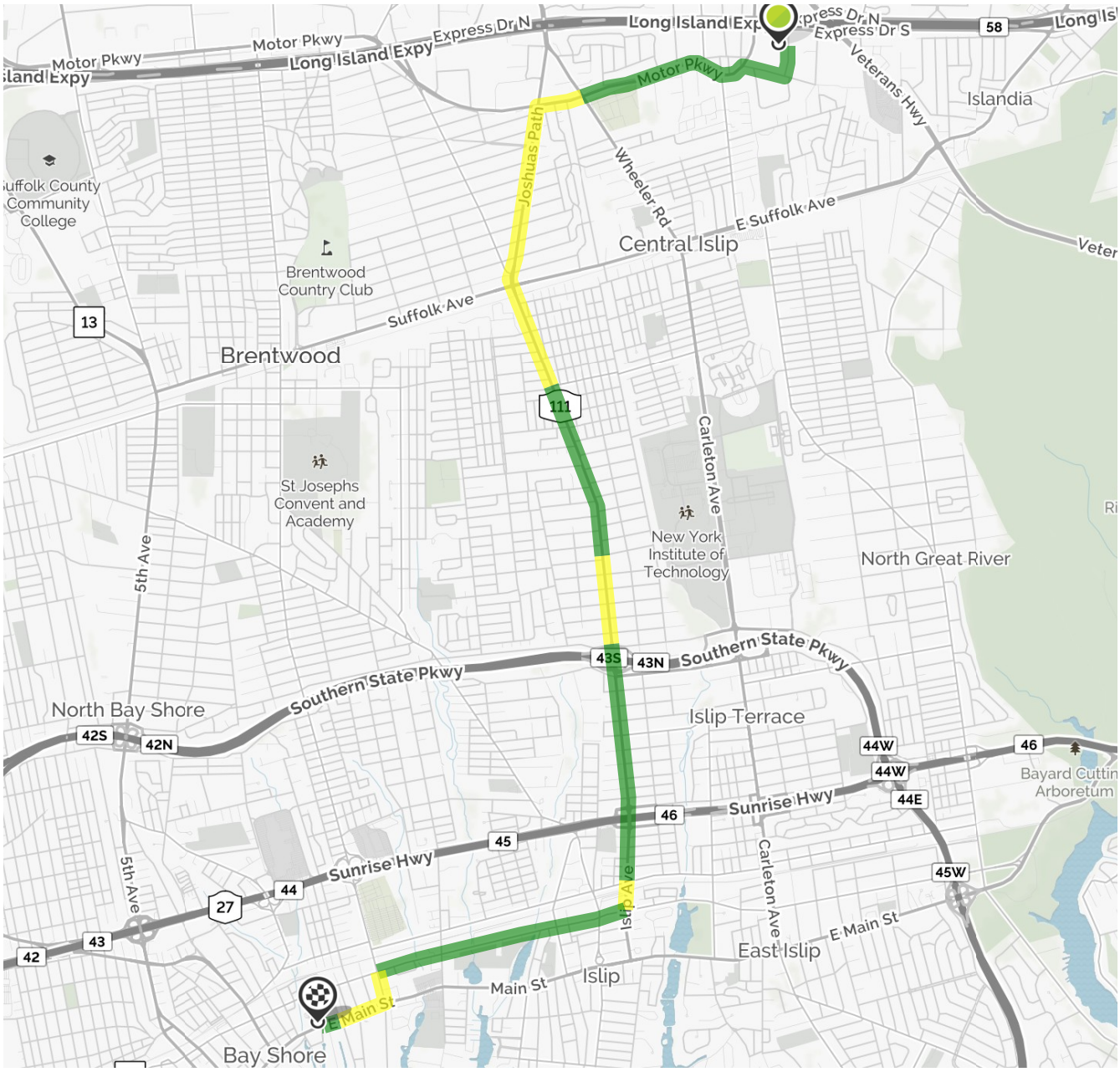
If you are on Awixa Ave and reach Doral Ln you've gone a little too far.

Then 0.39 miles — 8.55 total miles

8. Southside Hospital, 301 East Main Street, Bay Shore, NY, 301 EAST MAIN STREET.

Your destination is just past Mowbray Ave.

If you reach Mowbray Pl you've gone a little too far.



APPENDIX A

Physical Properties and Toxicological Information

MSDS Number: **T4914** * * * * * *Effective Date: 05/26/09* * * * * *Supercedes: 07/06/06*

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance

1,1,1-TRICHLOROETHANE

1. Product Identification

Synonyms: Methyl chloroform; trichloroethane; chloroetene
CAS No.: 71-55-6
Molecular Weight: 133.40
Chemical Formula: CH3CCl3
Product Codes: 9435, 9437, W509, W510

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Methyl Chloroform	71-55-6	96 - 100%	Yes
Dioxane	123-91-1	< 3%	Yes
1,2-Epoxybutane	106-88-7	< 0.5%	Yes
Actual concentrations proprietary			

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER, KIDNEYS, AND CARDIOVASCULAR SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. POSSIBLE CANCER HAZARD. CONTAINS DIOXANE WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Cancer Causing)
Flammability Rating: 1 - Slight
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES
Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation:
Inhalation of vapors will irritate the respiratory tract. Affects the central nervous system. Symptoms include headache, dizziness, weakness, nausea. Higher levels of exposure (> 5000 ppm) can cause irregular heart beat, kidney and liver damage, fall in blood pressure, unconsciousness and even death.
Ingestion:
Harmful if swallowed. Symptoms similar to inhalation will occur along with nausea, vomiting. Aspiration of material into the lungs can cause chemical pneumonitis which can be fatal. If aspirated, may be rapidly absorbed through the lungs and result in injury to other body systems.
Skin Contact:
Causes mild irritation and redness, especially on prolonged contact. Repeated contact may cause drying or flaking of the skin.
Eye Contact:
Liquids and vapors cause irritation. Symptoms include tearing, redness, stinging, swelling.
Chronic Exposure:
Prolonged or repeated skin contact may cause dermatitis. Chronic exposure may affect the kidneys and liver. Dioxane is a suspected human carcinogen based on animal data.
Aggravation of Pre-existing Conditions:
Personnel with CNS, kidney, liver or heart disease may be more susceptible to the effects of this substance. Use of alcoholic beverages may aggravate symptoms.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact:
In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
Autoignition temperature: 500C (932F)
Flammable limits in air % by volume:
lel: 7.0; uel: 16.0
Vapors in containers can explode if subjected to high energy source.
Dioxane has a flash point below 16C (60F).
Explosion:
Can react with strong caustic, such as potash to form a flammable or explosive material. Air/vapor mixtures may explode when heated. Vapors can flow along surfaces to distant ignition source and flash back. Sealed containers may rupture when heated.
Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Combustion by-products include phosgene and hydrogen chloride gases. Structural firefighters' clothing provides only limited protection to the combustion products of this material.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! Do not use aluminum, magnesium or zinc metal for storage container. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do not use aluminum equipment or storage containers. Contact with aluminum parts in a pressurized fluid system may cause violent reactions.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit (PEL):
350 ppm (TWA) for trichloroethane
100 ppm (TWA) skin for dioxane
-ACGIH Threshold Limit Value (TLV):
350 ppm (TWA), 450 ppm (STEL) for trichloroethane
20 ppm (TWA) skin, A3 - Animal Carcinogen for dioxane
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). This substance has questionable warning properties. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.
Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Viton is a recommended material for personal protective equipment.
Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear, colorless liquid.
Odor:
Mild chloroform-like odor.
Solubility:
4,400 ppm in water @ 20C (68F)
Specific Gravity:
1.34 @ 20C/4C
pH:
No information found.
% Volatiles by volume @ 21C (70F):
100
Boiling Point:
74C (165F)
Melting Point:
-32C (-26F)
Vapor Density (Air=1):
4.63
Vapor Pressure (mm Hg):
100 @ 20C (68F)
Evaporation Rate (BuAc=1):
12.8

10. Stability and Reactivity

Stability:
Requires inhibitor content to prevent corrosion of metals. Slowly hydrolyzes in water to form hydrochloric and acetic acid.
Hazardous Decomposition Products:
May produce carbon monoxide, carbon dioxide, hydrogen chloride and phosgene when heated to decomposition. Carbon dioxide and carbon monoxide may form when heated to decomposition.
Hazardous Polymerization:
Hazardous polymerization can occur in contact with aluminum trichloride.
Incompatibilities:
Open flames, welding arcs, nitrogen tetroxide, oxygen, liquid oxygen, sodium, sodium hydroxide, and sodium-potassium alloy, strong alkalis, oxidizers, aluminum and other reactive metals.
Conditions to Avoid:
Insufficient inhibitor, incompatibles, heat, flame and ignition sources

11. Toxicological Information

Oral rat LD50: 9600 mg/kg; inhalation rat LC50: 18000 ppm/4H; investigated as a mutagen, tumorigen, reproductive effector; irritation eye rabbit, Standard Draize, 2mg/24H severe.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Methyl Chloroform (71-55-6)	No	No	3
Dioxane (123-91-1)	No	Yes	2B
1,2-Epoxybutane (106-88-7)	No	No	2B

12. Ecological Information

Environmental Fate:
When released into the soil, this material is not expected to biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released to water, this material is expected to quickly evaporate. This material is not expected to significantly bioaccumulate. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition. When released to the atmosphere, this material has an average global half-life of 6.0 - 6.9 years. When released into the air, this material may adversely affect the ozone layer.
Environmental Toxicity:
This material is expected to be slightly toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: 1,1,1-TRICHLOROETHANE
Hazard Class: 6.1
UN/NA: UN2831
Packing Group: III
Information reported for product/size: 20L

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Methyl Chloroform (71-55-6)	Yes	Yes	Yes	Yes
Dioxane (123-91-1)	Yes	Yes	Yes	Yes
1,2-Epoxybutane (106-88-7)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\--------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Methyl Chloroform (71-55-6)	Yes	Yes	No	Yes
Dioxane (123-91-1)	Yes	Yes	No	Yes
1,2-Epoxybutane (106-88-7)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\--------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Methyl Chloroform (71-55-6)	No	No	Yes	No
Dioxane (123-91-1)	No	No	Yes	No
1,2-Epoxybutane (106-88-7)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\--------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Methyl Chloroform (71-55-6)	1000	U226	No
Dioxane (123-91-1)	100	U108	No
1,2-Epoxybutane (106-88-7)	100	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Mixture / Liquid)

WARNING:
THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: 2[Z]
Poison Schedule: S6
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 2 Flammability: 1 Reactivity: 0
Label Hazard Warning:
WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER, KIDNEYS, AND CARDIOVASCULAR SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. POSSIBLE CANCER HAZARD. CONTAINS DIOXANE WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

Label Precautions:
Avoid breathing vapor.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Avoid contact with eyes, skin and clothing.
Label First Aid:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.
Product Use:
Laboratory Reagent.
Revision Information:
MSDS Section(s) changed since last revision of document include: 3.
Disclaimer:
****
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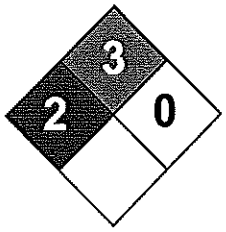
Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

ScienceLab.com
Chemicals & Laboratory Equipment



Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
1,1-Dichloroethane MSDS

Section 1: Chemical Product and Company Identification

Product Name: 1,1-Dichloroethane

Catalog Codes: SLD3280

CAS#: 75-34-3

RTECS: KI0175000

TSCA: TSCA 8(b) inventory: 1,1-Dichloroethane

CI#: Not available.

Synonym:

Chemical Name: 1,1-Dichloroethane

Chemical Formula: C2-H4-Cl2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
{1,1-}Dichloroethane	75-34-3	100

Toxicological Data on Ingredients: 1,1-Dichloroethane: ORAL (LD50): Acute: 725 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified 2 (Reasonably anticipated.) by NTP. A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Development toxin [POSSIBLE]. The substance is toxic to kidneys, lungs, liver, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact: Check for and remove any contact lenses. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 458°C (856.4°F)

Flash Points: CLOSED CUP: -17°C (1.4°F). OPEN CUP: -6°C (21.2°F).

Flammable Limits: LOWER: 5.6% UPPER: 11.4%

Products of Combustion: These products are carbon oxides (CO, CO2), halogenated compounds.

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/spray. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes Keep away from incompatibles such as oxidizing agents, alkalis.

Storage:
Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. A refrigerated room would be preferable for materials with a flash point lower than 37.8°C (100°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 STEL: 250 (ppm) from ACGIH (TLV) [1999] TWA: 100 (ppm) from OSHA (PEL) Australia: TWA: 200 (ppm) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Oily liquid.)

Odor: Chloroform like odor (Slight.)

Taste: Not available.

Molecular Weight: 98.96 g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 57.3°C (135.1°F)

Melting Point: -96.9°C (-142.4°F)

Critical Temperature: 261.5°C (502.7°F)

Specific Gravity: 1.175 (Water = 1)

Vapor Pressure: 180 mm of Hg (@ 20°C)

Vapor Density: 3.44 (Air = 1)

Volatility: Not available.

Odor Threshold: 120 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties:
Partially dispersed in diethyl ether. See solubility in water, diethyl ether.

Solubility: Partially soluble in diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents, alkalis.

Corrosivity: Corrosive in presence of aluminum.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Will attack some forms of plastic and rubber

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 725 mg/kg [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 2 (Reasonably anticipated.) by NTP. A4 (Not classifiable for human or animal.) by ACGIH. DEVELOPMENTAL TOXICITY: Classified Development toxin [POSSIBLE]. The substance is toxic to kidneys, lungs, liver, central nervous system (CNS).

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification:
CLASS 3: Combustible liquid with a flash point greater than 37.8C (100F). Marine pollutant

Identification: : 1,1-Dichloroethane : UN2362 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65 (no significant risk level): 1,1-Dichloroethane California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: 1,1-Dichloroethane Rhode Island RTK hazardous substances: 1,1-Dichloroethane Pennsylvania RTK: 1,1-Dichloroethane Florida: 1,1-Dichloroethane Minnesota: 1,1-Dichloroethane Massachusetts RTK: 1,1-Dichloroethane New Jersey: 1,1-Dichloroethane New Jersey spill list: 1,1-Dichloroethane TSCA 8(b) inventory: 1,1-Dichloroethane TSCA 8(a) PAIR: 1,1-Dichloroethane TSCA 8(d) H and S data reporting: 1,1-Dichloroethane: June 1999 TSCA 12(b) one time export: 1,1-Dichloroethane SARA 313 toxic chemical notification and release reporting: 1,1-Dichloroethane: 1% CERCLA: Hazardous substances.: 1,1-Dichloroethane: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R11- Highly flammable. R22- Harmful if swallowed. R37/38- Irritating to respiratory system and skin. R41- Risk of serious damage to eyes. R52- Harmful to aquatic organisms.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/09/2005 05:07 PM

Last Updated: 11/06/2008 12:00 PM

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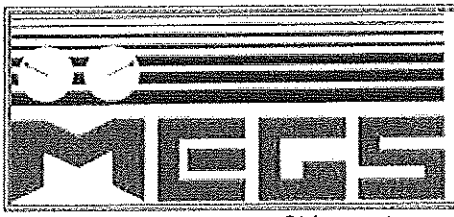

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Quebec	Quebec	Tel : 418-834-7447	Fax : 418-834-3774

1,1,-DICHLORETHYLENE- MATERIAL SAFETY DATA SHEET

TABLE OF CONTENTS:

24 Hour EMERGENCY CONTACT

U.S- CHEMTREC 1-800-424-9300

CANADA- CANUTEC 613-996-6666

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Up to Table of Contents

Matheson Tri-Gas, Inc.

The telephone numbers listed below are emergency numbers, please contact your local branch for routine inquiries.

USA	CANADA
959 Route 46 East	530 Watson Street
Parsippany, New Jersey	Whitby, Ontario
07054-0624 USA	L1N 5R9 Canada
Phone: 973-257-1100	**Phone:** 905-668-3570

SUBSTANCE: 1,1-DICHLOROETHYLENE

SYMBOL: $C_2H_2Cl_2$

TRADE NAMES/SYNONYMS:
1,1-DICHLOROETHENE; 1,1-DICHLOROETHYLENE; VDC; VINYLIDENE CHLORIDE MONOMER; VINYLIDENE DICHLORIDE; VINYLIDENE CHLORIDE, INHIBITED; RCRA U078; UN 1303; C2H2CL2; MAT25070; RTECS KV9275000

CHEMICAL FAMILY: halogens

CREATION DATE: Jan 24 1989
REVISION DATE: Mar 16 1999

2. COMPOSITION, INFORMATION ON INGREDIENTS

Up to Table of Contents

COMPONENT: 1,1-DICHLOROETHYLENE

CAS NUMBER: 75-35-4

EC NUMBER (EINECS): 200-864-0

PERCENTAGE: >99.9

COMPONENT: 4-METHOXYPHENOL

CAS NUMBER: 150-76-5

EC NUMBER (EINECS): 205-769-8

PERCENTAGE: 0.02000

3. HAZARDS IDENTIFICATION

Up to Table of Contents

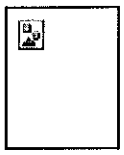
NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=4 REACTIVITY=2

WHMIS CLASSIFICATION: BD2

EC CLASSIFICATION (ASSIGNED):
F+ Extremely Flammable
Xn Harmful

R 12-20-40

EC Classification may be inconsistent with independently-researched data.

EMERGENCY OVERVIEW:
Color: colorless

Physical Form: volatile liquid

Odor: faint odor, sweet odor

Major Health Hazards: harmful if swallowed, respiratory tract irritation, skin irritation, eye irritation, central nervous system depression

Physical Hazards: Flammable liquid and vapor. Vapor may cause flash fire. May polymerize. Containers may rupture or explode. May form peroxides during prolonged storage.

POTENTIAL HEALTH EFFECTS:

INHALATION:
Short Term Exposure: irritation, symptoms of drunkenness, lung congestion, liver damage, convulsions
Long Term Exposure: kidney damage, tumors

SKIN CONTACT:
Short Term Exposure: irritation (possibly severe)
Long Term Exposure: same as effects reported in short term exposure

EYE CONTACT:
Short Term Exposure: irritation (possibly severe), eye damage
Long Term Exposure:same as effects reported in short term exposure

INGESTION:
Short Term Exposure: same as effects reported in short term exposure
Long Term Exposure: same as effects reported in short term exposure

CARCINOGEN STATUS:
OSHA: N
NTP: N
IARC: N

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4. FIRST AID MEASURES

Up to Table of Contents

INHALATION:
Remove from exposure immediately. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention.

SKIN CONTACT:
Remove contaminated clothing, jewelry, and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention, if needed.

EYE CONTACT:
Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.

INGESTION:
If vomiting occurs, keep head lower than hips to help prevent aspiration. Get medical attention, if needed.

5. FIRE FIGHTING MEASURES

Up to Table of Contents

FIRE AND EXPLOSION HAZARDS:
Severe fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive above flash point. Containers may rupture or explode if exposed to heat.

EXTINGUISHING MEDIA:
alcohol resistant foam, carbon dioxide, regular dry chemical, water

Large fires: Use alcohol-resistant foam or flood with fine water spray.

FIRE FIGHTING:
Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Water may be ineffective.

FLASH POINT:
14 F (-10 C)

LOWER FLAMMABLE LIMIT:
5.6%

UPPER FLAMMABLE LIMIT:
11.4%

AUTOIGNITION:
855 F (457 C)

FLAMMABILITY CLASS (OSHA):
IA

6. ACCIDENTAL RELEASE MEASURES

Up to Table of Contents

AIR RELEASE:
Reduce vapors with water spray. Stay upwind and keep out of low areas.

SOIL RELEASE:
Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material.

WATER RELEASE:
Collect with absorbent into suitable container. Collect spilled material using mechanical equipment.

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Remove sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Reportable Quantity (RQ): Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

Up to Table of Contents

Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Store in a cool, dry place. Store in a well-ventilated area. Keep in the dark. Keep separated from incompatible substances. Store outside or in a detached building. Store with flammable liquids. Store in a tightly closed container. Containers must have overpressure release device. Avoid heat, flames, sparks and other sources of ignition. Keep separated from incompatible substances. Monitor inhibitor content. Avoid exposure to low temperatures or freezing. May form explosive peroxides. Store in a tightly closed container. Avoid contact with light. Store in a cool, dry place. Monitor inhibitor content. Do not evaporate or distill to dryness. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Up to Table of Contents

EXPOSURE LIMITS:
1,1-DICHLOROETHYLENE:
1 ppm (4 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
5 ppm (20 mg/m3) ACGIH TWA
20 ppm (80 mg/m3) ACGIH STEL

VENTILATION: Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from

NIOSH and/or OSHA.
At any detectable concentration -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Escape -
Any air-purifying respirator with a full facepiece and an organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.
For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Any self-contained breathing apparatus with a full facepiece.

9. PHYSICAL AND CHEMICAL PROPERTIES

Up to Table of Contents

PHYSICAL STATE: liquid

COLOR: colorless

PHYSICAL FORM: volatile liquid

ODOR: faint odor, sweet odor

MOLECULAR WEIGHT: 96.64

MOLECULAR FORMULA: C2-H2-CL2

BOILING POINT: 86-90 F (30-32 C)

FREEZING POINT: -188 F (-122 C)

VAPOR PRESSURE: 400 mmHg @ 14.8 C

VAPOR DENSITY (air=1): 3.4

SPECIFIC GRAVITY (water=1): 1.213

WATER SOLUBILITY: 0.04% @ 20 C

PH: Not available

VOLATILITY: Not available

ODOR THRESHOLD: 500 ppm

EVAPORATION RATE: Not available

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

SOLVENT SOLUBILITY:
Soluble: organic solvents

10. STABILITY AND REACTIVITY

Up to Table of Contents

REACTIVITY:
May form explosive peroxides. Avoid contact with temperatures above -40 C. Avoid contact with heat, air, light or moisture and monitor inhibitor content. May polymerize. Closed containers may rupture violently.

CONDITIONS TO AVOID:
Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES:
metals, acids, oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: phosgene, halogenated compounds, oxides of carbon

POLYMERIZATION:
May polymerize. Avoid contact with heat or light and monitor inhibitor content.

11. TOXICOLOGICAL INFORMATION

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VINYLIDENE CHLORIDE:

TOXICITY DATA:
6350 ppm/4 hour(s) inhalation-rat LC50; 200 mg/kg oral-rat LD50

CARCINOGEN STATUS:
IARC: Human Inadequate Evidence, Animal Limited Evidence, Group 3; ACGIH: A3 -Animal Carcinogen

LOCAL EFFECTS:
Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:
Toxic: ingestion
Slightly Toxic: inhalation

TARGET ORGANS:
central nervous system, liver

TUMORIGENIC DATA:
Available.

MUTAGENIC DATA:
Available.

REPRODUCTIVE EFFECTS DATA:
Available.

12. ECOLOGICAL INFORMATION

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ECOTOXICITY DATA:

FISH TOXICITY:
74000 ug/L 96 hour(s) LC50 (Mortality) Bluegill (Lepomis macrochirus)

INVERTEBRATE TOXICITY:
224000 ug/L 96 hour(s) LC50 (Mortality) Opossum shrimp (Mysidopsis bahia)

ALGAL TOXICITY:
>712000 ug/L 96 hour(s) EC50 (Photosynthesis) Diatom (Skeletonema costatum)

ENVIRONMENTAL SUMMARY:
Moderately toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Up to Table of Contents

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U078. Hazardous Waste Number(s): D029. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 0.7 mg/L. Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

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U.S. DOT 49 CFR 172.101. SHIPPING NAME-UN NUMBER; HAZARD CLASS; PACKING GROUP; LABEL:
Vinylidene chloride, inhibited-UN1303; 3; I; Flammable liquid

15. REGULATORY INFORMATION

Up to Table of Contents

U.S. REGULATIONS:
TSCA INVENTORY STATUS: Y

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CERCLA SECTION 103 (40CFR302.4): Y
1,1-Dichloroethylene: 100 LBS RQ

SARA SECTION 302 (40CFR355.30): N

SARA SECTION 304 (40CFR355.40): N

SARA SECTION 313 (40CFR372.65): Y
1,1-Dichloroethylene

SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):
ACUTE: Y
CHRONIC: Y
FIRE: Y
REACTIVE: Y
SUDDEN RELEASE: Y

OSHA PROCESS SAFETY (29CFR1910.119): N

STATE REGULATIONS:
California Proposition 65: N

EUROPEAN REGULATIONS:

EC NUMBER (EINECS): 200-864-0

EC RISK AND SAFETY PHRASES:

R 12	Extremely flammable.
R 20	Harmful by inhalation.
R 40	Possible risks of irreversible effects.
S 2	Keep out of reach of children.
S 7	Keep container tightly closed.
S 16	Keep away from sources of ignition - No smoking.
S 29	Do not empty into drains.

CONCENTRATION LIMITS:
C>=12.5% Xn R 20-40
1%<=C<12.5% Xn R 40

16. OTHER INFORMATION

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Matheson Tri-Gas makes no express or implied warranties, guarantees or representations regarding the product or the information herein, including but not limited to any implied warranty of merchantability or fitness for use. Matheson Tri-Gas shall not be liable for any personal injury, property or other damages of any nature, whether compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.

Linde Gas

Linde Gas LLC (216) 642-6600
P.O. Box 94737
Cleveland, Ohio 44101
www.us.lindegas.com

MATERIAL
SAFETY
DATA SHEET

No. 155

PRODUCT NAME Vinyl Chloride		CAS #	75-01-4
TRADE NAME AND SYNONYMS Vinyl chloride, inhibited (D.O.T.)		DOT I.D. No.:	UN 1086; RQ 1.0 (0.454)
CHEMICAL NAME AND SYNONYMS Vinyl Chloride, Chloroethylene; Chloroethene		DOT Hazard Class:	Division 2.1
ISSUE DATES AND REVISIONS Revised january 1995		Formula	C_2H_3Cl or CH_2CHC
		Chemical Family:	Halogenated Alkene

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT
TWA = 5 molar ppm with an A1 Carcinogen Rating (ACGIH 1994-1995). Al is a confirmed human carcinogen. OSHA 1993. 1910.1017, 8 Hr. TWA = 1 Molar PPM (Continued on Page 4)

SYMPTOMS OF EXPOSURE
Inhaling high concentrations causes mild symptoms of drowsiness, blurred vision, staggering gate and tingling and numbness in the extremities.

Liquid vinyl chloride may cause severe irritation or burns on skin or eye contact.

TOXICOLOGICAL PROPERTIES
Several workers who handled and used vinyl chloride developed a rare form of liver cancer.

IARC, NTP and OSHA all list vinyl chloride as a carcinogen.

Persons in ill health where such illness would be aggravated by exposure to vinyl chloride should not be allowed to work with or handle this product.

RECOMMENDED FIRST AID TREATMENT
PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO VINYL CHLORIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted respiration and supplemental oxygen. Further treatment should be symptomatic and supportive.

(Continued an Page 4)

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Vinyl chloride polymerizes on exposure to sunlight, heat or in the presence of oxygen or air. The addition of phenol or hydroquinone inhibits the polymerization. It is flammable in air.

PHYSICAL DATA

BOILING POINT 7.3°F (-13.7°C)	LIQUID DENSITY AT BOILING POINT 60.6 lb/ft³ (971 kg/m³)
VAPOR PRESSURE @ 70°F (21.1°C) = 52 psia (360 kPa)	GAS DENSITY AT 70°F, 1 atm @ 77°F (25°C) = .164 lb/ft³ (2.63 kg/m³)
SOLUBILITY IN WATER Slightly Soluble	FREEZING POINT -244.8°F (-153.8°C)
EVAPORATION RATE N/A (Gas)	SPECIFIC GRAVITY (AIR=1) @ 77°F (25°C) = 2.22
APPEARANCE AND ODOR Colorless gas with a pleasant, sweet odor	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) -108°F (CC)	AUTO IGNITION TEMPERATURE 882°F (472°C)	FLAMMABLE LIMITS % BY VOLUME (See Page 4) LEL 3.6 UEL 33
EXTINGUISHING MEDIA Water, dry chemical, carbon dioxide		ELECTRICAL CLASSIFICATION Class 1, Group Not Specified

SPECIAL FIRE FIGHTING PROCEDURES
Attempt to stop the flow of vinyl chloride. Use water spray to cool surrounding containers.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Vinyl chloride vapors are heavier than air and may travel a considerable distance to a source of ignition. Should fire be extinguished and flow of gas continue, increase ventilation to prevent formation of flammable mixtures in low areas or pockets.

REACTIVITY DATA

STABILITY Unstable		CONDITIONS TO AVOID None
Stable	X	

INCOMPATIBILITY (Materials to avoid) Oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS None

HAZARDOUS POLYMERIZATION May Occur	X	CONDITIONS TO AVOID It is inhibited with phenol or hydroquinone to prevent polymerization.
Will Not Occur		

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact your closest supplier location or call the emergency telephone number listed herein.

WASTE DISPOSAL METHOD
Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to your supplier. For emergency disposal assistance, contact your closest supplier location or call the emergency telephone number listed herein.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)	Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.	
VENTILATION	LOCAL EXHAUST	SPECIAL
Hood with forced ventilation	To prevent accumulation above the TWA	N/A
	MECHANICAL (Gen.)	OTHER
	In accordance with electrical codes	N/A
PROTECTIVE GLOVES	Most materials except natural rubber	
EYE PROTECTION	Safety goggles or glasses	
OTHER PROTECTIVE EQUIPMENT	Safety shoes, safety shower, eyewash "fountain," transparent face shield	

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION

DOT Shipping Name: Vinyl chloride, inhibited
DOT Shipping Label: Flammable Gas
I.D. No.: UN 1086; RQ 1.0(0.454)
DOT Hazard Class: Division 2.1

SPECIAL HANDLING RECOMMENDATIONS

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connectinn cylinder to lower pressure (<150 psiq) pipinq or systems. Do not heat cylinder by any means to increase tne discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handling recommendations, consult Compressed Gas Association's Pamphlets I P-1 and P-10.

SPECIAL STORAGE RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked areas and emergency exits.

Do not allow the temperature where cylinders are stored to exceed 125F (52C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders beins stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

For additional storage recommendations, consult Compressed Gas Association's Pamphlet P-1 and P-10.

SPECIAL PACKAGING RECOMMENDATIONS

Most metals except copper and its alloys may be used with vinyl chloride. Copper and its alloys could form explosive acetylides by reacting with the acetylene impurity in the product.

Teflon® is the preferred gasketing material.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Earth-ground and bond all lines and equipment associated with the vinyl chloride system. Electrical equipment should be non-sparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of federal Law (49CFR).

(Continued on Page 4)

*Various Government Agencies (i.e. Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.

HEALTH HAZARD DATA

TWA DATA: (continued)

(<5 Molar PPM averaged over any period not exceeding 15 minutes) with the prohibition of any personal direct contact with vinyl chloride liquid and it is classified as a cancer suspect agent.

RECOMMENDED FIRST AID TREATMENT: (Continued)

Eye Contact: PERSONS WITH POTENTIAL EXPOSURE TO VINYL CHLORIDE SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids with fingers to assure complete flushing. Continue for minium of 15 minutes. An eye specialict should be summoned promptly.

Skin Contact: Flush affected areas with copious quantities of water. Remove affected clothing as rapidly as possible. A physician should see the patient. Follow the water flush with a soap and water wash.

SPECIAL PRECAUTIONS

OTHER RECOMMENDATIONS OR PRECAUTIONS: (Continued)

Always secure cylinders in an upright position before transporting them. Never transport cylinders in trunks OT vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cyclinders secured in open flatbed or in open pick-up type vehicles.

Vinyl chloride is a toxic chemical and it is subject to the reporting requirements of SARA, Title III, Section 313.

Material Safety Data Sheet

Ethyl Chloride

Airgas

Section 1. Chemical product and company identification

Product name	: Ethyl Chloride
Supplier	: AIRGAS INC., on behalf of its subsidiaries 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
Product use	: Synthetic/Analytical chemistry.
Synonym	: Ethane, chloro-; Aethylis; Aethylis chloridum; Anodynon; Chelen; Chlorene; Chlorethyl; Chloridum; Chloroethane; Chloryl; Chloryl anesthetic; Cloretilo; Dublofix; Ether chloratus; Ether hydrochloric; Ether muriatic; Hydrochloric ether; Kelene; Monochlorethane; Monochloroethane; Muriatic ether; Narcotile; C2H5Cl; Aethylchlorid; Chloorethaan; Chloroaethan; Chlorure D'ethyle; Cloroetano; Cloruro di etile; Etylu chlorek; NCI-C06224; UN 1037; Aethylisaethylis chloridum; Chloryle anesthetic; 1-Chloroethane
MSDS #	: 001023
Date of Preparation/Revision	: **4/26/2010.**
In case of emergency	: 1-866-734-3438

Section 2. Hazards identification

Physical state	: Gas. [COLORLESS LIQUID OR GAS WITH A PUNGENT, ETHER-LIKE ODOR]
Emergency overview	: WARNING! FLAMMABLE GAS. MAY CAUSE FLASH FIRE. MAY CAUSE EYE AND SKIN IRRITATION. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CONTENTS UNDER PRESSURE. Keep away from heat, sparks and flame. Do not puncture or incinerate container. Avoid contact with eyes, skin and clothing. May cause target organ damage, based on animal data. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed. Contact with rapidly expanding gases can cause frostbite.
Target organs	: May cause damage to the following organs: kidneys, liver, mucous membranes, cardiovascular system, upper respiratory tract, skin, eyes, central nervous system (CNS).
Routes of entry	: Inhalation Dermal Eyes
Potential acute health effects	
Eyes	: Moderately irritating to eyes. Contact with rapidly expanding gas may cause burns or frostbite.
Skin	: Moderately irritating to the skin. Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation	: Acts as a simple asphyxiant.
Ingestion	: Ingestion is not a normal route of exposure for gases
Potential chronic health effects	: **CARCINOGENIC EFFECTS**: Classified + (Proven.) by NIOSH. Classified A3 (Proven for animals.) by ACGIH, 3 (Possible for humans.) by European Union. 3 (Not classifiable for humans.) by IARC. **MUTAGENIC EFFECTS**: Not available. **TERATOGENIC EFFECTS**: Not available.
Medical conditions aggravated by over-exposure	: Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

Section 3. Composition, Information on Ingredients

Name	CAS number	% Volume	Exposure limits
Ethyl Chloride	75-00-3	100	**ACGIH TLV (United States, 1/2009).** **Absorbed through skin.** TWA: 264 mg/m³ 8 hour(s). TWA: 100 ppm 8 hour(s). **OSHA PEL (United States, 11/2006).** TWA: 2600 mg/m³ 8 hour(s). TWA: 1000 ppm 8 hour(s). **OSHA PEL 1989 (United States, 3/1989).** TWA: 2600 mg/m³ 8 hour(s). TWA: 1000 ppm 8 hour(s).

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : As this product is a gas, refer to the inhalation section.

Section 5. Fire-fighting measures

Flammability of the product : Flammable.

Auto-ignition temperature : 518.75°C (965.8°F)

Flash point : Closed cup: -50.15°C (-58.3°F).

Flammable limits : Lower: 3.8% Upper: 15.4%

Products of combustion : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
halogenated compounds
carbonyl halides

Fire hazards in the presence of various substances : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and oxidizing materials.

Fire-fighting media and instructions : In case of fire, use water spray (fog), foam or dry chemical.

In case of fire, allow gas to burn if flow cannot be shut off immediately. Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Section 7. Handling and storage

Handling : Use only with adequate ventilation. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Keep container closed. Avoid contact with skin and clothing. Avoid contact with eyes. Keep away from heat, sparks and flame. To avoid fire, eliminate ignition sources. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Storage : Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Segregate from oxidizing materials. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Full chemical-resistant suit and self-contained breathing apparatus should be worn only by trained and authorized persons.

Product name

chloroethane

ACGIH TLV (United States, 1/2009). Absorbed through skin.
TWA: 264 mg/m³ 8 hour(s).
TWA: 100 ppm 8 hour(s).
OSHA PEL (United States, 11/2006).
TWA: 2600 mg/m³ 8 hour(s).
TWA: 1000 ppm 8 hour(s).
OSHA PEL 1989 (United States, 3/1989).
TWA: 2600 mg/m³ 8 hour(s).
TWA: 1000 ppm 8 hour(s).

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight	: 64.52 g/mole
Molecular formula	: C2-H5-Cl
Boiling/condensation point	: 12.2°C (54°F)
Melting/freezing point	: -138.9°C (-218°F)
Critical temperature	: 187.3°C (369.1°F)
Vapor density	: 2.2 (Air = 1)
Specific Volume (ft^3/lb)	: 6.0241
Gas Density (lb/ft^3)	: 0.166

Section 10. Stability and reactivity

Stability and reactivity	: The product is stable.
Incompatibility with various substances	: Extremely reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Toxicity data

Product/ingredient name	Result	Species	Dose	Exposure
chloroethane	TDLo Oral	Rat	250 mg/kg	-
	LC50 Inhalation Vapor	Rat	152 g/m3	10 minutes
	LC50 Inhalation Vapor	Rat	152 g/m3	2 hours
	LC50 Inhalation Vapor	Rat	150000 mg/m3	2 hours

IDLH : 3800 ppm

Chronic effects on humans : **CARCINOGENIC EFFECTS**: Classified + (Proven.) by NIOSH. Classified A3 (Proven for animals.) by ACGIH, 3 (Possible for humans.) by European Union. 3 (Not classifiable for humans.) by IARC.
May cause damage to the following organs: kidneys, liver, mucous membranes, cardiovascular system, upper respiratory tract, skin, eyes, central nervous system (CNS).

Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material to humans.

Specific effects

Carcinogenic effects	: No known significant effects or critical hazards.
Mutagenic effects	: No known significant effects or critical hazards.
Reproduction toxicity	: No known significant effects or critical hazards.

Section 12. Ecological information

Aquatic ecotoxicity

Not available.

Products of degradation : Products of degradation: carbon oxides (CO, CO_2) and water, halogenated compounds.

Environmental fate	: Not available.
Environmental hazards	: No known significant effects or critical hazards.
Toxicity to the environment	: Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1037	ETHYL CHLORIDE	2.1	Not applicable (gas).		**Reportable quantity** 100 lbs. (45.4 kg) **Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: Forbidden. **Cargo aircraft** Quantity limitation: 150 kg **Special provisions** B77, T50
TDG Classification	UN1037	ETHYL CHLORIDE	2.1	Not applicable (gas).		**Explosive Limit and Limited Quantity Index** 0.125 **ERAP Index** 3000 **Passenger Carrying Road or Rail Index** Forbidden
Mexico Classification	UN1037	ETHYL CHLORIDE	2.1	Not applicable (gas).		-

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 15. Regulatory information

United States

U.S. Federal regulations : **United States inventory (TSCA 8b):** This material is listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: chloroethane
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: chloroethane: Fire hazard, reactive, Sudden release of pressure, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: chloroethane

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: chloroethane

Clean Air Act (CAA) 112 regulated flammable substances: chloroethane

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	Ethyl Chloride	75-00-3	100
Supplier notification	Ethyl Chloride	75-00-3	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : **Connecticut Carcinogen Reporting:** This material is not listed.
Connecticut Hazardous Material Survey: This material is not listed.
Florida substances: This material is not listed.
Illinois Chemical Safety Act: This material is not listed.
Illinois Toxic Substances Disclosure to Employee Act: This material is not listed.
Louisiana Reporting: This material is not listed.
Louisiana Spill: This material is not listed.
Massachusetts Spill: This material is not listed.
Massachusetts Substances: This material is listed.
Michigan Critical Material: This material is not listed.
Minnesota Hazardous Substances: This material is not listed.
New Jersey Hazardous Substances: This material is listed.
New Jersey Spill: This material is not listed.
New Jersey Toxic Catastrophe Prevention Act: This material is not listed.
New York Acutely Hazardous Substances: This material is listed.
New York Toxic Chemical Release Reporting: This material is not listed.
Pennsylvania RTK Hazardous Substances: This material is listed.
Rhode Island Hazardous Substances: This material is not listed.

California Prop. 65 : **WARNING:** This product contains a chemical known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Ethyl Chloride	Yes.	No.	Yes.	No.

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class B-1: Flammable gas.

CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

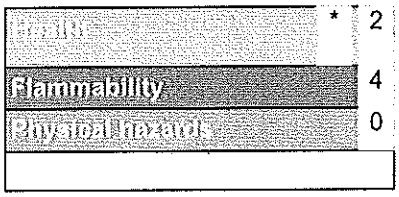
United States

Label requirements : FLAMMABLE GAS.
MAY CAUSE FLASH FIRE.
MAY CAUSE EYE AND SKIN IRRITATION.
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
CONTENTS UNDER PRESSURE.

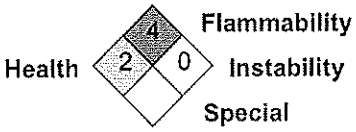
Canada

Label requirements : Class A: Compressed gas.
Class B-1: Flammable gas.

Hazardous Material Information System (U.S.A.) :



National Fire Protection Association (U.S.A.) :



Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

APPENDIX H

SOIL MANAGEMENT PLAN
MAKO PROPERTIES, LLC - BUILDING #3

48-50 ENTER LANE
SUFFOLK COUNTY
ISLANDIA, NEW YORK

Prepared by

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SOIL MANAGEMENT PLAN

1. NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the Department. Currently, this notification will be made to:

Jahan Reza
Project Manager
NYSDEC , Region 1 – HQ
SUNY @ Stony Brook
50 Circle Road
Stony Brook, NY 11790
631-444-0242
Email: jahan.reza@dec.ny.gov

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for Site re-grading, intrusive elements or utilities to be installed below the ground surface, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in Appendix E of this document;

- Identification of disposal facilities for potential waste streams;
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

Any excavation will be conducted under the Community Air Monitoring Plan (see SMP Appendix G).

2. SOIL SCREENING METHODS

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

3. STOCKPILE METHODS

At a minimum, a hose connected to a NYS fire hydrant will be available at the Site for dust control. Depending on the scope of the excavation, a dedicated water truck with water cannon may be required. Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC.

4. MATERIALS EXCAVATION AND LOAD OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

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.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Exact truck transport routes will be determined after a disposal facility is selected. All trucks loaded with Site materials will exit the vicinity of the Site using only approved truck routes. These will be selected and proposed to DEC prior to field mobilization. Preferred truck routes are the most appropriate routes and take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site. Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site to the extent possible in order to minimize off-site disturbance. Off-site queuing will be prohibited.

6. MATERIALS DISPOSAL OFF-SITE

All soil/fill/solid waste excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

7. MATERIALS REUSE ON-SITE

Chemical criteria for on-site reuse of material will be submitted and approved by NYSDEC prior to re-use. The qualified environmental professional will ensure that procedures defined for materials reuse in the SMP are followed and that unacceptable material does not remain on-site. Visual, olfactory and PID soil screening and assessment will be performed by a Qualified Environmental Professional during excavations into known or potentially contaminated material (Residual Contamination Zone). Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for re-use on-site will be placed below a demarcation layer or

impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

For soils to be removed and disposed of off-site, the direct load approach is intended, when possible, whereby the soil is excavated and then placed directly into trucks for disposal. This eliminates the need for staging soil on-site. Should excavated soil have to be staged for either disposal or reuse, it will be placed on, and covered with, secured plastic sheeting to prevent erosion by precipitation.

8. FLUIDS MANAGEMENT

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, but will be managed off-site.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

9. COVER SYSTEM RESTORATION

No cover system currently exists at the Site.

10. BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are the lower of the protection of public health or protection of groundwater soil cleanup objectives for restricted residential use per Table 375-6.8b of 6 NYCRR. 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. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

11. STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

12. CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

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. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

13. COMMUNITY AIR MONITORING PLAN

A figure showing the location of air sampling stations based on generally prevailing wind conditions will be developed. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. Volatile organic compounds will be monitored at the downwind perimeter of the work area on a continuous basis using a PID. If total organic vapor levels exceed 5 ppm above background, work activities must be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings must be recorded and be available for regulatory personnel to review. In addition, particulates should be continuously monitored upwind using a personal Dataram, downwind and within the work area at temporary particulate monitoring stations during excavation activities. If the downwind particulate level is 150 µg/m3 greater than the upwind particulate level, then dust suppression techniques must be employed. All readings must be recorded and be available for regulatory personnel to review. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers. The generic CAMP for the Site is presented in Appendix G of the SMP.

14. ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site. Specific odor screening methods to be used on a routine basis will include use of a PID meter to screen for VOCs and olfactory observations by Field Technicians. If nuisance odors are identified at the site boundary, or if odor complaints are received, 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 any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

15. DUST CONTROL PLAN

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 dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

16. OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

The rodent plan includes the following:

- Within the construction Site, tamper resistant rodent bait stations will be installed in appropriate locations and active rodent burrows will be baited.

- Upon installation, each bait station will be baited, labeled, and secured to the ground. Bait will be replenished and bait stations relocated as necessary to control rodent populations. A baiting program will be initiated prior to mobilization by the contractor in the construction area. Regular inspections and rebaiting of bait stations will be performed to ensure rodents will not be dispersed by construction activities and that rodents will not infest work areas.

Safety signs will be posted on the Site, which will include a copy of the product label and MSDS for the rodenticide in used. Signs will also list practical medical treatment, first aid procedures, and antidote. Caution signs in English and Spanish will be posted when bait stations are placed in areas accessible to the general public, domestic animals, and pets.